

# ASIA'S ROLE IN THE POST-CRISIS

# GLOBAL ECONOMY

**Asia Economic Policy Conference**

*Sponsored by the*  
**Federal Reserve Bank of San Francisco**

# ASIA'S ROLE IN THE POST-CRISIS GLOBAL ECONOMY

*Edited by*

**Reuven Glick**

**Mark M. Spiegel**

**Asia Economic Policy Conference**

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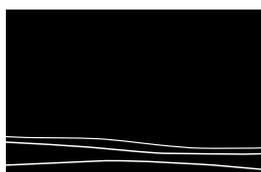
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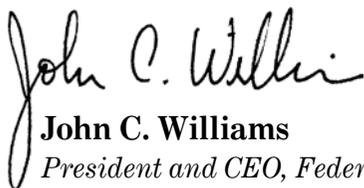
# Foreword

The 2011 Asia Economic Policy Conference, titled “Asia’s Role in the Post-Crisis Global Economy,” is the second in a series that the Federal Reserve Bank of San Francisco began in 2009 and holds in alternate years. This series is the flagship event of our Center for Pacific Basin Studies, bringing together researchers, private market participants, and policymakers to explore Asia’s evolving role in the global economy.

These conferences provide knowledge of the region that is critical in ensuring that the Federal Reserve System has the understanding of global economic trends needed to conduct monetary policy. They build on the Federal Reserve Bank of San Francisco’s long-standing tradition of focusing on Asian developments through the activities of our Center for Pacific Basin Studies in our Economic Research Department and our Country Analysis Unit in Banking Supervision and Regulation.

Policymakers in both advanced and emerging economies face an array of challenges in the current economic environment. How can monetary policy and macroprudential policy be coordinated to achieve the objectives of price and output stability in an environment vulnerable to disruptions in financial markets? What financial regulatory framework will best reduce the likelihood and costs of future crises? What are the relative merits of regional coordination in Asia in light of the lessons of the recent crisis? What are the prospects for global rebalancing of trade and capital flows, and what role might China play in these developments?

This year’s conference assembled an outstanding group of experts to examine these issues. I appreciate the contributions of all those who took part in the conference, including authors, discussants, panelists, and audience members. My special thanks to Reuven Glick and Mark Spiegel, who organized the program and edited the proceedings, and to Anita Todd for her assistance with the production of this volume.



**John C. Williams**  
*President and CEO, Federal Reserve Bank of San Francisco*



# **Asia's Role in the Post-Crisis Global Economy: Conference Summary**

**Reuven Glick and Mark M. Spiegel**

The Federal Reserve Bank of San Francisco's Center for Pacific Basin Studies held the second in its biennial Asia Economic Policy Conference (AEPC) series with a program on "Asia's Role in the Post-Crisis Global Economy" on November 29–30, 2011. The program focused on the challenges faced by policymakers in both advanced and emerging economies, including Asia, in the aftermath of the financial crisis of 2007–08. The conference brought together experts from around the world and commissioned papers and other presentations by distinguished speakers. This chapter highlights the principal issues raised at the conference and summarizes the papers presented.

The economic recovery from the global financial crisis has proceeded at varying rates across advanced and emerging market economies. While many advanced economies have struggled with high unemployment and rising sovereign debt, many emerging market economies, particularly in Asia, recovered relatively quickly. In opening remarks on "Aggregate Demand and the Global Economic Recovery," Federal Reserve Board of Governors Vice Chair Janet Yellen acknowledges that emerging Asia made an important contribution to bolstering the global economy in the wake of the financial crisis. However, because the global economy faces an ongoing dearth of aggregate demand among advanced economies, she argues that it is crucial for emerging market economies, particularly in Asia, to take further steps to boost domestic demand, providing support for their own growth and that of the global economy.

In Yellen's view, many emerging market economies have the scope to bolster their domestic demand in the current environment. Such policies would also support stronger, more balanced, and more sustainable global economic growth, as well as enhance social welfare at home. Specific policy measures she mentions include increased public spending on social services that would spur consumption by reducing the need for precautionary household saving. In addition, government support could be shifted away from manufacturing toward encouraging service-sector development, which has typically lagged behind in emerging economies. Since services tend to have a higher nontraded component, faster growth of this sector would help rebalance growth toward domestic

demand. Finally, exchange rate adjustments could play a crucial role in boosting emerging Asia's contribution to global demand.

Two presentations discuss the lessons for monetary policy from the financial crisis and the relation between monetary and financial stability policies. The recent financial crisis illustrated that cleaning up after financial disruptions can be very costly and should be avoided. Before the financial crisis, the common view, both in academia and in central banks, was that achieving price and output stability would promote financial stability by stabilizing asset prices and making asset price bubbles less likely. Although price and output stability are surely beneficial, the recent crisis indicates that a policy focus solely on these objectives may not be enough to produce good economic outcomes. Indeed, in some views, central bank success in stabilizing inflation and decreasing the volatility of business cycle fluctuations in the two decades before the crisis, popularly known as the Great Moderation, made policymakers complacent about the risks from financial disruptions.

Lars Svensson from Sweden's Riksbank argues in "Monetary Policy after the Crisis" that monetary policy is distinct and different from financial stability policy. In his view, it was not monetary policy but rather financial stability policy that failed, caused the crisis, and needs to be improved. He makes the case that flexible inflation targeting remains the best approach to monetary policy, using interest rate policy, communication about future intentions, and other unconventional instruments such as large-scale asset purchases when rates are at or close to the zero lower bound. He strongly supports publishing policy rate forecasts on a regular basis, based on both the existing practical experience of the Reserve Bank of New Zealand, Norges Bank, the Riksbank, and the Czech National Bank, and his belief that doing so directly affects long-term interest rate expectations, especially since central banks should have better information about their own intentions than market agents.

Svensson agrees that monetary policy should take financial stability policy into account, and vice versa. But under normal conditions, financial stability should be handled through financial policies such as banking regulations, not monetary policy. He argues that financial stability makes little sense as an objective of monetary policy. This objective is only for a central bank if the bank retains control over financial stability instruments. In many countries the situation is more complicated: Responsibility for monetary policy and control of monetary policy instruments, such as changing interest rate policy targets, rests with the central bank, while responsibility for maintaining financial stability is shared among several authorities, not always including the central bank.

Emerging market economies have been subject to increased inflows of foreign capital over the last few years, and some policymakers in those countries have expressed concerns about the risks of bubbles and other negative effects from such inflows. This has caused some observers to suggest that the effects on capital flows to other countries should be taken into account when, for instance, the Federal Reserve sets its monetary policy. Disagreeing with this conclusion, Svensson asserts that the problems of emerging markets to a large extent depend on the decision of these countries to stabilize their dollar exchange rate or even peg to the dollar. More expansionary monetary policy in the United States in the form of lower long rates tends to depreciate the dollar, all else equal. Indeed, countries that choose to peg to the dollar tend to import U.S. expansionary monetary policy. This may in some cases be too expansionary for these countries, overheating their economies and raising the risks of negative consequences, such as asset market bubbles. However, Svensson argues, these countries have the option of adopting more flexible exchange rates and conducting independent monetary policy that is more appropriate for their objectives. If countries choose a peg to the dollar in spite of the risks, they themselves are responsible for the outcome.

The traditional approach to financial regulation focuses on maintaining the soundness of individual financial institutions. In the case of banking regulation, that focus typically takes the form of requirements on minimum capital for individual banks as a proportion of their risk-weighted assets. In their paper, “Macroprudential Policies in Open Emerging Economies,” Joon-Ho Hahm at Yonsei University, Frederic Mishkin of Columbia Business School, Hyun Song Shin at Princeton University, and Kwanho Shin of Korea University provide an overview of the policy options that can complement traditional tools of bank regulation and the tools of monetary policy in reining in the excesses in the financial system. They maintain that the case for flexible inflation targeting is as strong as ever, but macroprudential policies are needed as a first line of defense against credit booms to guard the fragility of bank liabilities. In particular, they argue that macroprudential policies should aim to constrain excessive growth in bank lending during booms as well as the emergence of vulnerabilities on the liability side of bank balance sheets.

Hahm et al. provide an overview of macroprudential tools. These include administrative rules that limit bank lending, such as caps on loan-to-value ratios and debt service-to-income ratios, which may complement the traditional tools used in banking supervision. Countercyclical capital requirements and forward-looking provisioning that lean against the credit or business cycle, that

is, rise with credit growth and fall with credit contraction, can also promote financial stability and reduce systemic risk. In addition, they provide evidence that the ratio of core to noncore liabilities provides information about leverage cycles and a good measure of the banking sector's exposure to risk. For example, in Korea noncore liabilities are highly procyclical and unresponsive to domestic monetary policy, but are highly responsive to U.S. monetary policy. Consequently, the authors suggest that limiting this ratio can be a useful macroprudential tool.

Eswar Prasad and Lei Ye of Cornell University in "The Renminbi's Role in the Global Monetary System" analyze the growing internationalization of the renminbi through its use in the denomination and settlement of cross-border trade and financial transactions. Renminbi trade settlement in Hong Kong has expanded rapidly, the issuance of renminbi-denominated bonds both in Hong Kong and mainland China is picking up, and some central banks are considering holding renminbi-denominated assets in their foreign exchange reserve portfolios. Nonetheless, the authors conclude that while internationalization of the renminbi is steadily growing, it is a long way from attaining full convertibility or meeting other prerequisites for achieving reserve currency status. Progress will require more exchange rate flexibility and more openness of China's capital account.

Prasad and Ye document the increasing openness of China's capital account in both *de jure* and *de facto* terms through selective and cautious changes, consistent with the active promotion of the renminbi as an international currency. However, they argue, in most cases constraints on capital inflows and outflows have been merely relaxed rather than eliminated entirely. China still has a substantial capital control regime in place. In their view, China faces only modest risks from a more open capital account in terms of vulnerability to external shocks. The bigger risks arise from the improper sequencing of capital account liberalization, greater exchange rate flexibility, and domestic financial market reforms. A fixed or tightly managed nominal exchange rate makes it harder to cope with capital flow volatility because the exchange rate cannot act as a shock absorber.

This combination of policies also reduces the independence of domestic monetary policy, impeding the central bank's ability to use monetary policy instruments such as interest rates to maintain domestic price stability. Broader and deeper financial markets help absorb capital inflows and direct them to productive activities and, more broadly, help to cope with capital flow volatility. In the absence of a more flexible exchange rate and a better-developed financial system, a more open capital account can impair financial stability and constrain

monetary policy. Thus, Prasad and Ye argue that China runs the risk of putting the cart before the horse by pushing capital account liberalization more aggressively than exchange rate flexibility and financial system reforms.

Last, the authors discuss the prospects for the renminbi as a global reserve currency. Attaining reserve currency status has various benefits, including seigniorage revenues from abroad, as inflation reduces the value and the cost to China of foreign (and domestic) investors' holdings of the currency. It also would provide easier access to cheap foreign financing of debt issued in the domestic currency, an advantage that in the case of the United States has been termed an "exorbitant privilege." To the extent that this status results in a greater denomination of trade transactions in China's own currency, domestic importers and exporters would face lower currency risk. The potential costs of having a reserve currency include reduced control of the currency's external value and possibly a more volatile exchange rate. However, while China is actively promoting the internationalization of its currency, Prasad and Ye believe it is a long way from attaining full convertibility or meeting other prerequisites for achieving reserve currency status. Thus, although the renminbi will play an increasingly important role in the international monetary system, it is unlikely to displace the U.S. dollar anytime soon.

Justin Lin of the World Bank in his remarks on "China and the Global Economy" discusses China's achievements since the beginning of economic reforms in 1979, as well as the prospects for China's future growth. As Lin describes, China was still a low-income country in the 1970s, when its income per capita was less than one-third of sub-Saharan Africa. After beginning its reform process, China achieved an annual growth rate of 9 percent between 1979 and 1990, which remarkably rose even higher to 10.4 percent between 1990 and 2010. Such an extended period of high growth in such a populous country is unique in the world's history. Moreover, Lin maintains that China has the potential to maintain an 8 percent annual growth rate for another two decades, enabling China to act as an engine of global growth. He attributes China's remarkable performance over the past 30 years to its ability to implement structural economic reforms in an environment of relative stability. In addition, as a latecomer, China was able to develop according to its comparative advantage and tap into the technologies already developed in advanced countries.

As is well-known, an excessive share of China's GDP is devoted to investment and a correspondingly low share is accounted for by private consumption expenditures. Nicholas Lardy of the Peterson Institute for International Economics in his remarks on "Sustaining China's Economic Growth after the Global Financial Crisis" discusses how Chinese policymakers are seeking to

address the country's unbalanced growth path and sustain its growth in the future. In Lardy's view, this unbalanced pattern of aggregate demand is primarily attributable to financial repression, as reflected in a negative real return on household savings. Since 2004, the inflation-adjusted return on a one-year deposit in Chinese banks has averaged  $-0.4$  percent, far below the average rate of 3 percent between the late 1990s and the early 2000s.

The negative real return on financial savings has decreased private consumption expenditures in two ways. First, it has depressed household interest income and dampened household spending. Second, it contributed to a sharp increase in the rate of household savings, since Chinese households put aside a larger share of their after-tax income when the return on their savings declined. This is perhaps not surprising in an economy where the pension and health-care systems are relatively underdeveloped and many households lack access to any retirement or health insurance schemes and thus essentially are self-insuring.

In addition to depressing spending, negative real deposit rates combined with other features of the Chinese economy also have fostered greater investment in residential property assets and contributed to a sustained rise in residential property investment. First, China's capital account is largely closed, meaning that Chinese households cannot easily invest in foreign currency-denominated stocks, bonds, or other financial assets, restricting investments to domestic assets. Second, the Chinese domestic stock market is marked by insider trading and other abuses. Thus, the average Chinese household does not regard domestic equities as a viable long-term investment class.

The combination of these factors has induced Chinese households to allocate a growing share of their savings to residential property. As a result, household investment in residential real estate exceeded 10 percent of GDP in 2011, an all-time record high. In response, the government has taken measures to curb housing demand, including limiting the purchases of residential property units by individuals who do not intend to occupy the properties. In December 2009 the government doubled to 40 percent the required down payment to qualify for a mortgage on a property that was not the owner's primary residence, while in April 2010 the government raised this ratio to 50 percent, introduced higher interest rates for mortgages on nonprimary residences, and in many cities prohibited households from purchasing more than two properties, regardless of how they are financed.

Lardy concludes that the most important policy change the Chinese government could adopt to stimulate domestic consumption and thus alleviate the imbalance in its economy would be to resume the process of interest rate liberalization that was halted in 2004. This does not mean immediately eliminating all

remaining central bank control of lending and deposit rates, but rather resuming the process of allowing successively larger bands around the rates that the bank sets. In particular, the asymmetric liberalization that occurred until 2004, in which the benchmark interest rates set by the central bank on loans are floors while benchmark rates set on deposits are ceilings, should be modified with the goal of moving toward more market-oriented determination of interest rates. This would encourage consumption by raising household income and simultaneously reducing the average household saving rate.

The second day of the conference began with two papers concentrating on international relationships within Asia and between Asia and the rest of the global economy. In the first paper, “Asian Regional Policy Coordination,” Ted Truman of the Peterson Institute for International Economics addresses the prospects for greater regional cooperation and integration in Asia as well as whether more regional policy coordination would provide a substitute for global coordination.

He agrees that Asia would benefit from more regional policy coordination, but argues that focusing solely on the goal of insulating Asia from global policy coordination efforts—what he calls “Asian exceptionalism”—is unlikely to be successful. His argument is two-fold: First, Asian economies are sufficiently heterogeneous in a number of dimensions that they are unlikely to find mutually advantageous grounds for much deeper regional coordination. Second, the recent financial crisis refutes the notion that any region of the global economy is so isolated that it can ignore global spillovers. Thus Asian policy coordination cannot and should not ignore the broader global economy.

Truman reviews the extent of Asian policy coordination, concluding that it has reached a stage of common “surveillance,” involving reviews of the economic and financial policies of participating countries and the adoption of some common standards or joint policy actions, such as the regional currency swap facility created through the Chiang Mai Initiative. Still, different views across countries pose barriers to deeper policy coordination. Truman refers to experiences during the global financial crisis to demonstrate that opportunities for policy coordination tend to be temporary. While countries were quite willing to cooperate in multilateral efforts at the depth of the crisis, focus reverted to domestic issues as soon as conditions calmed.

Truman believes that the extent of policy coordination that can be achieved is also hampered because of ambiguity in the appropriate definition of “Asia,” particularly given the heterogeneity in size and economic development across the region. Although the levels of economic development within Europe are much closer than in Asia, even there substantive coordination problems have

arisen from differences in country characteristics and economic conditions. Truman presents evidence that various groupings of Asian countries are about as economically integrated as is the euro area—more so with respect to unemployment, less so with respect to growth, and about the same with respect to inflation. But given the considerable differences in economic development among the core countries of Asia (China, Japan, India, and Korea), he is skeptical about the prospects of achieving deep forms of policy coordination with common objectives and regular policy adjustment.

Last, Truman examines the appropriate relationship between regional and global policy coordination through participation in multilateral organizations such as the International Monetary Fund. He grants that a lack of proper surveillance may have contributed to the European crisis, and posits that greater regional coordination may have helped Europe as well as Asia, perhaps through more pooling of foreign exchange reserves. However, he cautions regions can never be totally self-reliant and therefore should care about policies of governments outside of the region as well as the role of multilateral organizations.

In the final paper presentation, “Global Imbalances and Global Liquidity,” Pierre-Olivier Gourinchas of the University of California at Berkeley argues that the global financial crisis demonstrated a need to reassess the way global imbalances are interpreted. In particular, he maintains that proper assessment of financial stability should be based not on traditional measures, such as current account balances, but rather on global liquidity imbalances that account for liquidity mismatches over time and across countries. This measure would focus on national funding risk, and provide a better indicator of impending financial difficulties.

Gourinchas examines the buildup of global imbalances prior to the financial crisis, paying special attention to the role of the United States. He notes that in the boom period prior to the crisis, the U.S. current account position actually modestly improved, while ultimately unsustainable financial excesses were building up, supporting his view that current account balances provide an inadequate picture of a country’s financial vulnerability.

To illustrate the role that financial balances may play in a funding crisis, Gourinchas formulates a model to demonstrate that gross financial positions are important potential determinants of illiquidity and crisis vulnerability. In particular, he distinguishes between private and public debt positions, with the distinction that the latter are usually heavy in short-term debt liabilities, leaving them vulnerable to funding difficulties regardless of the nationality of their creditors. Thus, in the event of fiscal difficulties, capital outflows may lead to

a balance of payments crisis, even if a country's current account was roughly in balance initially. In this framework, the country's vulnerability is determined by its inability to roll over maturing liabilities rather than by the nationality of the holders of public debt.

Gourinchas emphasizes that equity-like instruments are used less often than debt to finance international imbalances due to information asymmetry, because sellers of risky claims typically have more information about their value than buyers. This implies that debt instruments, which typically require less information to monitor, may be the preferred method of funding, despite their vulnerability to default. However, debt instruments may become less preferred if default becomes more likely. If this happens, increased knowledge about the debtor's situation is more valuable, which Gourinchas characterizes as the instruments becoming more "information sensitive." Similarly, issuing longer maturity debt, which can allow a debtor to weather a temporary adverse shock, may not always be desirable. Short-term debt can better discipline borrowers and address moral hazard issues, since borrower incentives are better aligned with those of creditors when they know that they must service their debt obligations more promptly.

Based on the analysis of his model, Gourinchas suggests using a liquidity coverage ratio, defined as the ratio of short-term *pledgeable* claims to maximum short-term funding outlays, as a measure of a country's vulnerability. Putting this measure into operation is difficult, however, since the components in both the denominator and numerator are difficult to construct. Moreover, in many cases the offset of funding outlays is not automatic. Just because an asset could be applied to pay off a liability does not mean that it will happen in practice. This is particularly true for sovereign obligations, where a government may possess adequate assets to service its nominal debt liabilities but refuses to do so.

Gourinchas provides empirical evidence of how differences in international illiquidity across regions and time have played a role in the vulnerability to crises. He explains that the vulnerability of euro-area economies was particularly high because the European banking system requires ready access to dollar assets, while the U.S. banking system has little need for euro-denominated liquid assets.

He also points out that the United States historically has been a net liquidity provider to the rest of the world because its assets include foreign equity and direct investment, while its liabilities are predominantly more liquid securities. More recently, however, Europe has become a liquidity provider to the United States through the extensive investments of its commercial banks—notably

in securitized real estate assets—which are financed through U.S. wholesale funding markets. The rest of the world, in contrast, served as a liquidity sink, building up their holdings of foreign reserves at a rapid pace.

However, as the European situation deteriorated, private dollar funding available to European commercial banks suddenly declined. This posed a problem, since obtaining funds by U.S.-based European subsidiaries from the Federal Reserve using the discount window was seen as signaling weakness, while borrowing from the European Central Bank was initially expensive due to the 100 basis point premium charged by the Fed on these funds. Private interbank swap markets also showed signs of stress. Consequently, Gourinchas argues that the reduction in the Fed premium on swap line borrowing significantly eased the dollar funding difficulties of European commercial banks.

The conference next featured a policymaker panel discussion on “Policy Reforms after the Crisis.” In the first presentation, Jun Il Kim, Deputy Governor and Chief Economist of the Bank of Korea, discussed “Global Policy Challenges in the Post-Crisis Period.” Kim credits aggressive U.S. and European monetary and fiscal policy responses to the financial crisis with avoiding another Great Depression. He also contends that the global economy is still hampered by excessive leverage. Although efforts to deleverage are likely to be contractionary, he suggests that Japan illustrates the need for orderly deleveraging over time. The need for fiscal space for continued expansionary fiscal policy in the short term requires agreeing on long-term fiscal tightening to anchor public expectations of long-term fiscal sustainability.

Kim also argues that regulatory responses to the crisis are required. In particular, he recommends that regulatory reforms focus more on systemic risk but not be so stringent as to hinder investment and economic growth. He acknowledges that efforts towards increased regulation in advanced economies might affect emerging market economies as well by discouraging risk-taking and investment by global financial institutions in these economies. Indeed, fluctuations in capital flows from advanced economies played an important role in previous emerging market crises, and current policy reforms may dampen capital flows into emerging markets. Hence, the implications of policy reforms for capital flows between advanced and emerging countries should be considered in the design of the post-crisis regulatory framework.

In addition, the Deputy Governor notes that the international swap arrangements set up by the Federal Reserve with several emerging market economies played an important role in calming markets during the crisis. He supports creating a global financial safety net to address future international liquidity needs, which might curtail global imbalances by reducing emerging market

nations' temptation to increase their holdings of foreign reserves through current account surpluses. Though the extension of funds to emerging market economies might expose lending central banks to credit risk, in his view the risk feeding back from an emerging market crisis could be far worse. He also argues that the threat of a global safety net increasing moral hazard is likely to be exaggerated because the cost of crises would remain sufficiently severe to keep moral hazard issues in check.

Kim concluded his remarks with a review of Korea's experience during the crisis. Korea entered the crisis with strong macroeconomic conditions and a large stock of reserves that masked its vulnerability to external shocks. However, its ability to tap its foreign reserves was limited when the crisis hit, as fears that its stock was dwindling too rapidly led to further capital outflows. In response, Korea adopted a number of policy reforms, including limits on exposure to short-term debt and a levy on foreign currency liabilities, with higher premia on shorter-term liabilities. In addition, the Bank of Korea Act gave the central bank new powers for pursuing macroprudential regulation and added the pursuit of financial stability to its price stability mandate.

Ryuzo Miyao, Policy Board Member of the Bank of Japan, spoke on a "Macroprudential Perspective on Monetary Policy." Miyao argues that the central cause of the financial crisis lay in the formation and bursting of an asset price bubble, facilitated by the use of new financial instruments, particularly derivative products. These new instruments led to a rapid increase in leverage and raised global vulnerabilities on a scale that was not fully appreciated during the asset boom.

Miyao says monetary policy tools should play a role in limiting asset price bubbles before crises erupt because their power is limited afterward. He acknowledges that this view is controversial, but claims that since disruptions from asset price bubbles could increase output and price level instability, containing bubbles in advance falls squarely under the purview of monetary policy. However, he acknowledges that monetary policy conducted solely through interest rate changes may not be sufficient to counter asset bubbles without also damaging economic activity. Consequently, he advocates the use of macroprudential tools, such as limiting loan-to-value ratios of systemically important financial institutions, as well as countercyclical capital buffers.

Miyao then examines the case of Japan, which experienced financial difficulties for some time before the global crisis and entered the crisis with a variety of macroprudential policies in place. By 2006, the Bank of Japan had already been considering financial imbalances, such as the prevalence of currency and maturity mismatches in its financial system, in its assessment of financial stability.

Subsequent to the 2007–09 crisis, the Bank of Japan also stated that shrinking financial imbalances was a prerequisite for ending its zero interest rate policy. However, Miyao acknowledges that detection of financial imbalances sometimes proved difficult. The Bank of Japan therefore has been engaged in efforts to better detect and understand the effects of asset price bubbles, in concert with multilateral efforts at the International Monetary Fund and the Bank for International Settlements.

In the final panel presentation, Norman Chan, Chief Executive of the Hong Kong Monetary Authority, presents his views on the causes of the financial crisis. He notes numerous potential explanations for debt buildup before the crisis, including financial innovation, which allowed the extensive use of securitization, relatively low interest rates, which lowered the cost of borrowing, and the relatively high appetite for risk inspired by low yields and a general feeling of optimism. These factors all left it easier to obtain credit, particularly for real estate finance.

However, Chan primarily attributes the crisis to what he termed a market failure. Extremely low yields on debt prior to the crisis reflected a misperception held by the market that the large debt levels built up by Greece and other countries were sustainable. This perception led to weaker fiscal discipline in Europe as well as excessive leverage in the United States. Since the root cause of the crisis was excessive leverage, Chan argues that the only way to fully recover from the crisis was through deleveraging by the United States and other countries. While Hong Kong suffered its own painful housing bubble collapse, Chan says it has recovered, restructured, and emerged as a more resilient economy. He argues that similar reforms were needed in the United States, including better assessment by rating agencies of the creditworthiness of exotic derivatives and raising both the quality and quantity of required capital, as recommended by the Basel Committee.

In a closing address, Barry Eichengreen of the University of California at Berkeley notes that the title of the conference—“Asia’s Role in the Post-Crisis Economy”—had proven to be quite prescient, as global discussions had recently centered on the possibility that Asian countries, either directly or through the International Monetary Fund, might be called upon to provide resources to help European countries stabilize their financial positions. Eichengreen also highlights the importance of global trade to Asia, and how the collapse of trade during the crisis revealed an important vulnerability in the region. This new appreciation of global trade’s importance introduces an opportunity for the region to help construct a more robust global economy.

Eichengreen warns that the proper vehicle for pursuing macroeconomic stability is less apparent. While conference papers identify opportunities for pursuing macroeconomic stability at the national, regional, and multinational levels, the program unfortunately lacked a paper on fiscal policy, where challenges to the pursuit of macro stability are currently paramount.

Given threats to financial stability, Eichengreen believes that both monetary and fiscal policymakers needed to step up and respond as the last line of defense. Still, the most desirable policy response is not always clear. For example, last resort lending is an obvious monetary policy response after a crisis has hit, but what is the role for monetary policy prior to a crisis? Should that be left to regulators, or is a monetary policy response to the perceived development of financial froth also appropriate?

Eichengreen notes the need for more global regulatory coordination, and expresses disappointment that the most recent Basel negotiations failed to agree on an international standard for countercyclical capital requirements. He also comments that the IMF can play a constructive role in limiting cross-border policy spillovers, but to do so, existing quotas and executive board representation will need to be rebalanced to give Asian countries more of a voice. However, he expresses disappointment that some Asian countries have not “been able to get over their IMF phobia.”

Eichengreen points to regional responses to the 1997–98 crisis, such as the Chiang Mai Initiative Multilateralization, the ASEAN+3 Macroeconomic and Research Office (AMRO), the Asian Bond Fund, and the Asian Bond Markets Initiative, but notes that Chiang Mai has yet to be used, and AMRO has concentrated on research rather than surveillance. He argues that the vast differences in political systems across Asia and in stages of economic development have played a role in limiting the achievements of regional Asian institutions. This contrasts with the European Union, where adherence to certain norms, such as democracy, rule of law, and human rights, are prerequisites for entry. He also comments that the “ASEAN norm” of not interfering in the affairs of individual countries hinders regional surveillance in Asia. Finally, Eichengreen notes that the European crisis aptly demonstrates the limitations of regional cooperation.



## OPENING REMARKS

# Aggregate Demand and the Global Economic Recovery

Janet L. Yellen

Good morning. I'm delighted to return "home" to the Federal Reserve Bank of San Francisco and honored to kick off the Bank's second Asia Economic Policy Conference.

In my remarks this morning I will underscore the urgency of strengthened international policy cooperation to attain strong, sustainable, and balanced growth in the global economy—a theme that received emphasis at the Group of Twenty (G-20) Leaders' Summit in Cannes earlier this month. The global economy is facing critical challenges. The recovery in the United States and other advanced economies has been proceeding too slowly to provide jobs for millions of unemployed people. There have also been clear signs of slowing growth in emerging market economies over the past year. In effect, we face a dearth of aggregate demand, not just among the advanced economies, but also for the global economy as a whole.

In ordinary times, policymakers in the advanced countries would address such a demand shortfall with expansionary fiscal and monetary policies. But these are no ordinary times. Central banks in a number of advanced economies, including the United States, have brought short-term interest rates close to zero, so that further monetary accommodation can be provided only through unconventional tools, such as securities purchases and forward policy guidance. Meanwhile, the scope for fiscal stimulus is limited by concerns about sizable budget deficits and longer-term sustainability.

At the G-20 summit earlier this month in Cannes, the United States and other advanced economies—including France, Germany, Italy, Japan, Spain, and the United Kingdom—agreed to pursue fiscal consolidation plans to place public finances on a sustainable course over the medium term while sustaining the

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**Author's note:** *I am indebted to Federal Reserve Board staff members Shaghil Ahmed, Eric Engen, William English, Joseph Gruber, Steven Kamrin, Michael Leahy, Andrew Levin, Trevor Reeve, and David Wilcox for their assistance in preparing these remarks.*

near-term recovery. Indeed, in the current environment of weak demand, near-term fiscal consolidation could threaten the economic recovery, which in turn may undermine the success of the fiscal strategy. In such circumstances, economies with the capacity to stimulate global growth—namely, countries with large current account surpluses and the potential to expand domestic demand—must take a leading role in adopting policies to rebalance and sustain the global economy. This commitment was made by all of the G-20 leaders, including those from China, Indonesia, South Korea, and other emerging markets.

In the remainder of my remarks, I will point out some key factors that have been restraining the pace of U.S. economic growth, and I will discuss the need for fiscal adjustments to place our federal budget on a sustainable path over the medium term without impairing the economic recovery. I will then turn to a consideration of the crucial role of the Asian economies in fostering a stronger global recovery. Of course, these remarks solely reflect my own views and not necessarily those of others in the Federal Reserve System.

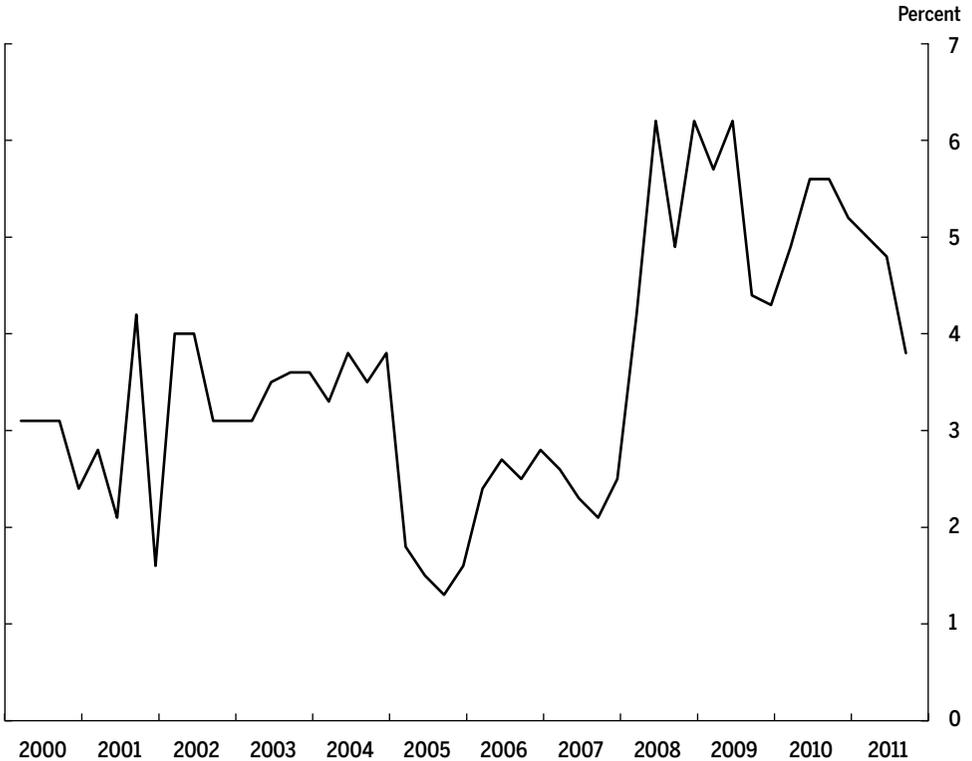
## **U.S. Economic Growth**

Since the middle of 2009, the U.S. economy has been recovering from the most severe recession and financial crisis to afflict our country since the Great Depression. However, the pace of the economic recovery has been less vigorous than desired or expected, and the unemployment rate has declined only about one percentage point over the past two years. Indeed, the number of jobs in the private sector remains more than 6 million below the peak level reached in early 2008—a distressing development made all the worse by the fact that new entrants have, of course, continued to come into the labor force in recent years. The fraction of those now jobless who have been without work for six months or more stands at a very high level. In addition to those officially unemployed, many individuals are involuntarily working part time or have dropped out of the labor force entirely.

The pace of economic growth in the second half of this year has been somewhat faster than in the first half, reflecting in part a reversal of the temporary factors that had weighed on growth earlier in the year. Nonetheless, a range of more-persistent factors also appear to be restraining the recovery. In recognition of these drags, the consensus of professional forecasters in the survey released in November 2011 by the Federal Reserve Bank of Philadelphia was that unemployment would decline only slightly in the next few years, to an average rate of 8.4 percent in 2013. Moreover, financial market conditions have deteriorated, on net, in recent months, intensifying some of the headwinds facing the economy.

At the onset of the financial crisis, consumer spending contracted sharply and the personal saving rate began a steep ascent. Exhibit 1 shows that the saving rate rose from around 2½ percent in 2006 to about 5 percent in the first half of 2011. It now appears that consumer spending is advancing at a moderate pace. In the pre-crisis years, consumer spending grew rapidly, providing considerable impetus to the expansion. In contrast, over the next few years, consumer spending seems unlikely to serve as one of the main engines of growth. The ratio of household debt-to-income remains exceptionally high, even though over the past few years it has declined slightly from the post-World War II peak reached prior to the crisis. Although households appear to have made some progress in deleveraging, many still face elevated debt burdens and reduced access to credit. Moreover, high levels of unemployment and underemployment, slow gains in wages, and declines in the values of both homes and financial assets

EXHIBIT 1  
**U.S. Household Saving Rate**



Source: Bureau of Economic Analysis.

have weighed on household spending and diminished the ability of households to tap home equity in emergencies or for other purposes. Consumer sentiment dropped markedly over the summer and remains quite depressed, apparently reflecting households' concerns about the broader economy as well as their own financial situations.

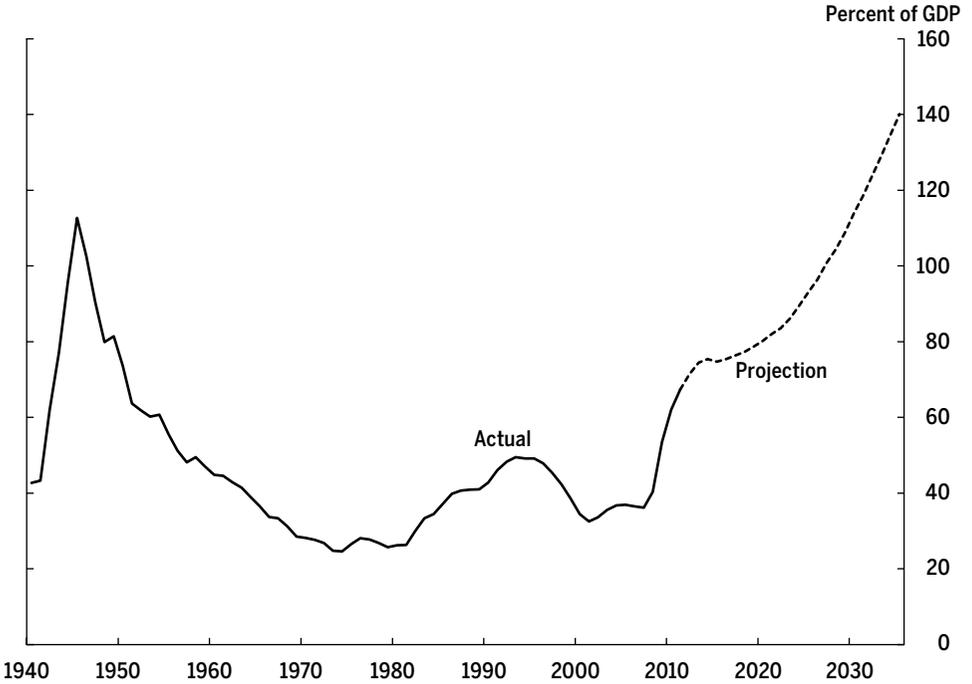
A sharp downturn in housing was at the core of the previous recession, and this sector continues to weigh on the recovery. Robust increases in housing activity have helped spur recoveries from most U.S. recessions since World War II. This time, in contrast, residential construction remains depressed by a large inventory of foreclosed and distressed properties either currently available for purchase or probably soon to become so, tight credit conditions for construction loans and mortgages, and concerns about the possibility of further declines in home prices. As a result, new home construction currently is at only about one-third of its average pace in recent decades. In addition, homeowners with insufficient equity in their homes have found it difficult to take advantage of today's low interest rates by refinancing their mortgages. Recently announced changes to the federal government's Home Affordable Refinance Program, or HARP, are designed to improve the opportunity for homeowners to refinance, and I'm hopeful this program will succeed in reducing household debt service burdens and the flow of foreclosures. More generally, I see a strong case for additional policies to foster more-rapid recovery in the housing sector. Indeed, to provide greater support for mortgage markets, the Federal Reserve recently adjusted its program for reinvesting its securities holdings.

The Federal Reserve continues to provide highly accommodative monetary conditions to foster a stronger economic recovery in a context of price stability. Moreover, the scope remains to provide additional accommodation through enhanced guidance on the path of the federal funds rate or through additional purchases of longer-term financial assets.

## **Challenges for U.S. Fiscal Policy**

Turning now to U.S. fiscal policy, with the onset of the recent recession and financial crisis, the federal budget deficit widened significantly and has remained wide. Exhibit 2 shows that, as a result, federal debt held by the public has increased relative to our national income to a level not seen in the past half-century. These budget developments have reflected both the weak economy, which has depressed revenues and pushed up expenditures, and the fiscal stimulus that was implemented to help ease the recession and support the recovery. So long as the economy continues to recover, the deficit should narrow over the next several years as a growing economy boosts revenues and reduces

EXHIBIT 2  
**U.S. Federal Debt Held by the Public**



**Note:** Federal Reserve Board staff calculations using Congressional Budget Office projections.

expenditures and as the policies put in place to provide economic stimulus continue to wind down. Even so, the ratio of debt to gross domestic product (GDP) will continue to edge higher over the next decade unless the Congress and the Administration are able to agree on a program of deficit reduction that is more ambitious than the targets incorporated in last summer’s Budget Control Act. Looking yet further out, it is apparent that, absent significant policy shifts, budget pressures resulting from the aging of the U.S. population and fast-rising health-care costs will continue to push the federal debt ratio higher in coming decades. The dashed line in Exhibit 2 shows the Congressional Budget Office’s long-term projection of the debt-to-GDP ratio through 2035 under current policy settings, including the effects of the Budget Control Act.

It is crucial that the federal budget be put on a sustainable long-run trajectory, and we should not postpone charting that course. A failure to put in place a credible plan to address our long-run budget imbalance would expose the

United States to serious economic costs and risks in the long term and possibly sooner. Timely enactment of a plan to put the federal budget onto a sustainable trajectory will make it easier for individuals and businesses to prepare for these adjustments. In addition, the sooner our longer-term budget problems are addressed, the less wrenching the adjustment will have to be and the more control that policymakers—rather than market forces or international creditors—will have over the timing, size, and composition of the necessary adjustments.

At the same time, too much fiscal tightening in the near term could harm the economic recovery. Significant near-term reductions in federal spending or large increases in taxes would impose an additional drag on the economy at a time when aggregate demand is already weak. Indeed, under current law, federal fiscal policy is slated to impose considerable restraint on the growth of aggregate demand next year. We need, and I believe we have scope for, an approach to fiscal policy that puts in place a well-timed and credible plan to bring deficits down to sustainable levels over the medium and long terms while also addressing the economy's short-term needs. I do not underestimate the difficulty of crafting a strategy that appropriately balances short-run needs with long-run considerations, but doing so would provide important benefits to the U.S. economy.

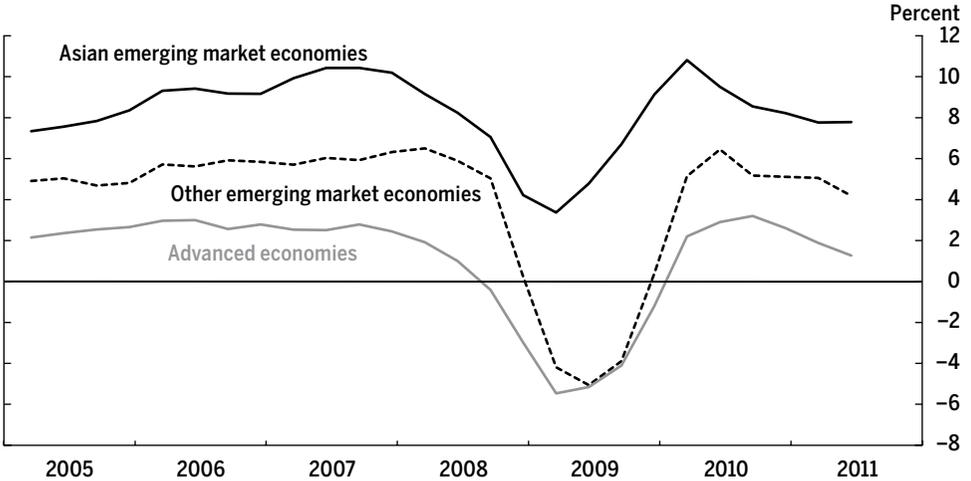
## **The Key Role of the Emerging Asian Economies**

In light of the various factors weighing on aggregate demand in the United States and other advanced economies, I believe it is crucial for emerging market economies, particularly in Asia, to take further steps to boost domestic demand, providing support for their own growth and that of the global economy. Indeed, such policies are a core component of the G-20 nations' commitment to strong, sustainable, and balanced growth.

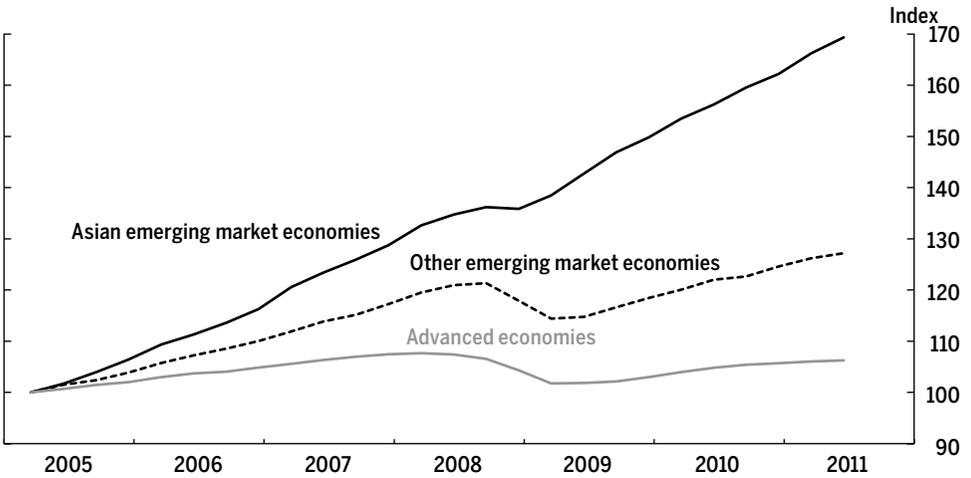
Of course, emerging Asia has already made an important contribution to bolstering the global economy in the wake of the financial crisis. The top panel of Exhibit 3 shows that even though the emerging Asian economies were hit quite hard by the global downturn, they recovered much more quickly than did other parts of the world. The full extent of the Asian bounceback can perhaps best be appreciated by comparing the level of output in Asia, shown in the bottom panel of the exhibit, with those in advanced economies and other emerging market economies. Asia's output level—the solid black line—has increased substantially from its barely perceptible trough. Output in other emerging market economies—the dashed line—has also increased significantly. In comparison, output in the advanced economies—the solid gray line—has not yet attained its pre-crisis peak.

EXHIBIT 3  
Real GDP

**A Output Growth, Four-quarter Percent Change**



**B Level of Output, 2005:Q1 = 100**



Sources: Country sources via Haver; International Monetary Fund; Federal Reserve Board staff calculations.

Notes: GDP weighted aggregate. Advanced economies consist of Australia, Canada, the euro area, Japan, Sweden, Switzerland, the United Kingdom, and the United States. Asian emerging market economies consist of China, Hong Kong, India, Indonesia, the Philippines, Malaysia, Singapore, South Korea, Taiwan, and Thailand. Other emerging market economies consist of Argentina, Brazil, Chile, Colombia, Israel, Mexico, Russia, Saudi Arabia, and Venezuela.

A key factor contributing to the relatively rapid recovery of the Asian emerging market economies was that, in contrast to many previous episodes of severe stress, these economies were well-positioned to permit the use of countercyclical fiscal and monetary policies. Cyclically adjusted fiscal balances in emerging Asian economies fell noticeably in 2008 and 2009, reflecting a more expansionary fiscal stance; fiscal stimulus was particularly large in China, India, and Singapore. Monetary policy was also eased substantially throughout emerging Asia.

Partly as a result of those policy measures, the growth of the emerging Asian economies over the past several years appears to have relied less on external demand from the advanced economies. The top panel of Exhibit 4 shows that the shares of exports in nominal GDP in the Asian economies have trended downwards since 2006 following a decade of solid increases. However, trade balances in the region (shown in the bottom panel of the exhibit) generally remain in surplus, notwithstanding some recent narrowing in several countries. These surpluses suggest that, on balance, the Asian economies continue to add more to global supply than to global demand.

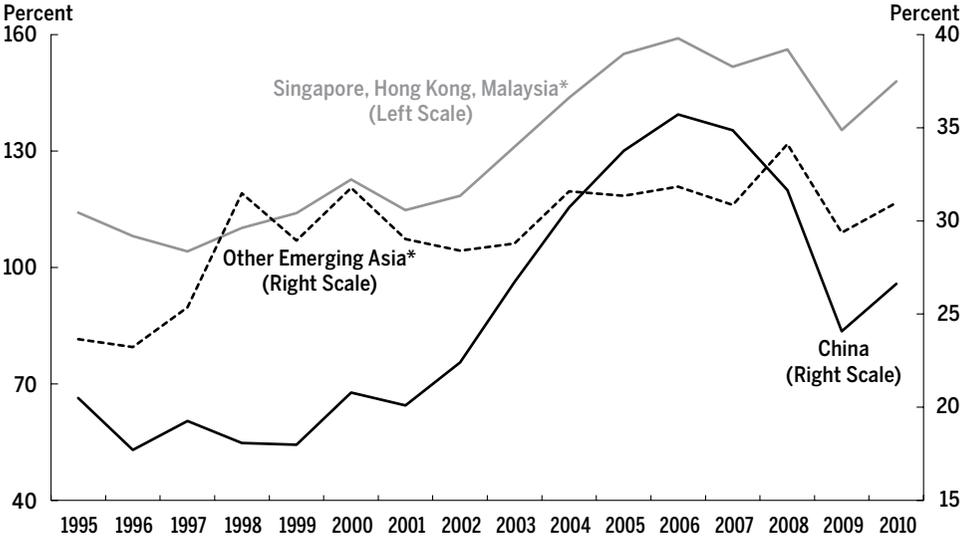
Crucially, private consumption as a share of output still remains quite low in several emerging Asian economies. Exhibit 5 shows that China's consumption share—the solid black line—which was already well below that of other major economies in 2000, has fallen steadily over the past decade to about one-third of its GDP.<sup>1</sup> Private consumption shares in other emerging Asian economies—the dashed line—are also significantly below those in the advanced economies—the solid gray line—and have not moved up in the wake of the global financial crisis.

Measures to boost private consumption would appear to benefit not only the global economy, but also the emerging Asian economies themselves. China and other emerging market economies have already taken some steps to promote household consumption, but the progress on this front has been slow and further measures are warranted. Indeed, at the G-20 Cannes summit, China pledged to rebalance its demand toward domestic spending through policies to bolster household income and strengthen social safety nets, and Indonesia and Korea each made similar commitments to facilitate the process of global rebalancing.

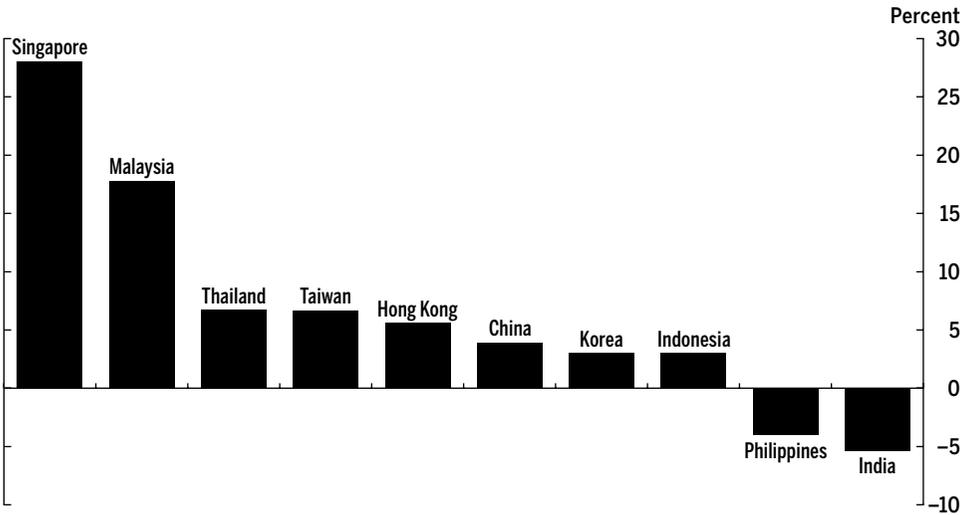
What are some specific policy measures that could be helpful? First, increased public spending on social services, such as education, health care, and retirement benefits, could spur consumption by reducing the need for precautionary household saving. In China, some redistribution of the profits of state-owned enterprises to the central government through larger dividend payments could provide revenue to support such spending. Second, government

EXHIBIT 4  
Exports and Trade Balance

**A Exports as a Share of GDP**



**B 2010 Trade Balance\*\* as a Share of GDP**

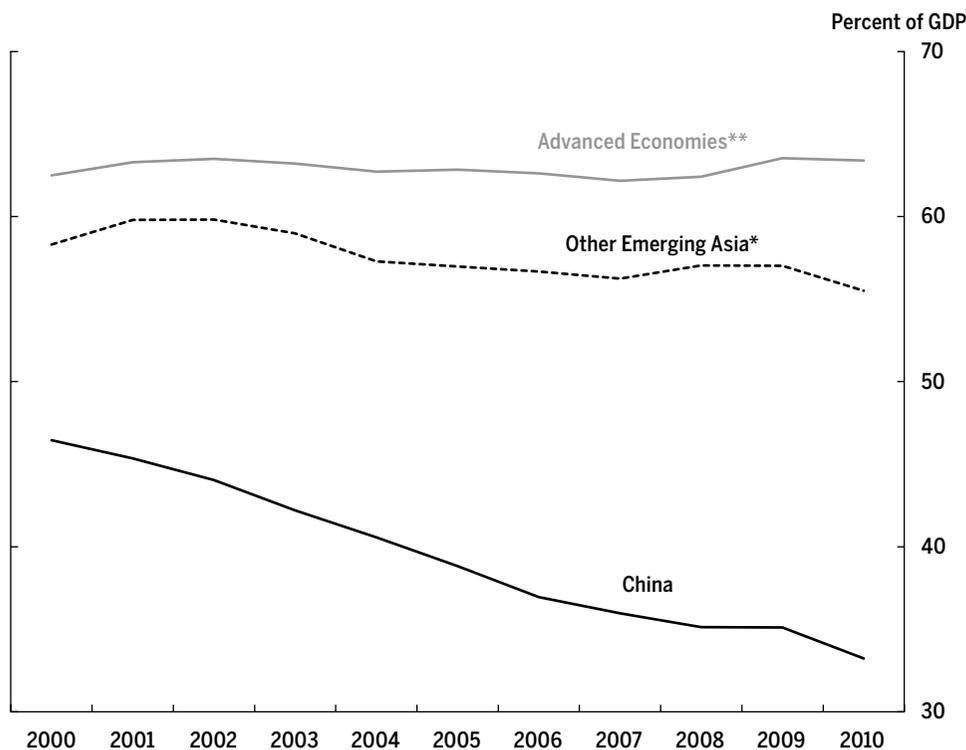


Sources: Haver, CEIC, and National Statistical Offices.

\*GDP weighted average.

\*\*Goods and services.

EXHIBIT 5  
**Private Consumption as a Share of GDP**



Sources: Haver, CEIC, and National Statistical Offices.

\*GDP weighted average of Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan, Thailand.

\*\*GDP weighted average of Canada, the euro area, Japan, the United Kingdom, and the United States.

support could be shifted away from manufacturing toward encouraging service-sector development, which has typically lagged behind in these economies. Services tend to have a higher nontraded component, so faster growth of this sector would help rebalance growth toward domestic demand. Third, additional development spending could be directed toward these countries' poorest regions; for example, China has recently strengthened its efforts in this area.

The case for boosting investment rates in Asian emerging economies to support global demand is less clear-cut. At about 45 percent of GDP, Chinese investment rates are now so high that the return on new investment may already be quite low in some sectors. In a number of other countries, however, investment rates are only at about the average of those in the advanced economies. It seems plausible that, with their lower capital-to-labor ratios, investment rates should

be higher in some emerging Asian economies. Indeed, some have argued that infrastructure needs remain extremely pronounced in many emerging market economies, and that a wave of investment may be in the offing for the world's developing economies.<sup>2</sup> With low interest rates throughout the world, this would certainly seem to be a propitious time for countries to pursue productive capital investment.

Finally, exchange rate adjustments will play a crucial role in boosting emerging Asia's contribution to global demand. Indeed, the G-20 leaders welcomed China's determination to increase exchange rate flexibility and to carry out its plans to increase convertibility of the renminbi capital account. Such flexibility is crucial if Asian domestic demand is to be expanded without exacerbating inflationary pressures. Exchange rate appreciation channels demand toward foreign products, thereby creating the scope for policies to expand domestic demand without exacerbating inflationary pressures. More generally, exchange rate flexibility makes it easier for monetary policy to respond to domestic considerations and to achieve price stability. Perhaps most important, since the ultimate goal of economic growth is to improve standards of living, allowing the currency to appreciate can help ensure that a greater proportion of output is devoted to household consumption, enabling social welfare to improve at a faster pace.

## **Conclusion**

To sum up, growth in advanced nations, including the United States, faces serious headwinds. Households are still deleveraging, corporations are reluctant to invest, and fiscal consolidation is needed over time to place public finances on a sustainable course. Despite some pickup in growth in the United States during the second half of 2011, the outlook is for unemployment to diminish only slowly, remaining painfully high for many years to come. These developments have also affected emerging market economies, where there are now clear signs of slowing growth. In addition, downside risks to global growth have increased significantly because of rising financial market pressures, reflecting an intensification of stress in European banking and sovereign debt markets as well as broader concerns about the outlook.

These circumstances call for concerted domestic policy actions to boost growth and create jobs. Indeed, as I already noted, we at the Federal Reserve are moving vigorously to promote a stronger economic recovery. However, monetary policy is not a panacea, and it is essential for other policymakers to also do their part. In particular, there is a strong case for additional measures to address the dysfunctional housing market. Stronger housing demand has the

potential to boost recovery. The Congress and the Administration also can support the recovery in the near term while simultaneously putting fiscal policy on a sustainable trajectory in the long term.

As I have emphasized in this talk, there is also an urgent need for policy action from a number of countries. In Europe, forceful action is essential to address the region's fiscal and financial stresses, which pose a threat not only to growth but also to global financial stability. In addition, many emerging market economies, particularly in Asia, have the scope to bolster domestic demand. Such policies would support stronger, more balanced, and more sustainable global economic growth; they would enhance social welfare at home as well. The most profound effect of the Asian miracle of the past several decades has been to lift hundreds of millions of people out of poverty. Further actions to boost aggregate demand in Asia will ensure that this miracle is sustained.

## NOTES

1 Output per capita has been growing very rapidly in China, so per capita consumption has also been rising.

2 See, for example, McKinsey Global Institute (2010), *Farewell to Cheap Capital? The Implications of Long-Term Shifts in Global Investment and Saving*, McKinsey & Company, December, available at [www.mckinsey.com/mgi/publications/farewell\\_cheap\\_capital/index.asp](http://www.mckinsey.com/mgi/publications/farewell_cheap_capital/index.asp).

**GENERAL DISCUSSION****Aggregate Demand and the Global Economic Recovery**

**Mr. McKinnon:** That was a very nice presentation, particularly regarding the decline in consumption in China, which is a major problem that is linked to the fall in personal income there as a share of GNP. You said you wanted the Chinese to appreciate their currency. However, there's a trade-off between wage growth and currency appreciation: The more people anticipate that the renminbi will appreciate, the slower wages will grow. Employers then become very concerned that if they offer generous wages and the renminbi ratchets up, they might go bust. I believe that if China can keep the renminbi stable with very high wage growth—and there's some indication that's happening at about 15 to 20 percent per year—then that's the most efficient way of raising household income and reducing China's international competitiveness.

**Ms. Yellen:** I would respond by saying that I think what's needed is a real exchange rate appreciation of the renminbi. That's what would be necessary to shift China's growth toward domestic sources of demand and away from reliance on foreign demand. It can occur in a number of ways, of which adjustments in the nominal exchange rate are only one. But there are other ways in which the real exchange rate can appreciate, and it could be that more rapid wage growth could play a role in allowing that adjustment to occur in a different way.

**Mr. McKinnon:** Right, but there is a trade-off. The more you push the exchange appreciation, the slower will be wage growth. This happened in Japan during the 1980s, when people began to anticipate that the yen would go up and up. So by the late 1990s, wage growth in Japan slumped, and remained less than in the U.S., and remains less than the United States to this day. So if we had rapid appreciation of the renminbi, this same thing could happen to China.

**Ms. Yellen:** I take your point. It also seems to me that in China, an exceptionally large share of income has gone to corporations which have retained earnings. That's part of the reason that the share of consumption in GDP is so low. And it does seem to me that the potential is there, as I mentioned, to stimulate demand by raising the fraction of total GDP that accrues to households as income, or to the government to support social spending.

**Mr. McKinnon:** That's exactly right.

**Mr. Williams:** One question I have for you is about the role of international coordination of policy. Given the whole story you laid out, how do you view the importance of the coordination of monetary and fiscal policy across countries in this situation we're in now?

**Ms. Yellen:** I see a great deal of value in coordination of policies, because I fear we're in a situation, as I've described, where throughout a large portion of the global economy, there is little that can be done to spur spending. This is particularly true in countries where fiscal deficits are so severe that they either force fiscal austerity or limit the potential for significant expansion of fiscal policy. In this situation, it's essential for countries to coordinate policies. Otherwise, the attempt to control fiscal imbalances could throw the global economy into a severe recession. That's why I regard the need for measures to spur aggregate demand in the global economy as urgent. In the advanced economies, policymakers have some scope for action, and I think we should use the scope that we have. But the limitations on the scope for action in many countries is so severe that it really is essential and to everyone's benefit for those countries with room to expand to take steps to promote global economic growth. This is a very dangerous moment and it really calls for global policy coordination. I think this has been widely recognized and it's the agenda of the G-20. I haven't invented anything here that is new or that is not already widely endorsed by the G-20, as in the recent Cannes Action Plan. What I see, however, in this environment, is an urgency to move forward on it.

**Mr. Prasad:** Janet, I think you laid out very nicely what needs to be done in the United States on the fiscal policy front: perhaps a little additional stimulus, but at least not withdraw stimulus in the short term, and a credible action plan for the long term. Instead we see exactly the opposite, withdrawing fiscal stimulus in the short term and no credible action plan in the long term. Given these very difficult circumstances, do you think monetary policy still has a lot of traction, if it is the only policy instrument available given the way things are going on fiscal policy? And my second question would follow up on John's question. From the point of view of the rest of the world, when the Fed acts in unconventional ways, it looks like the balance of risks in the U.S. might be difficult—and perhaps in your judgment the balance might be slightly positive. But to the rest of the world, the risks are very apparent, and the benefits are a lot less apparent. The standard position of the U.S. has been to say, to the Asian countries in particular, go ahead and let your currencies appreciate if you're unhappy with

U.S. monetary policy. But my question from that is, when you undertake policy actions here, do you in any explicit way think about the complications that you may be creating for other central banks? Does it enter into the calculus of your discussions?

**Ms. Yellen:** On the first question about the scope for monetary policy in the absence of a constructive shift in fiscal policy, I believe the Federal Reserve has some scope for action. I think one thing the Fed can do is try to use communications policy to influence market expectations about the path of shorter-term interest rates. We did that in August by indicating that the committee anticipates that economic conditions will warrant keeping the federal funds rate at its current low level at least until mid-2013.

We have opportunities to elaborate on that guidance in ways that might be helpful to markets—that might improve their understanding of what economic conditions would continue to point toward maintaining the federal funds rate at its current exceptionally low level. We could potentially clarify this guidance in a number of ways. We are also actively considering methods to further clarify the economic reasoning that leads us to choose when to act. I think that would be helpful in lowering longer-term interest rates. Is it a game-changer, given where interest rates are at this point? Well, I feel it could have some favorable impact. I don't want to exaggerate how large that might be.

I think another thing we could do is engage in further asset purchases. Depending on what we bought, I see purchases of longer-term assets having the potential to push down the term premium and flatten the yield curve. Some of my colleagues have suggested directing such purchases toward mortgage-backed securities; the potential objective would be to have a disproportionate impact on mortgage rates, to foster greater recovery in housing. And so I do see some scope to make a meaningful contribution. There are also some costs and benefits to be weighed associated with expanding the size of our balance sheet.

Concerning your second question about the impact of our monetary policy on the rest of the world, first and foremost, I would say that it is not in the world's interest to have a U.S. economy that is faltering. And strong growth in the U.S. economy, I believe, makes a positive contribution to growth throughout the world. We know that a system of flexible exchange rates, which is fundamentally the system that the major countries have adopted, has many channels through which monetary policy works to foster greater aggregate demand. Expansionary monetary policy works in part through an exchange-rate channel, but I think the importance of that channel should not be exaggerated. That said, it is part of the transmission mechanism for monetary policy. And we

are certainly aware that it has an impact on emerging market economies. I've talked about this in past speeches: in November 2010, when we announced our second program of large-scale asset purchases, there was a good deal of concern around the world about the impact of that policy on capital flows. I would debate just how much of what the emerging markets were experiencing was actually attributable to our monetary policy as opposed to a number of other factors, including much stronger growth in the emerging markets and a restoration of capital flows that diminished during the crisis. There's no doubt that emerging markets have faced very difficult problems in managing capital flows. The volatility of these capital flows and the associated volatility of exchange rates is a very, very difficult problem.

And I agree with the position that the IMF has taken on this, which is that, first and foremost, emerging markets should put in place appropriate macroprudential policies to deal with the potential adverse impacts of volatile capital flows. Further, they should make sure that financial institutions are strong and manage risk appropriately. But even using all of those tools, it might still be appropriate to intervene to control capital flows, and I believe that's an appropriate stance.

**Mr. Al-Jasser:** I'm the Governor from Saudi Arabia, which is also an Asian country. To follow up on John Williams's question, we should remember the summit in London in April 2009 that brought the G-20 countries together and raised slumping confidence. The U.S., which was the epicenter of the problem at that time, came to the fore. Asian countries that were able to, particularly China, boosted their fiscal stimulus. We had the largest stimulus in relative terms at that time. Thus we somehow arrested the problem through coordination among the G-20. I was there in April 2009. I was also at the G-20 meeting in Cannes early this month, and we didn't have the same type of coming together, maybe partly because a lot of people thought it was a European problem, and that Europe can solve the problem alone.

In your view, what could the G-20 as a group really do to help or encourage Europe to come to the fore and do what needs to be done to safeguard its system—and by consequence also prevent any cataclysmic developments in the global economy?

**Ms. Yellen:** You and I have been in any number of meetings together where the G-20 countries around the globe—Saudi Arabia, other Asian countries, the United States, Canada, Australia—have been united in voicing our concern about the European situation and the necessity of dealing with it to avoid severe financial disruption that will affect all of our economies through both trade and

financial channels. I do believe we've been very successful in sending that message to Europe. I think there's no lack of understanding in Europe of how very significant what they do is to the global picture. We continue to voice our concerns and express a need for them to take the appropriate actions. I'm not sure what more we can do, other than standing ready to cooperate. Certainly the world's central banks have indicated their willingness to cooperate.



# Monetary Policy after the Crisis

Lars E.O. Svensson

## 1. Introduction

In the aftermath of the financial crisis of 2008 and 2009 there has been a lively debate about what caused the crisis and how the risks of future crises can be reduced. Some blame loose monetary policy for laying the foundations for the crisis. There is also a lively debate about the future of monetary policy, whether it needs to be modified in the light of the crisis, and what its relation to financial stability should be. Here I will discuss the lessons for monetary policy from the financial crisis, the relation between monetary policy and financial stability, the role of monetary policy instruments other than the policy rate, and some issues for emerging markets arising from capital flows and exchange rate movements. My conclusions are as follows:

The crisis was not caused by monetary policy but by other factors, mainly regulatory and supervisory failures in combination with some special circumstances, such as low real interest rates due to global imbalances and U.S. housing and housing finance policy. Easy monetary policy in the United States did not cause the crisis.

A lesson from the crisis is that price stability is not enough to achieve financial stability. But, importantly, interest rate policy is not enough to achieve financial stability. A separate financial stability policy is needed for financial stability.

Given this, flexible inflation targeting—applied in the right way and using all the information that is relevant for the forecast of inflation and resource utilization, including the conduct of financial stability policy when appropriate—remains in my view the best-practice monetary policy before, during, and after the financial crisis. It was financial stability policy that failed and caused the crisis and that needs to be improved, not monetary policy.

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When setting up a better financial stability policy, it is important to understand that monetary policy is distinct and different from financial stability policy. The two policies have different objectives and different suitable instruments. Furthermore, the responsibility for monetary policy and control of the monetary policy instruments rests with the central bank, but the responsibility for financial stability policy and control of the financial stability instruments are in most countries shared between several authorities. It is important to conceptually distinguish financial stability policy from monetary policy and avoid conceptual and practical confusion between the two policies. Confusion risks leading to a poorer outcome for both policies and makes it more difficult to hold the policymakers accountable. Trying to use monetary policy to achieve financial stability leads to poorer outcomes for monetary policy and is an ineffective way to achieve and maintain financial stability.

However, the fact that financial stability policy and monetary policy are distinct and different does not mean that there is no interaction between them. This interaction needs to be considered. Monetary policy should be conducted taking the conduct of financial stability policy into account, and vice versa. This is similar to how monetary policy is conducted taking fiscal policy into account, and vice versa. Importantly, under normal conditions, financial stability is handled by financial stability policy, not by monetary policy. Monetary policy should be the last line of defense for financial stability, not the first.

It follows that financial stability as an objective of *monetary policy* makes little sense, whereas financial stability as an objective for the *central bank* makes sense, *if* the central bank gets control over the financial stability instruments.

The standard monetary policy tools are the policy rate and communication. During the crisis when policy rates have been at or close to their zero lower bound, we have seen other more unconventional instruments being used, including large-scale asset purchases (LSAPs) by the Federal Reserve. I believe the LSAPs conducted by the Federal Reserve have had substantial beneficial effects on the U.S. economy and that the objections that have been raised against them are not convincing.

Forward guidance about the future policy rate has been used as an unconventional tool in statements by the Bank of Canada, the Bank of Japan, and the Federal Reserve during the crisis. However, forward guidance in the form of published policy rate forecasts have for several years been a conventional policy instrument for the Reserve Bank of New Zealand, Norges Bank, the Riksbank, and the Czech National Bank. I have long been in favor of the publication of a policy rate forecast on a regular basis, based on both the existing practical experience of publishing such forecasts and the fact that what matters for

the economy and private-sector decisions is not what the policy rate is during the one or few months until the next policy meeting but what the longer interest rates are. These longer rates result from market expectations of future policy rates and term premiums. Publishing a policy rate path would be the most direct way to affect interest rate expectations, especially since central banks should have better information about their own intentions than anyone else.

Based on the observation that emerging market economies have received large capital inflows lately, with risks of bubbles and other negative effects, some observers suggest that the effects on capital flows to other countries should be taken into account when, for instance, the Federal Reserve sets its monetary policy. I do not agree with that conclusion. It seems to me that the problems for the emerging markets concerned depend to a large extent on the decision of these countries to stabilize their dollar exchange rate or even peg to the dollar. Countries that choose to peg to the dollar will tend to import U.S. expansionary monetary policy into their own country. This monetary policy may in many cases be too expansionary for the countries concerned, creating an overheated economy with risks for bubbles and other negative consequences. A flexible exchange rate would give the countries the option of conducting an independent monetary policy appropriate for the country in question. If countries nevertheless choose a peg to the dollar, with capital inflows, bubbles, and other negative effects, they are themselves responsible for those effects.

More expansionary monetary policy, for instance, in the United States in the form of lower long rates due to LSAPs, tends to depreciate the dollar, all else equal. This does not mean that the United States is conducting a beggar-thy-neighbor policy that hurts other countries. A weaker currency is a normal consequence of more expansionary monetary policy in an open economy. Other countries can adjust their policy in response. All countries cannot depreciate their currency against each other, but all countries can conduct more expansionary policy if they prefer, using conventional or unconventional policy tools. This will increase real activity and both exports and imports, which in a situation with underutilized world resources is to the benefit of all. Monetary policy is not a zero-sum game.

## **2. Flexible Inflation Targeting Still Best-Practice Monetary Policy**

My starting point is that the objectives of a good monetary-policy framework are twofold: to stabilize inflation around a low level and resource utilization around the highest sustainable level. Such a framework is fully consistent with the dual mandate of maximum employment and stable prices of the Federal Reserve, with its mandate-consistent inflation rate, and the flexible inflation

targeting of the Riksbank, with its inflation target (Bernanke 2011a, Svensson 2011b). There is no fundamental difference between the monetary-policy frameworks of the Federal Reserve and the Riksbank, although the communication strategies of the two institutions are somewhat different.<sup>1</sup>

The dual mandate and flexible inflation targeting boil down to “forecast targeting” (Woodford 2007, Svensson 2011b), that is, choosing a policy rate path such that the corresponding forecasts for inflation and resource utilization “look good” in the sense that they best stabilize inflation around the mandate-consistent/target inflation rate and resource utilization around its highest sustainable level. Thus, “looking good” implies an efficient trade-off between the stability of inflation and the stability of resource utilization.<sup>2</sup>

Is the financial crisis a reason to modify this framework of flexible inflation targeting? That depends on the causes of the crisis. As I see it, the financial crisis was caused by factors that had very little to do with monetary policy. These factors were the *macro conditions*, global imbalances that led to low real interest rates and high asset prices and the Great Moderation that led to a systematic underestimation of risk and a substantial expansion of credit; *distorted incentives* in financial markets that led to extreme levels of leverage and risk-taking and a lack of due diligence; *regulatory and supervisory failures* that underestimated or disregarded the fragility of the financial sector; eventually enormous *information problems* with extremely complex asset-backed securities and huge hidden off-balance-sheet liabilities; and some very *specific circumstances*, such as the U.S. housing policy to support homeownership for low-income households and related subprime mortgages contributing to the U.S. housing boom. Importantly, none of these causes had anything to do with monetary policy, except indirectly in that monetary policy may have contributed to the Great Moderation (Bean 2009, Svensson 2010).

So what conclusions can we draw from this about the conduct of monetary policy and any need to modify the framework of flexible inflation targeting? One obvious conclusion is that price stability is not enough to achieve financial stability (Carney 2009, White 2006). Good flexible inflation targeting by itself does not achieve financial stability, if anyone ever thought it did.

Another conclusion is that interest rate policy is not enough to achieve financial stability. The policy rate is an ineffective instrument for influencing financial stability, and policy rates high enough to have a noticeable effect on credit growth and house prices will have a strong negative effect on inflation and resource utilization, even in sectors that are not experiencing any speculative activity. The use of the policy rate to prevent an unsustainable boom in

house prices and credit growth poses major problems for the timely identification of such an unsustainable development, as well as for the assessment of whether policy-rate adjustment would have any noticeable impact on the unsustainable development, and of whether, in the longer run, the outcome for inflation and resource utilization would be better.<sup>3</sup>

Thus, it was financial stability policy that failed, not monetary policy. Monetary policy in the form of flexible inflation targeting—applied in the right way and using all the information that is relevant for the forecast of inflation and resource utilization, including the conduct of financial stability policy when appropriate—remains in my view the best-practice monetary policy before, during, and after the financial crisis.

### **3. Monetary Policy and Financial Stability Policy Are Different**

This leads me to the more general question of what the relation between monetary policy and financial stability should be. For instance, it is sometimes said that the objectives of monetary policy should be expanded to include financial stability (Eichengreen, Rajan, and Prasad 2011, and Eichengreen et al. 2011). Such suggestions give the impression that monetary policy and financial stability are the same thing. But they are not. It is important to conceptually distinguish financial stability policy from monetary policy and avoid conceptual and practical confusion between the two policies. Confusion risks leading to a poorer outcome for both policies and makes it more difficult to hold the policy-makers accountable. Trying to use monetary policy to achieve financial stability leads to poorer outcomes for monetary policy and is an ineffective way to achieve and maintain financial stability.

Different economic policies, such as fiscal policy, monetary policy, and labor market policy, can be distinguished according to their objectives, the policy instruments that are suitable for achieving the objectives and the authority or authorities that control the instruments and are responsible for achieving the objectives. From this point of view, it is clear that monetary policy and financial stability policy are distinct and different, and understanding this is important.

Monetary policy, in the form of flexible inflation targeting, has the objective of stabilizing both inflation around the inflation target and resource utilization around a sustainable level. Under normal circumstances, the suitable instruments are the policy rate and communication, including the publication of forecasts of inflation, the real economy, and (by some central banks) the policy rate. In times of crisis, as we have seen during the financial crisis, in particular when the policy rate is at or close to the zero lower bound, other more unconventional

instruments can be used. These instruments include fixed-rate lending at longer maturities, asset purchases (quantitative easing) to affect longer interest rates and expectations of future short rates, and foreign exchange intervention to prevent currency appreciation or even to induce currency depreciation. The authority responsible for monetary policy is typically the central bank. In many countries, including all the member states of the European Union, the central bank is given exclusive authority over monetary policy by statute and various measures to protect this policy independence are put in place.

Financial stability policy has the objective of maintaining and promoting financial stability. Financial stability can be defined as a situation in which the financial system can fulfill its main functions of submitting payments, transforming saving into financing, and providing risk management with sufficient resilience to disruptions that threaten these functions. The available instruments are, under normal circumstances, supervision, regulation, and financial stability reports with analyses and leading indicators that may provide early warnings of stability threats.

In times of crisis, authorities may use instruments such as lending of last resort, variable-rate lending at longer maturities (credit policy, credit easing), government lending guarantees, government capital injections, special resolution regimes for insolvent financial firms, and so forth. The responsible authorities vary across countries, but the powers are typically divided between several authorities. The lender of last resort function is with the central bank, but other instruments are often in the hands of other authorities.

So, financial stability policy and monetary policy are conceptually distinct, with distinct objectives and distinct suitable instruments. The decision frequency is also different. In monetary policy, decisions are often made six to eight times a year. In policy for financial stability, decisions may be made one to two times a year. When it comes to the instruments, the interest rate is a blunt and unsuitable instrument for affecting financial stability, and it thus makes little sense to assign the objective of financial stability to *monetary policy*. However, it may make sense to assign the objective of financial stability to the *central bank*, if the central bank is given control of the appropriate supervisory, regulatory, and crisis management instruments. Whether giving the central bank such a broad remit would also be the best solution is too complex an issue to address in this context.

The fact that financial stability policy and monetary policy are distinct and different does not mean that there is no interaction between each policy and the other policy's objectives. Monetary policy affects the real economy and thereby

profitability, asset prices, and balance sheets. Thereby it affects financial stability. Financial stability policy directly affects spreads, lending, and other aspects of financial conditions, as well as the transmission mechanism of monetary policy. This means that monetary policy should normally be conducted taking the conduct of financial stability policy into account, and financial stability policy should be conducted taking the conduct of monetary policy into account. This is similar to how monetary policy is conducted taking the conduct of fiscal policy into account, and vice versa. Note that this way of conducting monetary policy and financial stability policy—in line with a noncooperative Nash equilibrium rather than a coordinated equilibrium—does not depend on how the authority for financial stability policy is shared between different institutions. It should be conducted this way regardless of whether the central bank has the sole authority or whether it is shared between several institutions.

Thus, under normal conditions, financial stability is handled by financial stability policy, not by monetary policy. In a second-best situation, without appropriate supervision and regulation, if the policy rate is the only available tool and there is a trade-off between its effect on the monetary policy objectives and financial stability, that trade-off should be taken into account. Normally, however, the policy rate is not the only available tool, and much better instruments are available for affecting financial stability. Monetary policy should be the last line of defense of financial stability, not the first line.<sup>4</sup>

In discussions of monetary policy and financial stability, there have been many references to the “risk-taking channel” (Borio and Zhu 2008), according to which leverage and risk in the financial sector increase with lower policy rates. However, the general discussion on and the existing models for policy rates, the risk-taking channel, and so on consistently seem to suffer from confusion between nominal policy rates and the general level of real interest rates. Models such as those of Adrian and Shin (2011) and Diamond and Rajan (2011) include a short real rate but no nominal policy rate and no explicit monetary policy. Furthermore, there is no distinction between the short real rate and the neutral real rate. What monetary policy in the real world can do by setting a short nominal policy rate is only to temporarily make the short real interest rate deviate from the neutral real interest rate, which in turn is beyond the control of monetary policy. The effects that are attributed to monetary policy should only be the effects of the *deviation* between the short real rate and the neutral rate, not the effects of the whole *level* of the short real rate, the sum of the deviation and the level of the neutral real rate. The neutral real rate is affected by many things and can be low for many years for several reasons,

including global imbalances, fiscal policy, and shocks to aggregate demand and supply. This confusion means that the conclusions from this work for monetary policy are not clear.

#### **4. Monetary Policy Instruments**

The standard monetary policy instruments are the policy rate and communication, including statements and the publication of forecasts of inflation, the real economy and (by some central banks) the policy rate. During financial crises, in particular when the policy rate is at or close to the zero lower bound, we have seen other more unconventional instruments being used to implement more expansionary policy, as noted above.

There is a lively debate and a considerable body of research on the effects of the LSAPs undertaken by the Federal Reserve. Estimates based on a number of recent studies, as well as Federal Reserve estimates, suggest that, all else equal, the Federal Reserve's QE2 (second quantitative easing) program launched in November 2010 lowered longer-term interest rates by 10 to 30 basis points. Federal Reserve analysis further indicates that a reduction in longer-term interest rates would be roughly equivalent in terms of the effect on the economy to a 40- to 120-basis-point reduction in the federal funds rate (Bernanke 2011b). This is a large reduction in the federal funds rate. In FRB/US simulations discussed by Yellen (2011) and reported by Chung et al. (2012), QE2 is assumed to have lowered 10-year yields by about 15 basis points, which reduces the unemployment rate by about 0.3 percentage points and increases core personal consumption expenditures inflation by about 0.2 percentage points. This is a significant effect of QE2 alone, on top of the effects of the previous LSAPs. I believe the Federal Reserve's LSAPs have had a significant positive effect on the U.S. economy and that the objections raised against them are not convincing (Svensson 2011b).

Regarding the increase in the monetary base that follows from the Federal Reserve's asset purchases, the fact that the Federal Reserve can pay interest on reserves means that a large monetary base no longer by itself leads to inflation. In the standard textbook treatment, a large monetary base implies a zero policy rate. But when the Federal Reserve can pay interest on reserves, a large monetary base does not prevent the Federal Reserve from setting the policy rate at any level required to restrict aggregate demand and prevent too high inflation. This means that from a monetary policy perspective the Federal Reserve can unwind the LSAPs at any pace that it deems appropriate when they are no longer needed.

Forward guidance about the future policy rate in the form of a policy rate forecast was adopted by the Reserve Bank of New Zealand in 1997, Norges Bank in 2005, the Riksbank in 2007, and the Czech National Bank in 2008. It has become a standard part of monetary policy communication in these central banks. Forward guidance in the form of statements about the future policy rate was introduced by the Bank of Canada in 2009 and the Bank of Japan in 2010. The Federal Reserve introduced language in the March 2009 statement that it anticipated rates to remain at low levels for an “extended period” and in the August 2011 statement that it anticipated rates would remain low “at least through mid-2013.”

I have long been in favor of the publication of a policy rate forecast on a regular basis (Svensson 2003). This is based on both the existing practical experience of publishing such forecasts and the fact that what matters for the economy and private-sector decisions is not what the policy rate is during the one or few months until the next policy meeting but what the longer interest rates are that result from market expectations of future policy rates and term premiums. These longer interest rates have an impact on the economy through capital costs, the stock market, the exchange rate, and other asset prices (Blinder 1998, D’Amico et al. 2011, Woodford 2005). It would therefore seem that publishing a policy rate path would be the most direct way to affect interest rate expectations, especially since central banks should have better information about their own intentions than anyone else. Publication of the central bank’s assessment of the future path for the policy rate is thus a separate tool in the monetary policymaker’s toolbox. This tool can be particularly useful when the policy rate has reached the effective zero lower bound, and there is a need for even more expansionary policy. Given this, it may seem a mystery why still so few central banks choose to publish a policy rate path, when an increasing number of central banks are publishing forecasts of inflation and the real economy. I welcome very much that “[t]he FOMC continues to explore ways to further increase transparency about its forecasts and policy plans” (Bernanke 2011a).

## **5. Global Interest Rates and Emerging Market Capital Inflows**

Emerging market economies have been subject to increased inflows of foreign capital over the last few years, and some emerging market policymakers have expressed concerns about the related risks of bubbles and other negative effects. The International Monetary Fund (IMF 2011b) examined international capital flows over the last 30 years and found that net capital flows to emerging markets have been strongly correlated with changes in global

financing conditions, rising sharply during periods with relatively low global interest rates.

Based on these and similar observations, some observers have concluded that the effects on capital flows to other countries should be taken into account in, for instance, Federal Reserve policy decisions. For example, Eichengreen, Rajan, and Prasad (2011) find that the political authorities in large economies “should let considerations of these external effects play an explicit role in the monetary policy framework. Central banks in these countries should pay more attention to their collective policy stance and its global implications.”<sup>5</sup>

I do not agree with that conclusion. The Federal Reserve’s mandate concerns U.S. inflation and employment, and the Federal Reserve is not responsible for inflation, real developments, and monetary policy in other countries except as they feed back into the United States. That responsibility should rest with the policy authorities in those countries. Countries that choose to stabilize their dollar exchange rate or even peg to the dollar will tend to import U.S. expansionary monetary policy into their own country. This monetary policy may in many cases be too expansionary for the countries concerned, creating an overheated economy with risks for bubbles and other negative consequences. A flexible exchange rate would give the countries the option of conducting an independent monetary policy appropriate for the country in question. In particular, they would be able to respond appropriately to changes in interest rates and other variables in the rest of the world. If countries nevertheless choose a peg to the dollar, with capital inflows, bubbles, and other negative effects, they are themselves responsible for those effects.

Consider the following thought experiment.<sup>6</sup> Let the world consist of two large economies, called the domestic and foreign economy, respectively. Let the domestic economy be an emerging market economy with flexible inflation targeting, a flexible exchange rate, and free capital flows. Suppose that the domestic economy is initially in an equilibrium with the inflation forecast on the inflation target, the resource-utilization forecast at a sustainable level, a constant exchange rate forecast, zero capital flows, and a given policy rate path consistent with this. Suppose the foreign interest rate falls, due to more expansionary monetary policy in the foreign economy in order to increase demand and activity in the foreign economy. Everything else equal, this has two consequences for the domestic economy. First, due to increased foreign activity, foreign demand for domestic exports increases somewhat. Second, the interest rate differential between the domestic and foreign interest rates increases. This will trigger an incipient capital inflow into the domestic economy and appreciation of

the domestic currency. Suppose the appreciation is so large as to trigger depreciation expectations that balance the increased interest rate differential. This will again stabilize the capital flow at zero. Everything else equal, the appreciation of the currency is a real appreciation, which is contractionary for the tradable goods sector. Assume that this contractionary effect dominates over the initial increase in export demand, so the net effect on the tradable goods sector is contractionary. Demand for, and the output of, nontradable goods may expand somewhat from the appreciation, but assume that the contraction of the tradable goods sector dominates so the net effect on domestic output is a contraction. The appreciation also leads to lower inflation through lower prices on imported goods. The resource utilization and inflation forecasts will fall below a sustainable level and the inflation target, respectively.

The appropriate monetary policy response under flexible inflation targeting is to lower the policy rate and the policy rate path. This will stimulate the economy, moderate the nominal and real appreciation, and shift up the forecasts of inflation and resource utilization towards the target and a sustainable level, respectively. In the new equilibrium, the currency has appreciated somewhat in real terms, the nominal and real interest rate will be lower, the tradable goods sector may have contracted somewhat, and the nontradable goods sector may have expanded somewhat. This is the monetary policy response that I vote for when this situation arises for Sweden.

Suppose that for some reason the central bank is not willing to accept the nominal and real appreciation of the currency. By lowering the domestic interest rate and the policy rate path so as to keep the interest rate differential and its forecast unchanged, the central bank could in principle maintain a fixed exchange rate and zero capital flow. But the lower nominal and real interest rate paths are expansionary, and the inflation and resource utilization forecasts will shift up, above the inflation target and a sustainable level, respectively. The domestic economy is effectively importing the foreign economy's monetary policy, which is too expansionary for the domestic economy. The increased growth and activity and the expectation that the central bank may eventually have to accept an appreciation may then still lead to a capital inflow, even though the interest rate differential is unchanged. To prevent an appreciation, the central bank has to intervene and buy foreign exchange. This leaves more time for capital inflows, and the accumulated capital inflow may grow. The economy starts becoming overheated, asset prices grow, and bubbles may develop. To prevent the situation from becoming more problematic, the central bank may consider what the IMF calls capital flow management measures (CFMs), including

capital controls (residency-based CFMs) (IMF 2011a). The authorities may also consider a fiscal contraction and financial stability measures to improve the situation.

This is a highly stylized and very simplified thought experiment. Still, I think it conveys an important insight, namely that a substantial part of the problem is due to the central bank's unwillingness to accept the nominal and real appreciation, even though this appreciation is a natural equilibrium response to the lower world interest rate. Are the reasons for that unwillingness so important that they take precedence over the problematic consequences?<sup>7</sup>

More expansionary monetary policy in the United States, for instance in the form of lower long rates due to LSAPs, tends to depreciate the dollar, all else equal. Does this mean that the United States is conducting a beggar-thy-neighbor policy that hurts other countries? I do not see it this way. A weaker currency is a normal consequence of more expansionary policy in an open economy. Each of the countries affected has the option of adjusting its own monetary policy in response. All countries cannot depreciate their currency against each other, but all countries can conduct more expansionary policy if they prefer, with conventional (lower policy rates) or unconventional methods (such as asset purchases). More expansionary monetary policy will increase real activity, world trade, and both exports and imports, which in a situation of underutilized resources is to the benefit of all. Monetary policy is not a zero-sum game.

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## NOTES

1 For instance, the Federal Reserve's mandate-consistent inflation rate has to be inferred from the Federal Open Market Committee participants' longer-term inflation forecasts, whereas the Riksbank has an explicit inflation target; the Federal Reserve's Greenbook and Bluebook (now replaced by the Tealbook) are published with a five-year lag, whereas the Riksbank publishes an extensive *Monetary Policy Report* or a shorter *Monetary Policy Update* (which also includes a policy-rate path) after each policy meeting; and the Federal Reserve's minutes are non-attributed but attributed transcripts are published with a five-year lag, whereas the Riksbank's minutes are attributed.

2 Kohn (2007), Svensson (2011a), and Woodford (2007) explain why forecast targeting is both a better way of conducting policy and a better description of actual policy than following an instrument rule such as the Taylor rule.

3 See Assenmacher-Wesche and Gerlach (2010), Bean (2009), Bean et al. (2010), Bernanke (2010), Dokko et al. (2009), IMF (2009), and Kohn (2008, 2009).

4 Woodford (2012) sets up a model where the probability of a financial crisis is assumed to be an increasing function of a state-variable that may be identified with leverage. Furthermore, leverage is assumed to be increasing in lagged leverage and the current output gap and is also subject to shocks. From these assumptions obviously follows a case for tighter monetary policy, "leaning against the wind," in order to, everything else equal, reduce the output gap and thereby leverage and the probability of a financial crisis. However, the introduction in Woodford's model of financial stability instruments such as capital requirements, possibly cyclical ones, would allow leverage to be controlled more directly than indirectly and bluntly by the policy rate via the output gap. Monetary policy would be free to focus on stabilizing inflation and the output gap and need not lean against the wind. In the realistic case when the state variable affecting the probability of a financial crisis is a vector that includes not only leverage but, for instance, maturity mismatch and liquidity mismatch, it is even more the case that additional financial stability instruments such as restrictions on maturity and liquidity mismatches are superior to the policy rate in achieving and maintaining financial stability. See Svensson (2012) for details.

5 Eichengreen, Rajan, and Prasad are members of the Committee on International Economic and Policy Reform, a nonpartisan independent group of experts (academics and former government and central bank officials). In its September 2011 report (Eichengreen et al. 2011), the committee suggests that "[m]echanisms should . . . be developed to encourage large-country central banks to internalize the spillover effects of their policies. Specifically, we call for the creation of an International Monetary Policy Committee composed of representatives of major central banks that will report regularly to world leaders on the aggregate consequences of individual central bank policies."

6 Ferrero, Gertler, and Svensson (2009) provide a suitable model for such thought experiments, a new Keynesian dynamic stochastic general equilibrium model of a world with two large countries and tradable and nontradable goods.

7 The policy response to recent capital inflows to emerging market economies is further discussed in the IMF staff framework for policy advice on managing capital inflows, IMF (2011a).



## COMMENTARY

# Monetary Policy after the Crisis

Marvin Goodfriend

### Introduction

Lars Svensson has written a compact, well-reasoned assessment of monetary policy in light of the credit turmoil. His conclusions are well-organized and clear. I take advantage of Lars's craftsmanship to comment on the conclusions as he outlines them. To sharpen my commentary on Lars's views, I find it useful to distinguish "monetary policy narrowly defined" from "credit policy" and "interest on reserves policy." In the last part of my discussion, I illustrate briefly how the extra precision afforded by my classification is useful for assessing the different means by which a central bank makes its initiatives effective, and for setting the boundaries of independent central bank responsibilities. Given the limited space, I write in terms of the Federal Reserve, though it should be understood that the analysis is applicable more generally.

### Monetary Policy, Credit Policy, and Interest on Reserves Policy

Federal Reserve *monetary policy* narrowly defined consists of open market operations that expand or contract high-powered money (bank reserves plus currency) by buying or selling U.S. Treasury securities. Pure monetary policy is best appreciated this way: When the Fed's balance sheet is consolidated with the Federal government's balance sheet, the U.S. Treasuries disappear because they are liabilities of the Federal government. Only currency and bank reserves are left. So U.S. Treasuries acquired with currency or bank reserves is pure monetary policy.

Federal Reserve *credit policy* involves changing the composition of the Fed's asset portfolio between Treasury securities, on one hand, and credit to the private sector or non-Treasury entities on the other hand, holding the size of the Fed balance sheet fixed. A combination *credit and monetary policy* initiative would involve the use of newly created bank reserves to fund discount window lending or to purchase non-Treasury securities.

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**Author's note:** *My comment draws throughout on analysis developed and applied initially in Goodfriend (2011a).*

Pure credit policy by itself has little direct effect on the federal funds rate because it does not change aggregate bank reserves or interest paid on reserves. Fed credit policy works by interposing the government between private borrowers and lenders, and exploiting the government's creditworthiness to lower private borrowing costs and facilitate credit flows.

A good way to appreciate the difference between monetary policy and credit policy is this: Non-Treasury securities, e.g., loans or mortgage-backed securities, do not disappear on the consolidated Federal Reserve–federal government balance sheet. In effect, non-Treasury assets on the Fed's balance sheet represent private assets that have been acquired on behalf of the federal government.

*Interest on reserves policy* consists of varying the interest rate that the Fed pays on bank reserves, while holding monetary and credit policy fixed. The Fed began to pay interest on reserves in October 2008 to help put a floor under the federal funds rate. Interest on reserves works in that regard because depository institutions will not lend in the interbank market at interest below the rate they can earn on reserves held at the Fed.

## Commentary on Svensson's Conclusions

I summarize Lars's main conclusions below. To each, I attach one of two assessments: (1) agree wholeheartedly, or (2) agree with qualification. I don't disagree outright with any of Lars's conclusions. Broadly speaking, I share his view that greater clarity of central bank objectives and actions would be beneficial. I illustrate subsequently how the Fed can safeguard its independence and improve its operational effectiveness by distinguishing monetary policy narrowly defined from credit policy and interest on reserves policy.

**Conclusion 1:** "The crisis was not caused by interest rate policy but by other factors."

*I agree wholeheartedly.* The credit cycle was caused by a combination of other factors such as U.S. government subsidized housing finance, insufficient depository capital requirements, excessive use of liquidity, credit, and maturity transformation in money markets, inept regulation and supervision, global financial imbalances, and low global real interest rates (Goodfriend 2011c).

**Conclusion 2:** "Price stability is not enough to achieve financial stability, interest rate policy is not enough to achieve financial stability, and a separate financial stability policy is needed for financial stability."

*I agree with qualification.* The boundary for independent central bank responsibility for financial stability needs to be clarified and tightened with respect to credit policy initiatives.

**Conclusion 3:** “Flexible inflation targeting remains the best-practice monetary policy as before, during, and after the crisis. . . .”

*I agree with qualification.* I would not risk, tolerate, or target higher inflation in an attempt to stimulate economic activity at the zero bound on interest rate policy. Central bank stimulus at the zero bound works in only one of two ways. Monetary policy at the zero bound works by taking interest rate maturity risk onto the consolidated central bank–government balance sheet. Credit policy at the zero bound works by taking credit risk onto the consolidated central bank–government balance sheet. Either monetary or credit policy must be used at great scale to be effective, at potentially large financial risk to taxpayers. Hence, they should be utilized aggressively only if deflation becomes a clear and present danger (Goodfriend 2011b).

**Conclusion 4:** “It is important to conceptually distinguish financial stability policy from monetary policy and avoid conceptual and practical confusion between the two policies.”

*I agree with qualification.* Credit policy is both a financial stability policy and a fiscal policy, so the use of credit policy by an independent central bank must be tightly circumscribed.

**Conclusion 5:** “Monetary policy should be the last line of defense for financial stability policy, not the first.”

*I agree wholeheartedly.* In practice, there is no window of opportunity when interest rate policy can be used with a sufficient degree of confidence against perceived excessive asset price appreciation or excessive credit market expansion (Goodfriend 2003).

**Conclusion 6:** “Financial stability as an objective of monetary policy makes little sense, whereas financial stability, as an objective for the central bank, makes sense if the central bank gets control over financial stability instruments.”

*I agree with qualification.* Financial stability policy that involves expansive credit policy is fiscal policy, and so cannot be implemented effectively by an independent central bank without jeopardizing the central bank’s independence.

**Conclusion 7:** “I believe LSAPs conducted by the Federal Reserve have had substantial beneficial effects on the U.S. economy and that the objections that have been raised against them are not convincing.”

*I agree with qualification.* The Fed’s \$1 trillion injection of bank reserves into the economy in 2008–09 in exchange for non-Treasury securities such as mortgage-backed and agency securities delivered a powerful *combination monetary and credit policy* stimulus that protected against deflation. However,

the Fed should commit to a timetable or conditions by which it intends to remove such non-Treasury assets from its balance sheet in order to return to Treasuries only.

**Conclusion 8:** “I have long been in favor of the publication of a policy rate forecast on a regular basis based on practical experience [because] what matters . . . is not what the policy rate is during the one or few months until the next policy meeting, but what the longer interest rates are.”

*I agree with qualification.* The formal clarification of an inflation objective (as either a point target or target range) must come first. A published interest rate policy rate forecast can only reinforce the central bank's commitment to an explicit numerical inflation objective, the publication of interest rate policy intentions cannot substitute for it (Broaddus and Goodfriend 2004, pp. 13–15).

**Conclusion 9:** “Some observers suggest that . . . capital flows to other countries should be taken into account when, for instance, the Federal Reserve sets its monetary policy. I do not agree with that conclusion . . . if countries . . . choose to peg to the dollar, with capital flows, bubbles, and other negative effects, they are themselves responsible for those effects.”

*I agree wholeheartedly.* Monetary policy is most effective when a central bank lets its exchange rate float on the foreign exchange market so that it is free to focus entirely on domestic objectives such as price stability and full employment. This is no less true for emerging market economies than for developed economies.

## **Federal Reserve Independence and Credit Policy**

The presence of credit assets on the Fed's balance sheet should not be allowed to threaten the Fed's actual or perceived political independence and the credibility of its exit strategy from the zero interest bound. To preserve the Fed's independence, the Treasury and Congress should work to remove problematic credit assets from the Fed's balance sheet in exchange for Treasury securities, so the problematic credit assets can be monitored and managed elsewhere in the government. Then, there would be little need for Congress to scrutinize Fed actions beyond oversight hearings to hold the Fed accountable for stabilizing employment and inflation. And the Fed could manage interest rate policy independently as it has for decades.

## **Strengthening Interest on Reserves Policy**

The authority to pay interest on reserves is the most important tool enabling the Fed to raise the federal funds rate without first shrinking its balance sheet.

Depositories will not lend to each other below interest they receive at the Fed. However, large lenders in the federal funds market, such as government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac, and Federal Home Loan Banks (FHLBs), are legally ineligible to receive interest on balances they hold at the Fed. Depository institutions eligible to receive interest on reserves have an incentive to attract federal funds from the GSEs and the FHLBs, and to deposit those funds at the Fed. Yet, the federal funds rate has continued to fluctuate below the one-quarter percent interest the Fed has paid on reserves since the end of 2008. Thus, it is reasonable to worry that lending by the GSEs, the FHLBs, and others in the federal funds market could impair the power of interest on reserves to put a floor under the federal funds rate again when the Fed tries to exit the near-zero federal funds rate setting (Bech and Klee 2011).

The Fed should ask the Treasury and Congress to secure the interest on reserves floor for the federal funds rate by modifying regulations for the federal funds market to exclude all but depository institutions from lending in that market, or alternatively by allowing those institutions eligible to lend in the federal funds market to earn interest on balances at the Fed. So strengthened, interest on reserves would provide the Fed with a precise, flexible, and reliable means of raising the federal funds rate as the economy recovers, regardless of the size of the Fed's balance sheet.

## **Exiting the Zero Interest Bound with Monetary Policy Alone**

A major deficiency in relying on monetary policy narrowly defined to raise the federal funds rate is that the Fed would have to drain or immobilize hundreds of billions of dollars of reserves and return the stock of reserves to a level near to that prior to the credit turmoil in order to recreate a scarcity of reserves sufficient to raise the federal funds rate significantly. The problem is that large-scale operations would have to be undertaken in advance over a span of time to position monetary policy alone to raise the federal funds rate.

In lieu of selling assets, the Fed has proposed immobilizing reserves by arranging reverse repurchases or offering interest-earning time deposits. Either of these alternatives would also take time. Another problem with the Fed's use of such managed liabilities is that they involve credit policy. In particular, reverse repurchases are essentially a collateralized borrowing of funds using securities as collateral. Large-scale reverses expose the Fed to significant counterparty risk, which could complicate the Fed's management of financial markets in times of financial turmoil. In addition, the introduction and management of interest on term deposits, in particular, could destabilize the

interest elasticity of demand for bank reserves and complicate federal funds rate targeting with monetary policy.

The use of managed liabilities would jeopardize the Fed's independence by facilitating the perpetual use of credit policy borrowing by the Fed to fund asset acquisition. There is no reason for the Fed to issue managed liabilities if the regulation of the federal funds market is modified to secure the potential for interest on reserves to put a floor under the federal funds rate.

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## GENERAL DISCUSSION

# Monetary Policy after the Crisis

Chair: Sarah Bloom Raskin

**Ms. Raskin:** With that, I will open it up to comments and questions from the group. I think Lars may want to take a minute or two to give a quick response.

**Mr. Svensson:** Yes, thanks, Marvin, for thoughtful remarks which I will think thoroughly about. But let me object or take a different stance on one particular thing. I don't understand what you have against overshooting the inflation target in order to bring unemployment closer to a sustainable rate. The inflation targets would be symmetric: being 1 percent below should be as bad as being 1 percent above the inflation target. So, if we can have more expansion in our monetary policy and actually overshoot the target and in this way get unemployment closer to a sustainable level, it seems that this policy is desirable. However, no central bank seems to do this voluntarily—even though I would do it if I were the single decisionmaker at the Riksbank. The Bank of England seems to do it but is a little nervous about it, and I'm not sure it is completely voluntary. But no one else seems to understand this simple logic, except maybe Charlie Evans [President of the Federal Reserve Bank of Chicago], so I guess I'm with Charlie. So, why not treat the inflation objective as symmetric and why be so nervous about overshooting when it would be good on the unemployment side?

**Mr. Goodfriend:** My answer is going to surprise you, I think. It's a question about how you define overshooting. If the Fed or some other central bank chooses a range to target for inflation and stays within that range, there's room for overshooting and undershooting, as long as you're in the middle of the range most of the time. And I'm all in favor of a range. I don't support a point target if the central bank has not committed to an upper bound of that range. I'm nervous about accepting or excusing the variation of inflation around a point target without formal tolerance bounds. So, what I would like is for the Fed to establish a range. I would not mind if that range was 3 percent and 1 percent. I just want a range so that overshooting is well-defined. If you make the range 4 percent to 1 percent, overshooting is well-defined: it's over 4 percent. The confusion arises when the range has not been clarified and we can't really discuss what overshooting means. In the Fed's case, until that range is clarified I'm going to call inflation over 2 percent as above the Fed's tolerance range.

**Mr. Svensson:** I interpret the 2 percent or slightly below 2 percent as a point target, not the ceiling. All the statements I hear lead me to interpret that as a point target that one could overshoot or undershoot but, of course, one can make different interpretations.

**Mr. Goodfriend:** Before I left the Fed, I had thought that 2 percent was an upper bound, but that's the confusion.

**Ms. Raskin:** Okay, Rick, you want to go?

**Mr. Mishkin:** I'm a little puzzled, Marvin, by one of your statements. We had some disagreements many years ago about the issue of what you call "credit policy" versus monetary policy. A lender of last resort policy has a fiscal element to it because the central bank takes on credit risk. So, my question for you is, are you ruling out lender of last resort policy? There are issues that get into the complication of actually engaging in credit policy and, particularly, I have more concerns about quantitative easing in terms of buying private assets. But the real concern is if you do it in a pure discretionary fashion without explicitly talking about your objectives and agreeing how you're going to wind it down at some point in the future. I think the key reason we have less trouble with lender-of-last-resort policies is because they are usually self-liquidating. Monetary policy is too crude a tool to use for a particular market, it just works in general. The reason we are less uncomfortable with its use as a lender of last resort for particular markets is that when the markets recover, those arrangements naturally disappear and that's exactly what happened in this case. So, your pure distinction between monetary and credit policy, I think, is just much too stark.

**Mr. Goodfriend:** Can I respond quickly? In the long version of the paper that I referenced in the slides, I do distinguish this. I completely agree with you. There are conditions when it is OK to do credit policy. For example, temporary loans against good collateral to solvent depository institutions regulated by the central bank are appropriate because the fiscal implications including ex ante distortions and ex post costs are very limited.

**Mr. Prasad:** Since I was one of the people associated with the report that Lars mentioned, I feel obliged to interject myself in what was basically a lovefest between Marvin and Lars in terms of how monetary policy should be run. Actually I agree with them on a variety of issues including the fact that monetary policy and financial stability policy are distinct. But I think that distinction is becoming increasingly untenable. The other point on which I agree and I think frames this discussion is that central banks need independence in order to be

effective, and they need more instruments if they're going to have more mandates thrust upon them. But the reality we are facing is that it's going to be increasingly difficult to separate out monetary policy and financial stability policy. I take Marvin's point that trying to figure out when an asset bubble is taking place is hard, this crisis is teaching us that leverage matters. Once you start thinking about leverage as an important aspect of determining financial stability, monetary policy must also play a role. This distinction is going to be increasingly untenable. In fact, if we persist in maintaining this distinction, it's going to threaten central bank independence if we view central banks as the last line of defense. The second issue is international spillover of policies, and there again, I agree with Lars's approach at one level. I think flexible exchange rates, especially for China, would certainly be a good thing. But consider a thought experiment with two countries—say the U.S. and a small country like Thailand—who are doing exactly the right thing in terms of running a flexible inflation targeting regime with a flexible exchange rate. Thailand would get hammered when you have loose monetary policy in the United States that does not suit it. While Thailand would have capital flowing in, with relatively high inflation to begin with, raising interest rates brings in even more capital and basically slams you against a post. So, in the ideal world, even if you do have flexible exchange rates, one is going to have to be cognizant of these issues with emerging markets. Again, China is an exception here because they have problems with their own currency policy, but for other emerging markets protection from the spillovers of advanced economy policies warrants some sort of coordination.

**Ms. Raskin:** Why don't we get another question or two in.

**Ms. Forbes:** Lars, you mentioned that QE2 probably affected capital flows to emerging markets in different ways, and central banks should incorporate that in their decisionmaking. Have you looked at the magnitude of the effect? There seems to be widespread disagreement. Some people I've spoken to in the United States seem to think that QE2 did have a positive effect on capital flows to emerging markets, but the effect was quite small and overwhelmed by other things going on in the world and other macro variables. Some people in emerging markets, though, argue that the effect was substantial: QE2 was the major reason why capital flows surged to emerging markets, and they have no conventional policies to manage these inflows. I'm sure the truth is somewhere in between.

**Mr. Svensson:** I must admit that I'm not an expert on capital flows to the emerging markets, so I can't say anything about the magnitudes. However, I

know that the Swedish economy is being shocked by disturbances all the time from the rest of the world's interest rates and such. I noticed that the Swiss economy has been suffering from flight to quality and an appreciating currency. I don't quite understand why the situation in emerging markets, once they are reasonably advanced, would be so different from the case of Switzerland or Sweden. And we manage considerable depreciations or appreciations as best we can. I know too little to understand why things are so different in the emerging market countries, why they cannot handle disturbances and spillover in a similar way.

On the issue Eswar brought up, certainly leverage matters. But I think the policy rate is one of the worst tools to affect leverage, as well as maturity and liquidity mismatch. There are much more efficient methods like capital requirements, and we are learning about a number of new tools to utilize when conducting macroprudential policy and financial stability policy. So, I don't see any reason to use the policy rate.

On Marvin's comment about the independence of central banks, I don't think the answer is obvious. I think independence works very well for monetary policy because the target and the objectives are so simple compared to other economic policies. Thus we can hold central banks accountable so that they can be independent, but we can also hold them accountable because the targets are so simple. Financial stability policy is much more complicated, and the goal of financial stability itself is even complicated to define. If we have independent authorities conducting such policies, it's much more difficult to hold them accountable. I'm a little nervous about the democratic deficit if we allow independent agencies that we cannot hold accountable after the fact to handle very complicated financial stability policies. In many countries, macroprudential policies are coordinated or their responsibilities shared and different agencies cooperate. In Sweden, we cooperate and it works quite well, but I don't think we should cooperate between different agencies on monetary policy.

**Ms. Raskin:** I think we have time for one more. Ted?

**Mr. Truman:** Marvin and Lars agreed that there's a long list of causes of the crisis. There's a bit of an identification problem because everybody has their list, and we'll have 100,000 PhD dissertations written over the next 50 years on this question. But Lars did list one of the causes as macroeconomic conditions, and monetary policy presumably has something to do with macroeconomic conditions. You must put some weight on monetary policy as a contributor to macroeconomic conditions. That leads to the fundamental question, which you and Marvin might want to comment on. That is this question of independence of

central banks. Marvin understandably attaches a lot to that, therefore his reason for carefully circumscribing monetary policy is to protect the central bank's independence. But, as you said, that is relatively easy as long as you have a very simple objective that the general public can hold you accountable for.

**Mr. Goodfriend:** I'll go first and you can have the last word, Lars.

I appreciate the question because it's very important to the future of the independent central bank. I think the problems with financial stability, as Lars has alluded to, largely come from the fact that we impose too low capital requirements on our banks around the world. I think the social benefits to significantly higher capital requirements far exceed the social costs. One of the reasons we're having this problem defining central banks' boundaries on financial stability is because we allow banks to run with much lower capital than they should. The banks are happy to do so because they're implicitly getting underpriced backstops from the taxpayers. To fix this other issue, we need to have higher capital requirements. I'm very impressed by Switzerland having moved in that direction, and I think other countries should do so. That's where the problem is, not this issue of the boundary between central banks and the government.

**Mr. Svensson:** On the issue that Ted brought up, the macro condition I had in mind was low real interest rates due to global imbalances. You can say that monetary policy contributed to the Great Moderation because it was too successful, but I don't think that is the reason. The main reason was that risk was underestimated by market participants. Monetary policy cannot, in the long run, affect the real interest rate. What monetary policy can do is move the actual real rate below or above the neutral rate, which is state dependent and depends on a lot of things beyond monetary policy. Some people attribute changes in the real rate all to monetary policy. I think that is wrong. It is only the difference between the actual real rate and the neutral rate that should be affected by monetary policy. When you look at it that way, only a very small part of the low real rate is due to monetary policy.

On the issue of the independence of central banks, people are concerned that Congress or Parliament could intervene in the operations of the central bank, particularly if central banks experience losses on their balance sheets. I think those worries are somewhat exaggerated. Central banks are different from other banks in that they don't need positive capital to operate. The financial independence of central banks comes from having a large positive cash flow. When the cash flow is positive, the seigniorage and other income is larger than the operating costs. And, usually, the seigniorage is many, many times the operating costs of a central bank, so it has a huge positive cash flow. It would take a

very extreme situation for a central bank not to be able to continue operating in the usual way. It will be good to have some agreement that the government, Parliament, or Congress will recapitalize the central bank when needed.

**Ms. Raskin:** Thank you very much.

# Macroprudential Policies in Open Emerging Economies

Joon-Ho Hahm, Frederic S. Mishkin,  
Hyun Song Shin, and Kwanho Shin

This paper examines macroprudential policies in open emerging economies. It discusses how the recent financial crisis has provided a rationale for macroprudential policies to help manage the economy and the need for policymakers to monitor the financial cycle and systemic risks. It also discusses one particularly promising measure of the state of the financial cycle, the growth of noncore liabilities of the financial sector, and evaluates macroprudential policy frameworks. The paper uses Korea as an example and conducts an empirical evaluation of noncore liabilities of Korean banks as a measure of the financial cycle.

## 1. Introduction

Prior to 2007, there was a general consensus in central banks about most elements of monetary policy strategy and prudential supervision of the financial system. Then, starting in August 2007, the world was hit by what Alan Greenspan, former Chairman of the Federal Reserve, described as a “once-in-a-century credit tsunami.” The credit tsunami not only flattened the world economy, resulting in the most severe worldwide economic contraction since the Great Depression, but has also called into question the basic policy strategies used to manage the economy. This has led to a new focus on macroprudential regulation and supervision, that is, regulation and supervision of the financial system that focuses on system-wide risk, rather than just the riskiness of individual financial institutions, as an important policy tool to promote a healthy economy.

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This study examines macroprudential policies in open emerging economies, with a particular emphasis on South Korea. We start in Section 2 by first examining why thinking has changed about basic policy strategies to manage the economy. Section 3 examines in more detail the rationale for macroprudential policies and the need for policymakers to monitor the financial cycle and systemic risks. We then discuss in Section 4 one particularly promising measure of the state of the financial cycle, the growth of noncore liabilities of the financial sector. This section also applies the analysis to Korea and conducts an empirical evaluation of noncore liabilities of Korean banks as a measure of the financial cycle. Section 5 broadens the discussion to evaluate macroprudential policy frameworks. Section 6 provides some concluding remarks.

## **2. How Has Thinking Changed about Policies to Manage the Economy?**

To put things into perspective, we will first examine how central bankers and academic economists viewed the basic policy strategy before the crisis and then go on to discuss how their thinking has changed as a result of the crisis.<sup>1</sup>

### **2.1. Basic Policy Strategy before the Crisis**

Before the crisis there was broad consensus in central banks and academia for a policy framework that pursued a form of flexible inflation targeting, while assuming a dichotomy between monetary policy and financial stability policy. There was somewhat less agreement on what the central bank's response should be to asset price bubbles.<sup>2</sup>

#### **2.1.1. Flexible inflation targeting**

The basic monetary policy framework followed by almost all central banks (who had the ability to conduct an independent monetary policy because they did not pursue an exchange rate peg) involved a strong, credible commitment by the central bank to stabilize inflation in the long run, often at an explicit numerical level. However, it also allowed for the central bank to pursue policies to stabilize output around its natural rate in the short run.<sup>3</sup> This framework is referred to in the academic literature as “flexible inflation targeting” (Svensson 1997), although the phrase “inflation targeting” to describe this monetary policy strategy is somewhat unfortunate. This is because central banks have followed different approaches to the communication strategy of flexible inflation targeting, with some objecting to characterizing their inflation objective as a target.

Many central banks, such as the Bank of Korea, have announced an explicit numerical inflation objective and treat it as a target, and these are classified as

full-fledged inflation targeters. Others are reluctant to be so explicit. For example, the Federal Reserve has espoused a strong commitment to stabilize inflation, but has not been willing to announce an explicit inflation objective.<sup>4</sup> The Federal Reserve reports on the individual Federal Open Market Committee participants' projections of inflation in the long run under "appropriate monetary policy." In effect, the Fed provides the long-run inflation objective for each FOMC participant, but has not required that the participants agree on a common objective for inflation. The Federal Reserve has therefore not yet adopted an agreed-upon inflation objective and so it is not classified as being in the inflation-targeting camp. On the other hand, the FOMC participants' long-run inflation projections all have been in a pretty tight range between 1½ and 2 percent, and so they are not far from committing to a specific inflation objective, and not very large modifications in their communication strategy would move them to the inflation-targeting camp (Mishkin 2008). In other cases, such as the European Central Bank (ECB) or the Swiss National Bank, central banks have been willing to announce an explicit numerical inflation objective, but are reluctant to treat it as a target because they believe that this would not give them sufficient flexibility. They are unwilling to be classified as inflation targeters because they believe that the use of the word "target" might lead the public to expect them to hit the inflation targets too precisely or over too specific a horizon.

Despite these apparent differences in communication strategy, the basic approach of central banks with an independent monetary policy before the crisis was very similar. They were willing to conduct monetary policy under a strong commitment to stabilize inflation in the long run. Indeed, Svensson (2002) argues that any central bank that indicates it will pursue the standard objective function which involves minimizing both inflation and the output gap in an intertemporal setting is effectively a flexible inflation targeter. Before the crisis, almost all central banks with an independent monetary policy fell into this classification.

### ***2.1.2. Dichotomy between monetary and financial policy***

Although most central bankers were aware that financial disruptions could have a serious negative impact on the economy, nonetheless, the general equilibrium modeling frameworks at most central banks did not incorporate financial frictions as a major source of business cycle fluctuations. This naturally led to a dichotomy between monetary policy and financial stability policy in which these two types of policies were conducted separately. Monetary policy instruments focused on minimizing inflation and output gaps. It would then

be up to prudential regulation and supervision to prevent excessive risk-taking that could promote financial instability. Although most central banks supported the dichotomy between monetary policy and financial stability policy, some expressed the view that monetary policy should address financial stability issues, particularly with regard to responding to potential asset price bubbles, as discussed below.

### ***2.1.3. The “lean” versus “clean” debate on the response to possible asset price bubbles***

An active debate in central banks before the crisis focused on how central banks should respond to potential asset price bubbles. Because asset prices are a central element in the transmission mechanisms of monetary policy, the theory of optimal monetary policy requires that monetary policy respond to asset prices to obtain good outcomes in terms of inflation and output. Hence, the issue of how monetary policy might respond to asset price movements is not whether it should respond at all, but whether it should respond over and above the response called for in terms of objectives to stabilize inflation and employment. Another way of stating the question is, should monetary policy try to pop or slow the growth of developing asset price bubbles to minimize damage to the economy when these bubbles burst? Alternatively, should the monetary authorities not respond directly to possible asset price bubbles, but instead respond to asset price declines only after a bubble bursts to stabilize both output and inflation? These two positions have been characterized as leaning against asset price bubbles versus cleaning up after the bubble bursts. And so, the debate over what to do about asset price bubbles has been characterized as the “lean” versus “clean” debate.

Even before the crisis, there was no question that asset price bubbles have negative effects on the economy. As Dupor (2005) has emphasized, the departure of asset prices from fundamentals can lead to inappropriate investments that decrease the efficiency of the economy. Furthermore, the bursting of bubbles throughout history has been followed by sharp declines in economic activity, as Kindleberger’s (1978) famous book demonstrated.

The clear-cut dangers of asset price bubbles before the crisis led some economists both inside and outside central banks—such as Cecchetti et al. (2000), Borio and Lowe (2002), Borio, English, and Filardo (2003), and White (2004)—to argue that central banks should at times “lean against the wind” by raising interest rates to stop bubbles from getting out of hand. They argued that raising interest rates to slow a bubble’s growth would produce better outcomes because it would either prevent the bubble or would result in a less-severe bursting of the bubble, with far less damage to the economy.

The opposing “clean” view states that asset prices should have a special role in the conduct of monetary policy over and above that implied by their foreseeable effect on inflation and employment. This is often referred to as the Greenspan doctrine because he strenuously argued that monetary policy should not try to lean against asset price bubbles, but rather should just clean up after they burst (Greenspan 2002). There are several elements of this argument.

First, bubbles are hard to detect. To justify leaning against a bubble, a central bank is assuming that it can identify a bubble in progress. That assumption was viewed as highly dubious because it is hard to believe that the central bank has such an informational advantage over private markets. If the central bank has no informational advantage, and if it knows that a bubble has developed, the market will almost surely know this too, and the bubble will burst. Thus, any bubble that could be identified with certainty by the central bank would be unlikely ever to develop much further.

A second objection against leaning is that raising interest rates may be very ineffective in restraining the bubble because market participants expect such high rates of return from buying bubble-driven assets. By definition, bubbles are departures from the behavior that is normally incorporated within models, and so the tools of monetary policy are unlikely to work normally in abnormal conditions.

A third objection is that there are many asset prices, and at any one time a bubble may be present in only a fraction of assets. Monetary policy actions are a very blunt instrument in such a case, as such actions would likely affect asset prices in general, rather than solely those in a bubble.

Fourth, although some theoretical models suggest that raising interest rates could diminish the acceleration of asset prices, others suggest that raising interest rates would cause a bubble to burst more severely, thus doing even more damage to the economy (Bernanke, Gertler, and Gilchrist 1999; Greenspan 2002; Gruen, Plumb, and Stone 2005; and Kohn 2006). This view was supported by historical examples, such as the monetary tightening that occurred in 1928 and 1929 in the United States and 1989 in Japan, suggesting that raising interest rates may cause a bubble to burst more severely, thereby increasing the damage to the economy. Another way of saying this is that bubbles are departures from normal behavior, and it is unrealistic to expect that the usual tools of monetary policy will be effective in abnormal conditions. Attempts to prick bubbles were thus viewed as possibly violating the Hippocratic oath of “do no harm.”

Finally, there was a view that the monetary authorities had the tools to keep the harmful effects of a bursting bubble at a manageable level, as long as

they respond in a timely fashion. This was true even if interest rates fell and approached the zero lower bound, and so the conventional tool of lowering the policy interest rate was no longer an option. The economy could be stimulated by (1) managing expectations so that the policy rate would be viewed as staying low for an extended period, thereby lowering long-term interest rates, (2) lowering risk and term premiums by purchasing securities, thereby changing their relative supply, and (3) intervening in foreign exchange rate markets to lower the value of the domestic currency, thereby increasing foreign demand for domestic production.

One counter argument to this view was the experience of Japan after the bursting of its stock market and real estate bubble. However, as Posen (2003) pointed out, the problem in Japan was not so much the bursting of the bubble as it was the subsequent policies. The imbalances in Japan's banking sector were not resolved, so they continued to get worse well after the bubble had burst. In addition, as pointed out in Ahearne et al. (2002), the Bank of Japan did not ease monetary policy sufficiently or rapidly enough in the aftermath of the crisis.

The bottom line from this reasoning was that the cost of leaning against asset price bubbles was likely to be high, while the costs of bursting bubbles could be kept low. Instead of trying to lean against bubbles, central banks should just clean up after the bubble burst. This approach was fully consistent with monetary policy focusing on stabilizing inflation and employment without a special focus on asset price bubbles.

Another argument against focusing on asset prices is that it could lead to public confusion about policy objectives. As reported in Giavazzi and Mishkin (2006), interviews with participants from different sectors of Swedish society suggested that statements on house prices by the Riksbank confused the public and led to a general weakening of confidence in the Swedish central bank.

The Greenspan doctrine, which was strongly supported by Federal Reserve officials, generally held sway in the central banking community before the crisis. However, even among central bankers there were dissenting voices. The Reserve Bank of Australia during the period from 2002 to 2004 argued that rising housing prices in Australia posed a risk to the economy, and there is evidence that developments in the housing market encouraged the Bank to tighten monetary policy earlier rather than later (see Bloxham, Kent, and Robson 2010). In several meetings in 2004, a minority of members of the Monetary Policy Committee (MPC) of the Bank of England argued for raising interest rates to reduce the risks that high house price appreciation and the rapid accumulation of household debt would lead to an abrupt adjustment process. Statements from officials at the ECB and other central banks also suggested that

the possibility of an asset boom or bust might require a longer period than the usual one to two years to assess whether the price stability goal was being met (Issing 2003a, b; King 2004a, b; Stevens 2004; Selody and Wilkins 2004; Bank of Canada 2006; and Rosenberg 2006).

## 2.2. Lessons from the Financial Crisis

There are three lessons from what occurred during the financial crisis that have a bearing on basic policy strategy.<sup>5</sup>

### 2.2.1. *Developments in the financial sector have a far greater impact on economic activity than was recognized earlier*

Although central bankers generally recognized that financial frictions could play an important role in business cycle fluctuations, the 2007–09 financial crisis made it clear that the adverse effects of financial disruptions on economic activity could be far worse than was anticipated for advanced economies. When the financial crisis started in August 2007, central bank actions to contain it seemed to work. Many officials at the central banks, although still concerned about the disruption to the financial markets, hoped that the worst was over and that the financial system would begin to recover (see Mishkin 2011b). The subprime mortgage sector was after all only a small part of the overall capital market, and the losses in the subprime mortgage market, although substantial, still seemed manageable. By the summer of 2008, central banks were even turning their attention to the very high inflation rates at the time; for example, there were discussions inside the Federal Reserve whether the easing phase of monetary policy might have to be reversed to contain inflation (e.g., see Wessel 2009).

But then came a set of shocks that sent the financial system and the economy over the cliff: the Lehman Brothers bankruptcy on September 15, 2008, the AIG collapse on September 16, the run on the Reserve Primary Fund on the same day, and the U.S. Treasury's struggle to get the Troubled Asset Relief Program approved by the U.S. Congress over the next couple of weeks (Mishkin 2011b). The financial crisis morphed into a global crisis that caused a sharp drop in economic activity in the United States—real GDP declined at an annual rate of –1.3 percent in 2008:Q4, –5.4 percent in 2009:Q1, and –6.4 percent in 2009:Q2—but in the rest of the world as well—with real GDP falling at a –6.4 percent rate in the fourth quarter of 2008 and a –7.3 percent rate in the first quarter of 2009. The unemployment rate shot up to over 10 percent in the United States and in many other advanced economies, with the unemployment rate remaining stubbornly high even after the world economy started to recover. The worldwide recession that resulted from the financial crisis turned

out to be the most severe economic contraction since the worldwide depression of the 1930s.

The global financial crisis of 2007–09 therefore demonstrated that financial frictions have become front and center in macroeconomic analysis. They no longer could be ignored in the macroeconometric models that central banks use for forecasting and policy analysis, as was generally the case before the crisis.

### ***2.2.2. The cost of cleaning up after financial crises is very high***

Besides the obvious cost of a huge loss of aggregate output as a result of the worldwide recession, the global financial crisis suggests that there are likely to be three additional costs that will raise the costs far higher: (1) financial crises are typically followed by very slow growth, (2) the budgetary position of governments sharply deteriorates, and (3) the exit strategy for central banks from nonconventional monetary policy may be complicated and may hinder the ability of the central bank to successfully manage the economy in the future.

When economies experience deep recessions, the typical experience is that they subsequently have very strong recoveries, often referred to as V-shaped recoveries. However, as Reinhart and Reinhart (2010) document, this V-shaped pattern is not characteristic of recessions that follow financial crises because the deleveraging process takes a long time, resulting in strong headwinds for the economy. When analyzing 15 severe post-World War II financial crises, the Great Depression, the 1973 oil shock period, and the recent crisis, they find that real GDP growth rates are significantly lower during the decade following this episode, with the median decline in GDP growth being about 1 percent. Furthermore, unemployment rates stay persistently higher for the decade after crisis episodes, with the median unemployment rate five percentage points higher in advanced economies. Although we have many years to go before a decade goes by after the most recent crisis, it actually looks like it might have worse outcomes than the average crisis episode studied by Reinhart and Reinhart. They find that 82 percent of the observations of per capita GDP from 2008 to 2010 remained below or equal to the 2007 level, while the comparable number for the 15 earlier crisis episodes was 60 percent. We now recognize that the cumulative output losses from financial crises are massive, and this current crisis looks like it will be no exception.

As pointed out by Reinhart and Rogoff (2009), the aftermath of financial crises is almost always a sharp increase in government indebtedness. We have seen exactly this situation in the aftermath of the current crisis. The massive bailouts of financial institutions, fiscal stimulus packages, and sharp economic contractions that reduced tax revenue that occurred throughout the world have

adversely affected the fiscal situation for many countries. Budget deficits over 10 percent of GDP in advanced countries like the United States have become common. Furthermore, this rise in indebtedness has the potential to lead to sovereign debt defaults, which have come to the fore with the Greek sovereign debt crisis and concerns about the long-term fiscal health of other European countries, including Ireland, Portugal, Spain, and Italy. The fiscal retrenchments required to put fiscal balances on a sustainable path are likely to not only be contractionary but also to increase societal stress. Indeed, there is even a possibility that the fiscal problems brought on by the crisis could lead countries to exit the euro area.

Actions by central banks to contain the global financial crisis resulted in huge expansions of their balance sheets. The expansion of balance sheets arising from liquidity provision is typically easy to reverse because most of the liquidity facilities have provided loans at interest rates that are higher than market rates during normal times. Hence these liquidity facilities are self-liquidating because, as financial markets return to normal, market participants are no longer willing to borrow at above-market rates, so the use of these facilities shrinks. Hence this source of balance sheet expansion naturally reverses itself as the financial system recovers, and this is exactly what has happened.

A far more serious concern is the expansion of the balance sheet that stems from asset market purchases. This expansion of the balance sheet is not self-liquidating, and there are concerns that the resulting expansion of the monetary base will lead to high inflation in the future. This concern would be more worrisome if an expansion in the monetary base were closely linked to an expansion in the money supply, but this is not the case in the current environment. Because banks are perfectly happy to hold onto huge amounts of excess reserves as long as they are paid interest on them, as is the case currently, high growth rates in the monetary base do not translate into high growth rates of the money supply. Hence, quantitative easing and the resulting increase in the monetary base are unlikely to be inflationary.

More problematic is that asset market purchases were often for long-term securities, which expose the central bank to interest risk (and credit risk if it buys private securities like mortgage-backed securities) because these securities can have substantial price fluctuations. Possible losses on these securities thus mean that there could be an erosion of capital in the central bank's balance sheet, and this could subject it to congressional or parliamentary criticism and actions that could weaken its ability to conduct an independent monetary policy. In addition, if the central bank has bought private securities, their presence on the balance sheet means that the central bank has encroached on the politicians' turf be-

cause the central bank has engaged in a form of fiscal policy, which makes its political position more precarious, again possibly leading to a loss of independence.

Even the purchase of long-term government securities poses a danger for central banks because it may create the perception that the central bank is willing to accommodate irresponsible fiscal policy by monetizing the debt. This is a particular concern right now in the euro area, where the ECB has purchased securities issued by governments that not only have large fiscal imbalances but, in the case of Greece, have even lied about their fiscal position. This problem is also a serious concern in the United States, where both political parties have been unwilling to address long-run trends in entitlements that could cause U.S. government debt to explode. Not only can the purchase of long-term government assets encourage fiscal profligacy, but it can also lead to an unhinging of inflation expectations, which could make it difficult for the central bank to control inflation in the future.

### ***2.2.3. Price and output stability do not ensure financial stability***

The inability of price and output stability to ensure financial stability is perhaps the most important lesson for central banks from the recent financial crisis. Before the crisis, the common view, both in academia and in central banks, was that achieving price and output stability would promote financial stability. This was supported by research (Bernanke, Gertler, and Gilchrist 1999, and Bernanke and Gertler 2001), which indicated that monetary policy that optimally stabilizes inflation and output is likely to stabilize asset prices, making asset price bubbles less likely. Indeed, the success of central banks in stabilizing inflation and decreasing volatility of business cycle fluctuations, which became known as the Great Moderation, made policymakers complacent about the risks from financial disruptions.

The benign economic environment leading up to 2007, however, surely did not protect the economy from financial instability. Indeed, it may have promoted it. The low volatility of both inflation and output fluctuations may have lulled market participants into thinking there was less risk in the economic system than was really the case. Credit risk premiums fell to very low levels, and underwriting standards for loans dropped considerably. Some recent theoretical research even suggests that benign economic environments may promote excessive risk-taking and may actually make the financial system more fragile (Gambacorta 2009). Although price and output stability are surely beneficial, the recent crisis indicates that a policy focused solely on these objectives may not be enough to produce good economic outcomes.

## 2.3. Implications for Monetary and Macroprudential Policy Strategy

Now we can see what the implications of these lessons are for basic policy strategy and in particular for macroprudential policies.

### 2.3.1. Flexible inflation targeting

The first key point is that the lessons from the crisis do not invalidate the benefits of having a strong, credible commitment to stabilize inflation in the long run, which is the key rationale for adopting a flexible inflation targeting framework. (For a more detailed discussion of this point, see Mishkin 2011a.) Indeed, as argued elsewhere (Mishkin 2008), a strong, credible commitment to stabilize inflation can be even more valuable in periods of financial market stress, when prompt and decisive expansionary monetary policy may be required to prevent a market meltdown, but which will only be effective if inflation expectations remain grounded.

However, although the case for a flexible inflation targeting framework is not weakened by the lessons from the financial crisis, they do suggest that details of how such a framework is executed would benefit from some rethinking. Particularly important in this regard is thinking about the lean versus clean debate regarding whether monetary policy should react to potential asset price bubbles.

### 2.3.2. The lean versus clean debate

In thinking about this debate, it is worth distinguishing between two different types of asset price bubbles. As pointed out in Mishkin (2010a), not all asset price bubbles are alike. Financial history and the financial crisis of 2007–09 indicate that one type of bubble, which is best referred to as a *credit-driven bubble*, can be highly dangerous. With this type of bubble, there is the following typical chain of events: Because of either exuberant expectations about economic prospects or structural changes in financial markets, a credit boom begins, increasing the demand for some assets and thereby raising their prices. The rise in asset values, in turn, encourages further lending against these assets, increasing demand, and hence their prices, even more. This feedback loop can generate a bubble, and the bubble can cause credit standards to ease as lenders become less concerned about the ability of the borrowers to repay loans and instead rely on further appreciation of the asset to shield themselves from losses.

At some point, however, the bubble bursts. The collapse in asset prices then leads to a reversal of the feedback loop in which loans go sour, lenders cut back

on credit supply, the demand for the assets declines further, and prices drop even more. The resulting loan losses and declines in asset prices erode the balance sheets at financial institutions, further diminishing credit and investment across a broad range of assets. The decline in lending depresses business and household spending, which weakens economic activity and increases macroeconomic risk in credit markets. In the extreme, the interaction between asset prices and the health of financial institutions following the collapse of an asset price bubble can endanger the operation of the financial system as a whole.

However, there is a second type of bubble that is far less dangerous, which can be referred to as an *irrational exuberance bubble*. This type of bubble is driven solely by overly optimistic expectations and poses much less risk to the financial system than credit-driven bubbles. For example, the bubble in technology stocks in the late 1990s was not fueled by a feedback loop between bank lending and rising equity values, and so the bursting of the tech-stock bubble was not accompanied by a marked deterioration in bank balance sheets. The bursting of the tech-stock bubble thus did not have a very severe impact on the economy and the recession that followed was quite mild.

However, we have learned from the recent crisis that the bursting of credit-driven bubbles not only can be extremely costly, but are very hard to clean up afterward. Furthermore, bubbles of this type can occur even if there is price and output stability in the period leading up to them. Indeed, price and output stability might actually encourage credit-driven bubbles because it leads market participants to underestimate the amount of risk in the economy. The case for leaning against potential bubbles rather than cleaning up afterwards has therefore become much stronger.

However, the distinction between the two types of bubbles, one of which (credit-driven bubbles) is much more costly than the other, suggests that the lean versus clean debate may have been miscast, as White (2009) indicates. Rather than leaning against potential asset price bubbles, which would include both credit-driven and irrational exuberance type bubbles, there is a much stronger case for leaning against credit bubbles which would involve leaning against credit-driven bubbles, but not irrational exuberance bubbles. As White (2009) and Mishkin (2010a) have pointed out, it is much easier to identify credit bubbles than it is to identify asset price bubbles. Financial regulators and central banks often have information that lenders have weakened their underwriting standards, that risk premiums appear to be inordinately low, or that credit extension is rising at abnormally high rates. The argument that it is hard to identify asset price bubbles is therefore not a valid argument opposing leaning against credit bubbles.

### 2.3.3. *Macroprudential policies*

This realization leads directly to the main theme of this report, which is the use of macroprudential policies to address the potential buildup of financial vulnerability. Although there is a strong case to lean against credit bubbles, what policies will be most effective? First, it is important to recognize that the key principle for designing effective policies to lean against credit bubbles is whether they fix market failures. Credit extension necessarily involves risk-taking. It is only when this risk-taking is excessive because of market failures that credit bubbles are likely to develop. Recognizing that market failures are the problem, it is natural to look to prudential regulatory measures to constrain credit bubbles.

Some regulatory measures to fix market failures are simply the usual elements of a well-functioning prudential regulatory and supervisory system. These elements include adequate disclosure and capital requirements, liquidity requirements, prompt corrective action, careful monitoring of an institution's risk-management procedures, close supervision of financial institutions to enforce compliance with regulations, and sufficient resources and accountability for supervisors. However, the standard measures mentioned focus on promoting the safety and soundness of *individual* firms and fall into the category of what is referred to as microprudential supervision. However, even if individual firms are operating prudently, there still is a danger of excessive risk-taking because of the interactions between financial firms that promote externalities. An alternative regulatory approach, which deals with these interactions, focuses on what is happening in credit markets in the aggregate and involves macroprudential policies.

This recognition provides a strong rationale for macroprudential policies, which we discuss in Section 3 of this study. However, in designing macroprudential policies, we require measures of when excessive risk-taking is taking place systemically. We discuss such potential measures in Section 4. Macroprudential tools can be used to dampen the interaction between asset price bubbles and credit provision, and these are discussed in more detail in Section 5 of this study.

### 2.3.4. *Monetary policy*

The fact that the low interest rate policies of the Federal Reserve from 2002 to 2005 were followed by excessive risk-taking suggests to many that overly easy monetary policy might promote financial instability. Using aggregate data, Taylor (2007) has argued that excessively low policy rates led to the housing bubble,

while Bernanke (2010), Bean et al. (2010), Turner (2010) and Posen (2009) have argued otherwise. Although it is far from clear that the Federal Reserve is to blame for the housing bubble, the explosion of microeconomic research, both theoretical and empirical, suggests that there is a case for monetary policy to play a role in creating credit bubbles. Borio and Zhu (2008) have called this mechanism the “risk-taking channel of monetary policy.”

The literature provides two basic reasons why low interest rates might promote excessive risk-taking. First, as Rajan (2005, 2006) points out, low interest rates can increase the incentives for asset managers in financial institutions to search for yield and hence increase risk-taking. These incentives could come from contractual arrangements that compensate asset managers for returns above a minimum level, often zero, and with low nominal interest rates only high-risk investments will lead to high compensation. They also could come from fixed-rate commitments, such as those provided by insurance companies, forcing the firm to seek out higher yielding, riskier investments. Or they could arise from behavioral considerations such as money illusion in which asset managers believe that low nominal rates indicate that real returns are low, encouraging them to purchase riskier assets to obtain a higher target return.

A second mechanism for how low interest rates could promote risk-taking operates through income and valuation effects. Low interest rates increase net interest margins and increase the value of financial firms, boosting their capacity to increase their leverage and take on risk (Adrian and Shin 2009, 2010, and Adrian, Moench, and Shin 2010). In addition, low interest rates can boost collateral values, again enabling increased lending. This mechanism is closely related to the financial accelerator of Bernanke and Gertler (1999) and Bernanke, Gertler, and Gilchrist (1999), except that it derives from financial frictions for lenders rather than borrowers.

Monetary policy can also encourage risk-taking in two other ways. Although desirable from a viewpoint of establishing credibility and a strong nominal anchor, more predictable monetary policy can reduce uncertainty and encourage asset managers to underestimate risk (Gambacorta 2009). Monetary policy that cleans up after financial disruptions by lowering interest rates, which has been named the “Greenspan put” because this was the actual and stated policy of the Federal Reserve when Alan Greenspan headed the Fed, can lead to a form of moral hazard in which financial institutions expect monetary policy to help them recover from bad investments (e.g., see Tirole and Farhi 2009, Keister 2010, and Wilson and Wu 2010). The Greenspan put can also increase systemic risk because it is only exercised when many financial firms are in trouble

simultaneously, and so they may be encouraged to pursue similar investment strategies, thereby increasing the correlation of returns.

Micro empirical analysis provides a fair amount of support for the risk-taking channel of monetary policy. Jimenez et al. (2008), using Spanish credit registry data, find that low nominal interest rates, although they decrease the probability of defaults in the short term, lead to riskier lending and more defaults in the medium term. Ioannidou, Ongena, and Peydro (2009) examine a quasi-controlled experiment in Bolivia and find that lower U.S. federal funds rates increase lending to low-quality borrowers that end up with higher rates of default and yet at lower interest rate spreads. Delis and Kouretas (2010), using data from euro-area banks, find a negative relationship between the level of interest rates and the riskiness of bank lending.

Adrian and Shin (2010) discuss and provide evidence for the risk-taking channel of monetary policy using more aggregate data. They find that reductions in the federal funds rate increase term spreads and, hence, the net interest margin for financial intermediaries. The higher net interest margin, which makes financial intermediaries more profitable, is then associated with higher asset growth, which they interpret as a shift in credit supply, and which in turn predicts higher real GDP growth.

Given the support for the risk-taking channel, does this mean that monetary policy should be used to lean against credit bubbles? There are several objections to doing so. First, if monetary policy is used to lean against credit bubbles, it violates the Tinbergen (1939) principle because one instrument is being asked to do two jobs: stabilize the financial sector and stabilize the economy. Because there is another instrument to stabilize the financial sector, that is macroprudential supervision, would it not be better to use macroprudential supervision to deal with financial stability, leaving monetary policy to focus on price and output stability?

This argument suggests that macroprudential policies would be the first line of defense against credit bubbles. This is why we focus so much attention on these policies in this study. However, there are reasons why macroprudential policies may not always be sufficiently effective, providing a possible rationale for using monetary policy to restrain credit bubbles. Prudential supervision is subject to more political pressure than is monetary policy because it affects the bottom line of financial institutions more directly. Thus they will have greater incentives to lobby politicians to discourage macroprudential policies that would rein in credit bubbles. After all, it is during a credit bubble that financial institutions make the most money and so have greater incentives and more resources

to lobby politicians to prevent restrictive macroprudential policies. A case in point has been the recent Basel III accord. Press reports suggest that the capital standards in the accord were substantially weakened because of complaints by the German Landesbanken. Furthermore, implementation of the accord was put off for almost 10 years, and the accord did not contain measures to deal with systemic risk considerations, such as adjusting capital requirements over the credit cycle. The Basel III episode suggests that political considerations may make it extremely difficult to have effective macroprudential supervision.

The possibility that macroprudential policies may not be implemented sufficiently well to constrain credit bubbles, suggests that monetary policy may have to be used instead. But this raises another objection to using monetary policy to lean against credit bubbles: it may not work. We are sympathetic to the view discussed earlier that tightening monetary policy may be ineffective in restraining a particular asset bubble because market participants expect such high rates of return from purchasing bubble-driven assets. On the other hand, the evidence on the risk-taking channel of monetary policy suggests that there is a stronger case that raising interest rates would help restrain lending growth and excessive risk-taking. Furthermore, the theoretical analysis we discussed earlier suggests that if a central bank credibly commits to raise interest rates when a credit bubble looks like it is forming, then expectations in credit markets will work to make this policy more effective. The expectation that rates will go up with increased risk-taking will make this kind of activity less profitable and thus make it less likely that it will occur. Furthermore, expectations that rates will rise with increased risk-taking means that interest rates will not have to be raised as much to have their intended effect.

Nonetheless, using monetary policy to lean against credit bubbles is not a monetary policy strategy that can be taken lightly. Doing so could at times result in a weaker economy than the monetary authorities would desire or inflation that is too low. This suggests that there is a monetary policy trade-off between the pursuit of financial stability and the pursuit of price and output stability. Also as mentioned earlier, giving monetary policy another objective might lead to confusion about the central bank's commitment to price stability, thereby weakening the nominal anchor, with potentially adverse effects on economic outcomes.

Another danger from using monetary policy as a tool to promote financial stability is that it might lead to decisions to tighten monetary policy when it is not needed to constrain credit bubbles. A situation of low interest rates does not necessarily indicate that monetary policy is promoting excessive risk-taking. One lesson from the discussion here is that policymakers, and especially

monetary policymakers, will need tools to assess whether credit bubbles are developing. This provides an additional motivation for our analysis of measures to assess when excessive systemic risk-taking is occurring that we discuss in Section 4 of this study. Such measures can help central banks decide if there is imminent danger of credit bubbles, and whether monetary policy may have to be adjusted, in addition to using macroprudential policies, to restrain them. Monitoring of credit market conditions will become an essential activity of central banks in the future.

This danger of thinking of using monetary policy to promote financial stability is highly relevant today. Some economists, for example Hoenig (2010) and Rajan (2010), have called for the Federal Reserve to raise interest rates because they argue that the current low rates encourage excessive risk-taking. The \$600 billion large-scale asset purchase (LSAP) program the Federal Reserve adopted in November 2010 has led to further criticism of Federal Reserve monetary policy, with many commentators in the media suggesting that this would also encourage excessive risk-taking. However, the U.S. economy is currently not in a situation of rapid credit growth, low-risk premiums, and increasing leverage. Indeed, it still seems to be mired in a deleveraging cycle that is producing serious headwinds for the economy. This does not mean that the situation could not change. However, the Federal Reserve's expansionary monetary policy does not appear to be creating the next credit bubble in the United States and justification for raising interest rates and abandoning LSAPs on these grounds is very weak.<sup>6</sup>

But are there dangers from the current expansionary U.S. monetary policy for other countries, especially open emerging economies? The answer could be yes, because many emerging market economies are currently in a very different environment, with rapid credit growth and rapidly rising real estate prices. The empirical research by Ioannidou, Ongena, and Peydro (2009) is particularly relevant on this point, because it shows that low U.S. interest rates helped promote a lending boom in an open emerging economy, in this case Bolivia. As we discuss in Section 4, we find corroborating evidence for such an effect in Korea because U.S. interest rates are found to be an important driver of the Korean credit cycle.

The current expansionary monetary policy suggests that policies in open emerging market countries could be directed at prevention of a credit bubble. But does this mean that monetary policy tools should be used to do so? In some cases, monetary policy is not an option because the exchange rate is in effect pegged to an anchor currency like the U.S. dollar. However, even in other cases where there is no exchange rate peg, monetary policy may not be effective at

constraining credit booms. Again, our empirical results for Korea in Section 5 shed light on this issue. There we find that Korean interest rates do not appear to be an important driver of the Korean credit cycle, although U.S. interest rates are. In addition, as discussed in Section 3, open emerging market economies face the dilemma that when foreign interest rates are very low, raising domestic interest rates may just encourage capital inflows that may exacerbate the credit boom, rather than restraining it.

The situation thus argues for an even greater focus on macroprudential policies in open emerging market economies. However, not all open emerging market economies are in the same boat right now. For instance, liability measures in Korea do not suggest that Korea has yet exited from a deleveraging cycle. Other emerging market economies look quite different, suggesting that they may have to tighten macroprudential standards to slow credit growth.

### **2.3.5. Interaction between monetary and macroprudential policies**

Another lesson from the financial crisis and this discussion is that monetary policy and financial stability policy are intrinsically linked to each other, and so the dichotomy between monetary and financial stability policy is a false one. As we have seen, monetary policy can affect financial stability, while macroprudential policies to promote financial stability will have an impact on monetary policy. If macroprudential policies are implemented to restrain a credit bubble, they will slow credit growth and the growth of aggregate demand. To counter this slow growth in aggregate demand, monetary policy would be more stimulatory to stabilize inflation and output. Alternatively, if policy rates are kept low to stimulate the economy, there is a greater risk that a credit bubble might occur. This may result in tighter macroprudential policies to ensure that a credit bubble does not get started. Coordination of monetary and macroprudential policies would make it easier to pursue all three objectives of price stability, output stability, and financial stability.

## **3. Balance Sheet Aggregates and Financial Stability**

The traditional approach to financial regulation is focused on the task of ensuring the soundness of individual financial institutions. In the case of banking regulation, this focus has been given specific form with requirements on minimum capital for banks as a proportion of the risk-weighted assets of the bank. However, the traditional approach based on the “loss absorbency” of capital suffers from two shortcomings.

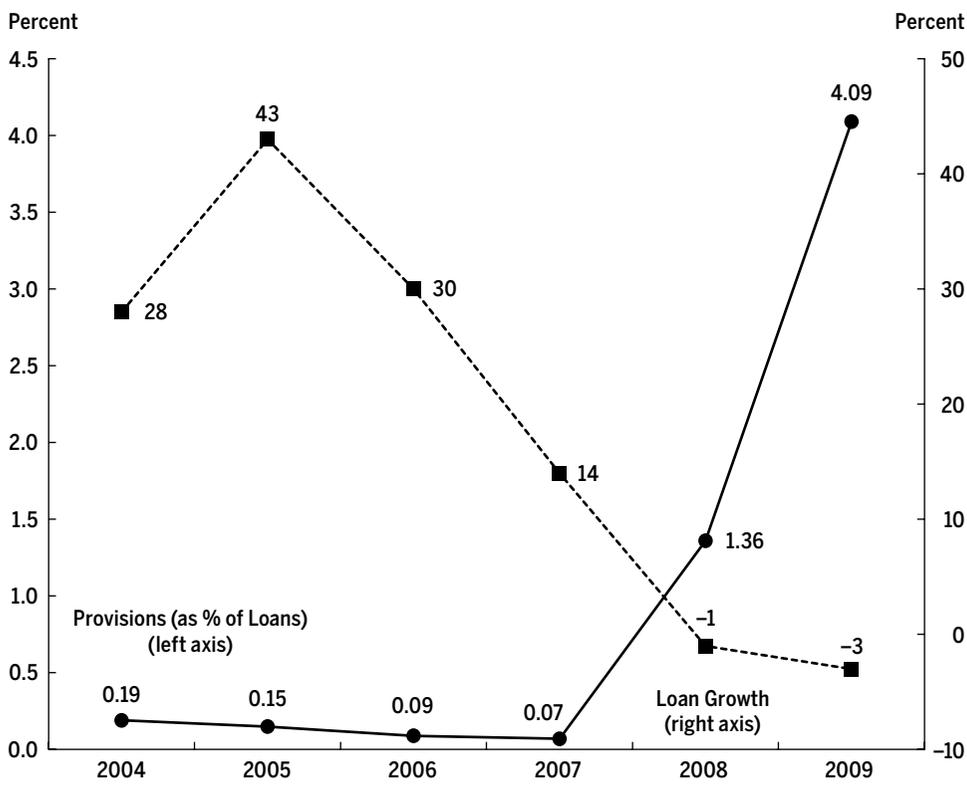
- Loss absorbency does not address directly *excessive asset growth* during booms.

- Preoccupation with loss absorbency diverts attention from the *liabilities side* of banks' balance sheets and vulnerabilities from the reliance on unstable short-term funding and short-term foreign currency debt.

To be effective, a macroprudential policy framework should address excessive asset growth and fragility of bank liabilities. Start first with the problem of excessive asset growth in a lending boom. During a lending boom, high bank profitability and low measured risk tend to bolster bank capital ratios. However, experience has shown repeatedly that rapid loan growth is achieved only at the cost of lowering lending standards. Take the example of Allied Irish Banks (AIB), which is currently very topical given the difficulties in Europe, but there is no shortage of examples from the recent global financial crisis.

Figure 1 plots AIB's loan growth and loan loss provisions from 2004 to 2009. AIB's loan book increased 43 percent in 2005 and 30 percent in 2006, but loan growth came to a sudden halt with the global financial crisis. Provisions

FIGURE 1  
**Loan Growth and Provisions for Allied Irish Banks**



were low and falling throughout the lending boom. However, the underlying vulnerability of the loan book was exposed by the recession, and provisions have jumped above 4 percent.

AIB's capital ratios were highest at the peak of the boom in 2006 and did not issue timely warnings, as seen in Table 1. The severity of the subsequent bust calls into question the philosophy of relying on capital ratios while neglecting asset growth itself.

Would additional measures, such as forward-looking provisioning, have prevented the collapse? Larger capital cushions would undoubtedly have mitigated the shock to the real economy, but the experience of Spain (which had such forward-looking provisioning) suggests that forward-looking provisioning may not be sufficient.

Both Ireland and Spain as members of the euro area were prevented from using autonomous monetary policy to rein in domestic liquidity. However, as discussed in the previous section, the loss of autonomy over monetary policy is a more general theme that affects many more countries than just the euro area. Emerging economies with open capital markets face constraints on monetary policy from carry trade inflows. Faced with low interest rates in advanced economies, raising domestic interest rates may backfire by inducing greater carry trade inflows and looser domestic financial conditions.

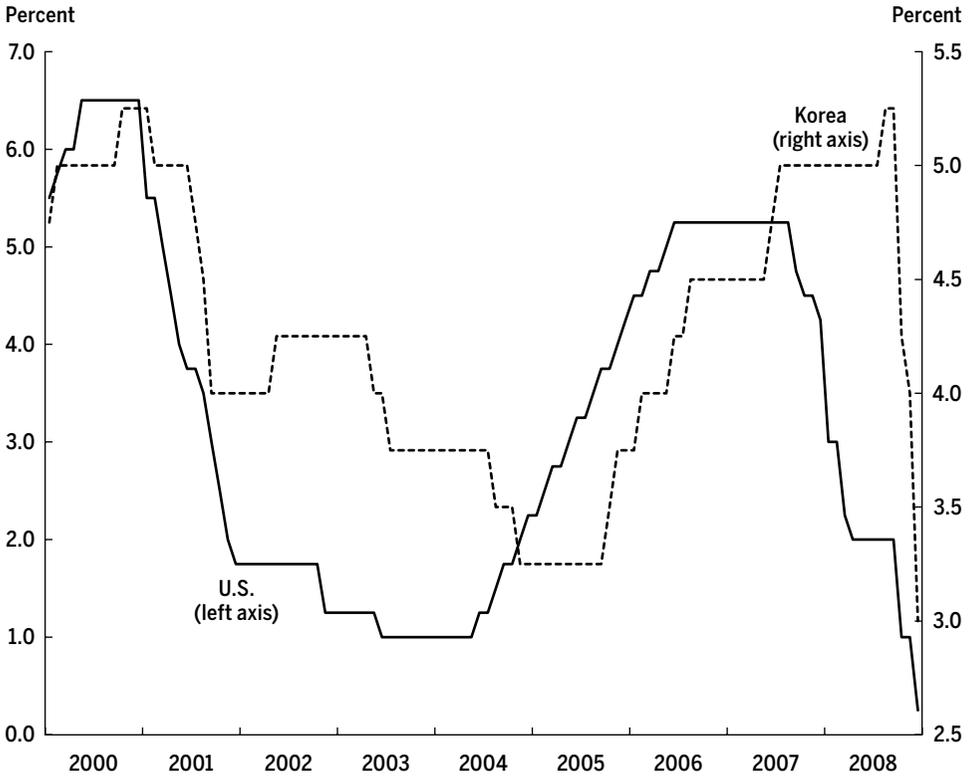
The constraints on monetary policy of an economy with open capital markets can be seen from the findings of a recent empirical study by Kim and Shin (2010). This study illustrates the way in which Korea's monetary policy was affected by the U.S. monetary policy stance even after Korea officially adopted a floating exchange rate policy.

In Figure 2, the U.S. policy rate, scaled by the left axis, is measured by the federal funds target rate, and the Korean policy rate, scaled by the right axis, is measured by the target rate set by the Bank of Korea. The figure clearly shows that the Korean policy rate follows the U.S. policy rate very closely with a few months' lag. The chart is consistent with the following narrative, often encountered in market financial commentary. When U.S. interest rates fall, carry trade capital flows into Korea, loosening domestic liquidity conditions and boosting the economy. This capital inflow puts the Korean monetary authority

TABLE 1  
**Capital Ratios for Allied Irish Banks**

	2004	2005	2006	2007	2008	2009
Tier 1 capital ratio (%)	7.9	7.2	8.2	7.5	7.4	7.2
Total capital ratio (%)	10.7	10.7	11.1	10.1	10.5	10.2

FIGURE 2  
**Policy Interest Rates in the United States and Korea**



**Sources:** Federal Reserve Economic Data at Federal Reserve Bank of St. Louis and Bank of Korea.

**Note:** The U.S. policy rate, measured on the left axis, is the federal funds target rate (from Jan. 2000 to Dec. 2008) and the federal funds target range/upper limit (from Jan. 2009–present). The Korean policy rate, measured on the right axis, is the overnight rate set by the Bank of Korea.

in a dilemma, since raising the policy interest rate may further attract capital inflows. According to Figure 2, the Korean monetary authorities resolved the dilemma by following the stance of U.S. monetary policy and lowering Korean rates.

When faced with excessive asset growth fueled by loose domestic financial conditions other tools may be necessary to lean against the buildup of vulnerabilities. Administrative measures on bank lending such as caps on loan-to-value (LTV) ratios and debt service-to-income (DTI) ratios may be important additional ingredients in the macroprudential policy framework. DTI rules serve as an anchor that ties loan growth to the wage level. The experience of Korea and other Asian economies suggests that DTI rules may be a useful complement to more traditional tools of banking supervision.

## 4. Noncore Liabilities

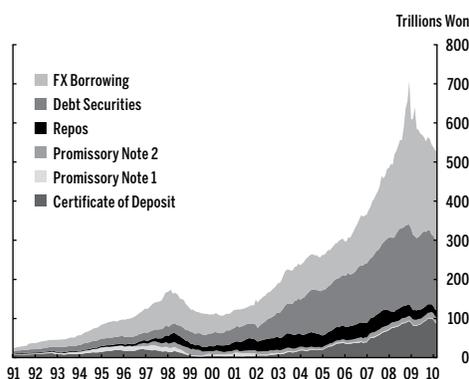
Excessive asset growth is mirrored on the liabilities side of the balance sheet by shifts in the composition of bank funding. The core funding available to the banking sector is retail deposits of household savers, which grow in line with the aggregate wealth of the household sector. In a lending boom when credit is growing very rapidly, the pool of retail deposits is not sufficient to fund the increase in bank credit. Other sources of funding are tapped to fund rapidly increasing bank lending. The state of the financial cycle is thus reflected in the composition of bank liabilities.

In an open emerging economy, rapid increases in the noncore liabilities of the banking system show up as capital inflows through increased foreign exchange-denominated liabilities of the banking system. Figure 3 charts the noncore liabilities of the Korean banking sector, taken from Shin and Shin (2011) with the foreign exchange liabilities shown as the light gray band at the top of the chart. Note that the first peak in noncore liabilities coincides with the 1997 crisis. After a lull in the early 2000s, noncore liabilities increase rapidly in the run-up to the 2008 crisis prompted by the fall of Lehman Brothers.

Figure 4 (also from Shin and Shin 2011) plots the noncore liabilities as a fraction of M2. We see that there has been substantial variation in noncore liabilities, ranging from around 15 percent of M2 to a peak of 50 percent in the Lehman crisis.

Shin and Shin (2011) have argued that the stage of the financial cycle can be gauged by using the information on the liabilities side of the banking sector

FIGURE 3  
**Noncore Liabilities of Korean Banking Sector**



Source: Shin and Shin (2011).

FIGURE 4  
**Noncore Liabilities of Korean Banking Sector as a Proportion of M2**



Source: Shin and Shin (2011).

balance sheet. Although monetary aggregates are also liabilities-side aggregates of the banking sector, they argue that traditional monetary aggregates can be refined and improved upon to serve as an effective set of indicators that underpin effective macroprudential policy. In this regard, they propose an approach to bank liability aggregates based on the distinction between *core* and *noncore* liabilities.

As banks, particularly in emerging market economies, are the most important financial intermediary and often play active roles in propagating the financial cycle, central banks have given special attention to the growth and changing composition of bank liabilities. For instance, traditional monetary aggregates give a window on the size and composition of bank liabilities, and hence can give an insight into the stage of the financial cycle. Key monetary aggregates such as M2 track the size of the short-term deposit base of the domestic banking system, and hence can serve as a proxy for the claims of the household sector on the banking sector, or on the intermediary sector more generally, encompassing money market funds and other short-term claims held by the household sector. In this way, monetary aggregates open a window on the possibility of macroprudential policy that takes cues from the money stock.<sup>7</sup>

As emphasized by Shin and Shin (2011), traditional classifications of monetary aggregates focus on the transactions role of money as a medium of exchange. As such, the criterion is based on how close to cash—how money-like—a particular financial claim is. Demand deposits are the archetypal money measure, since such liabilities of the banking sector can be quickly transferred from one person to another. Saving deposits are less money-like, and hence figure in broader notions of money, such as M2, but even here they fall outside the M2 measure if the depositor faces restrictions on easy access to the funds. In this way, the traditional hierarchy of monetary aggregates goes from cash to very liquid claims, such as demand deposits, going out to more illiquid claims on the banking sector such as term saving deposits, with the criterion being how easily such claims can be used to settle transactions. In the context of the quantity theory equation of money, this traditional monetary aggregate is more appropriate in identifying the extent to which inflation is likely.

For financial stability purposes, however, we need an alternative classification system for liability aggregates which is more directly related to the propagation of financial risks. The movement of this alternative aggregate must have implications for the procyclicality of financial cycles and systemic risk, and this property is not always captured by the ease of settlement of transactions. For instance, overnight repurchase agreements (repos) between financial institutions are claims that are short-term and highly liquid. However, the financial

crisis of 2008 demonstrated through the near-failure of Bear Stearns and the bankruptcy of Lehman Brothers that repos can be highly destabilizing when the collateral requirements on the repos rise through imposition of higher margins charged by creditors, setting off a spiral of distress in the financial system as a whole (Adrian and Shin 2010, Morris and Shin 2009, and Gorton 2008).

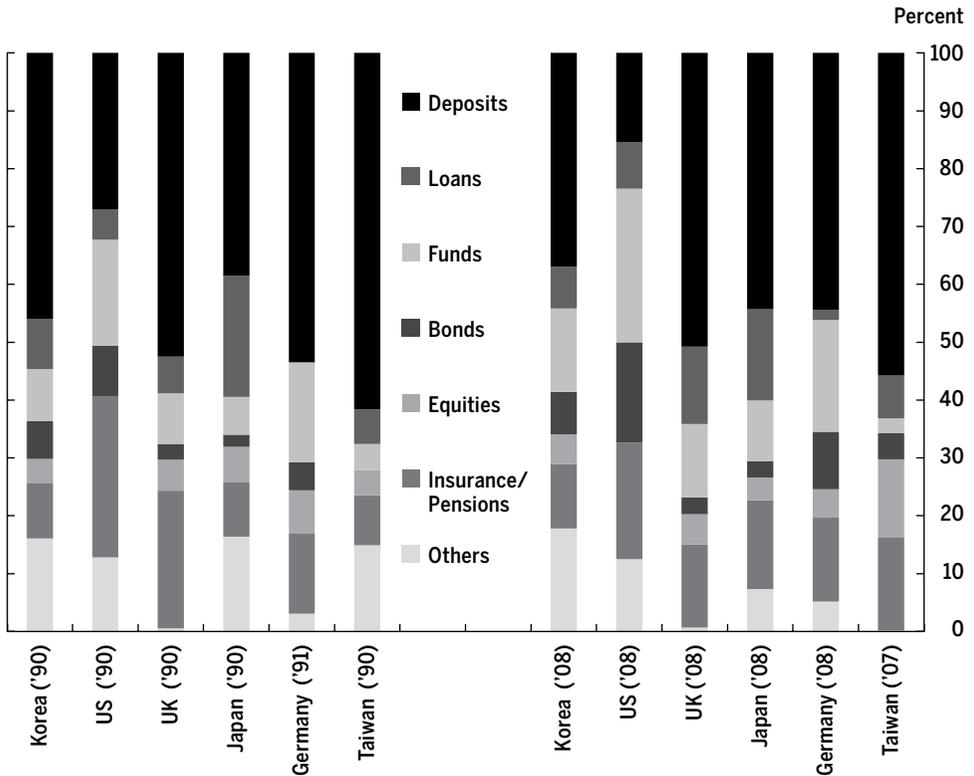
Shin and Shin (2011) emphasize that an important dimension that is not addressed in the traditional hierarchy of monetary aggregates is *who holds the claims*. The same claim can have very different financial stability implications if they are held by different entities. For instance, the cash deposits of a leveraged hedge fund at its prime broker are similar to demand deposits of household savers in the banking system in terms of how liquid the claim is. However, they have very different systemic implications. At the other end of the spectrum in terms of liquidity, a covered bond issued by a bank is an extremely illiquid long-term claim that is not money-like. However, a covered bond held by long-term investors such as a pension fund is similar to retail deposits in that the funding provided to the banking sector is more sticky—that is, stable—than a mortgage-backed security or a collateralized debt obligation (CDO) held by a securities firm.

Hence, from the perspective of financial stability, traditional monetary aggregates such as M2 fail to capture the stage of financial cycles. The relevant distinction is not how cash-like a claim is as embedded in traditional monetary aggregates, but rather the core versus noncore distinction that has to do with whether the claim is held by the ultimate domestic creditors such as the domestic household sector as it is more stable. For instance, repos and other claims held by banks on other banks can be regarded as noncore liabilities, which are more volatile.

If the financial system is organized around the capital market, conventional measures of money represent only a small proportion of the aggregate size of the leveraged sector. Nor is the quantity of deposits the most volatile component of the total aggregate liabilities of the financial system. In such a world, monitoring money aggregates is less useful for macroprudential policy.

The rapid move toward a market-based financial system in recent years has accelerated the trend toward greater reliance on nontraditional, non-deposit-based funding and toward greater use of the interbank loan market, the market for commercial paper, and asset-backed securities. As an illustration, Figure 5 compares the composition of liabilities of financial institutions in major countries. As we can see, the composition of liabilities varies substantially across countries and across time. Note also that the share of deposits

FIGURE 5  
**Composition of Financial Liabilities of Financial Intermediaries  
 in Selected Countries**



Source: Hahm (2010).

differs dramatically across countries, which shows that the usefulness of monetary aggregates is likely to be limited.

For countries with open capital markets, international capital flows play a particularly important role in financial stability, and hence have implications for the design and implementation of macroprudential policies. As argued by Shin and Shin (2011), during a boom when bank assets are growing rapidly, the funding required outstrips the growth of the domestic deposit base. It is often met by capital flows from international banks and is reflected in the growth of short-term foreign currency-denominated liabilities of the domestic banking system. As such, short-term foreign currency-denominated bank liabilities can also be seen as volatile noncore liabilities of the banking sector.

Overall, the core versus noncore properties of bank liabilities provide a better window on the actual exposure of the banking sector to financial risk and its willingness to increase exposure. As such, the relative size of noncore liabilities can be used as a monitoring tool to reflect the stage of the financial cycle and the degree of vulnerability to potential setbacks.

#### 4.1. An Accounting Framework for Core versus Noncore Bank Liability Aggregates

Shin and Shin (2011) considered a basic accounting framework to clarify the discussion of core and noncore liabilities. Suppose that the domestic financial system consists of ultimate borrowers (domestic firms and households) and ultimate creditors (domestic households). The domestic banking sector channels funds from ultimate creditors to ultimate borrowers. There is also a foreign creditor sector that stands ready to supply funds to the domestic banking sector. Shin and Shin (2011) show that the aggregate balance sheet identity can be rewritten in the following way.

$$\begin{aligned} \text{Total Credit} &= \text{Total Equity of Banking Sector} \\ &+ \text{Liabilities to Nonbank Domestic Creditors} \\ &+ \text{Liabilities to Foreign Creditors} \end{aligned}$$

The accounting identity above helps us understand the connections between (1) the procyclicality of the banking system, (2) systemic risk spillovers, and (3) the stock of noncore liabilities of the banking system. The core liabilities of a bank are its liabilities to the nonbank domestic creditors (such as through retail deposits). Then, the noncore liabilities of a bank are either a liability to another bank or a liability to a foreign creditor. This accounting identity nets out the claims and obligations *between* banks and describes only the total claims of ultimate creditors on the ultimate debtors. The accounting identity is helpful in keeping track of the total credit to the private sector, and the total funding that is needed to support that credit. The systemic risks that result from the claims between banks will be addressed below separately.

The accounting identity above nets out the interbank claims, and so is not well-suited to identifying the risks from runs. Instead, the focus is on total credit that flows to the ultimate borrowers in the economy. If the concern is with “excessive” lending by banks (the quotes indicate we’re not giving a formal definition), then the accounting identity serves to draw attention to the role of noncore liabilities in funding the excessive lending.

As seen in Section 3, in a boom when credit is growing very rapidly, the growth of bank balance sheets outstrips the growth in the pool of retail deposits. As a result, the growth of bank lending results in greater lending and borrowing

between the intermediaries themselves, or results in the sucking in of foreign debt. To understand this point better, first, consider the simple case where there is no foreign creditor sector. In a boom when the assets of banks grow rapidly but the pool of retail deposits stays fixed, the proportion of banking sector liabilities in the form of retail deposits will fall. More generally, in the presence of a foreign creditor sector, the increase in bank lending will result in increased cross-lending between banks, but also will result in greater borrowing from abroad. In this way, Shin and Shin (2011) argue that there are close conceptual links between procyclicality, systemic risk spillovers, and the stock of noncore liabilities of the banking system. The stage of the financial cycle is reflected in the composition of the liabilities of the banking sector.

The discussion so far suggests that the definition of core and noncore liabilities should focus on whether the liability is to an ultimate domestic creditor or not. In particular, Shin and Shin (2011) argue that we should distinguish between

- 1 liabilities due to an ultimate domestic creditor,
- 2 liabilities due to an intermediary, and
- 3 liabilities due to a foreign creditor.

The principle would be that (1) is classified as a core liability and (2) and (3) as noncore liabilities. In practice, however, the classification is not so clear-cut. For instance, the claims held by domestic nonfinancial firms share features of both core and noncore liabilities and are not easy to classify. For a small and medium-sized enterprise with an owner-manager, the bank deposits of that firm could be seen as household deposits. However, the firm could be a major firm with access to market finance, that can issue bonds and then deposit the proceeds of the bond sale in the banking system. This is what happened in Japan in the 1980s, for instance. This latter case should not be counted as a core liability, since the creditor firm is acting like an intermediary who borrows in the financial markets to lend to the banks.

For instance, as shown in Table 2, Shin and Shin (2011) suggest a two-way classification that takes account of the traditional concern with the liquidity of monetary aggregates together with the question of whether the liabilities are core or noncore. While acknowledging that some differences of views could lead to alternative classifications, they used the distinction to examine the case of Korea. For Korea, they define noncore liabilities as the sum of (1) bank liabilities to foreign creditors (2) bank debt securities (3) promissory notes (4) repos and (5) certificates of deposit (CDs).<sup>8</sup> This is the measure that was plotted earlier in Figures 3 and 4.

TABLE 2  
**Classification of Core versus Noncore Liabilities**

	Core liability	Intermediate	Noncore liability
Highly liquid	Cash Demand deposits (households)	Demand deposits (nonfinancial corporate)	Repos Call loans Short-term foreign exchange bank debt
Intermediate	Time deposits & CDs (households)	Time deposits & CDs (nonfinancial corporate)	Time deposits & CDs (banks & securities firms)
Illiquid	Trust accounts (households) Covered bonds (households)	Trust accounts (nonfinancial corporate)	Long-term bank debt securities (banks & securities firms) Asset-backed & mortgage-backed securities

Source: Shin and Shin (2011).

Note that this measure of noncore liabilities is an approximation of true noncore liabilities as the classification is still based upon financial instruments rather than actual claimholders. For instance, bank debt securities such as debentures and CDs can be held by households, and those must be excluded from the noncore liabilities. In Section 4.3 we conduct a more accurate analysis using information on claimholders of bank liabilities.

## 4.2. Empirical Properties of Bank Liability Aggregates: The Case of Korea

Based on our accounting framework, we examine the empirical properties of core and noncore bank liability aggregates using Korean data. We construct more detailed measures of core and noncore liabilities by using information in the flow of funds data. While the measures used in Section 3 were suggestive, they were not rigorously formulated since we did not use the information about who holds the claim. In Korea, the flow of funds data report the financial flows across various sectors of the economy. Since this contains information about both assets and liabilities of each sector classified by detailed instruments, we can infer the information about who holds the claim. We obtained Korea's flow of funds data from the Bank of Korea (<http://ecos.bok.or.kr/>).

### 4.2.1. Preliminary data analysis

For our study, we focus on the liabilities outstanding (i.e., stock measures) of depository financial corporations. The depository financial corporations include domestically licensed banks, specialized banks, foreign bank branches, bank

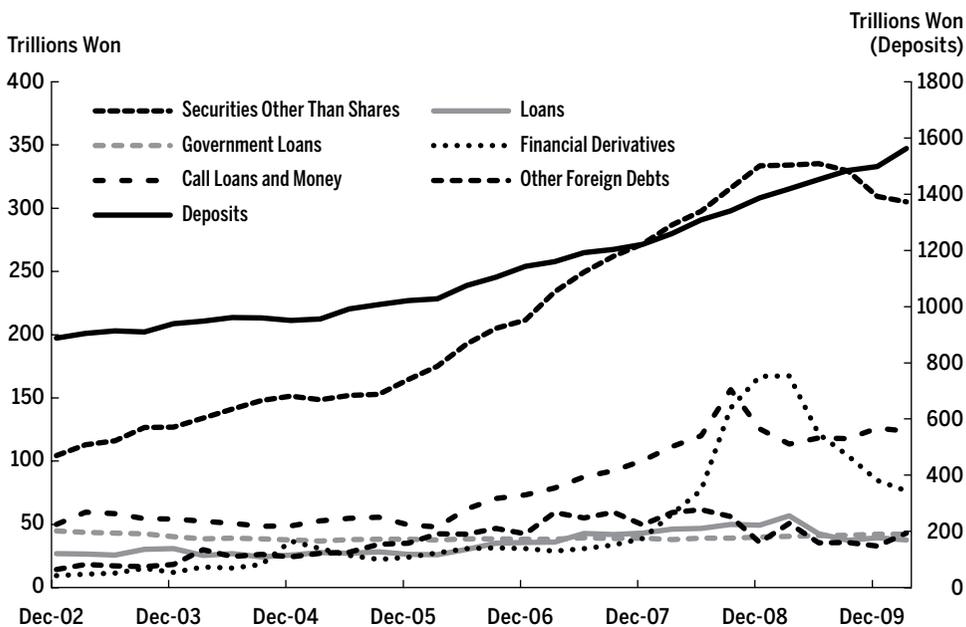
holding companies, and nonbank depository institutions such as bank trust accounts and credit unions. Hereafter, we simply refer to the depository financial corporations as banks. The data are quarterly (end of quarter) from 2002:Q4 to 2010:Q1.<sup>9</sup> Given our purpose of constructing core and noncore bank liabilities, we exclude equities, foreign direct investment, Bank of Korea (BOK) loans, beneficiary certificates, and miscellaneous items from the total liabilities of banks.

Our bank liabilities data are classified by two dimensions: by instruments and by claimholders. First, in terms of instruments, bank liabilities are classified into seven broad categories: deposits; securities other than shares; loans; government loans; call loans and call money; financial derivatives; and other foreign debts. Other foreign debts are mainly foreign borrowings of domestic banks and foreign bank branches located in Korea. Deposits are further classified into six subcategories: transferable and short-term deposits; long-term savings deposits; cover bills; negotiable CDs; repurchase agreements RPs; and money in trust. Securities other than shares (hereafter securities) are further classified into three categories: financial debentures; commercial paper (CP); and external securities. Loans are further classified into four categories (excluding the BOK loans): depository corporation loans; insurance company loans; loans by credit-specialized financial institutions; and loans by public financial institutions. Second, the bank liabilities are classified into five categories depending upon who holds the claim: other financial corporations; nonfinancial corporations; households; general government; and the foreign sector.

Figure 6 shows how bank liabilities classified by instrument evolved over time. In terms of size, deposits are the largest item, constituting over 70 percent of total bank liabilities. The growth of most instruments other than deposits stagnated after the outbreak of global financial crisis in 2008. Note that three instruments in particular—securities, financial derivatives, and foreign debts—exhibit a much more pronounced rise and fall around the crisis.

Now we turn to the classification of bank liabilities by claimholder—namely by who holds the claim. The evolution over time of bank liabilities by claimholders in Korea is shown in Figure 7. Recall that in the previous section, we defined liabilities held by households or nonfinancial corporations as core liabilities and those held by financial corporations or by the foreign sector as noncore liabilities. We see that both the liabilities held by financial corporations and liabilities held by the foreign sector increased rapidly before the crisis and then collapsed afterward. This is typical of the dynamics of noncore liabilities around financial crises. While foreigners had reduced their holdings at the end of 2008 and maintained their positions subsequently, financial institutions reduced their holdings most dramatically after the first quarter of 2009. In contrast, the liabilities

FIGURE 6  
**Bank Liabilities by Instrument**



Note: Currency and deposits are measured by the right axis. Others are measured by the left axis.

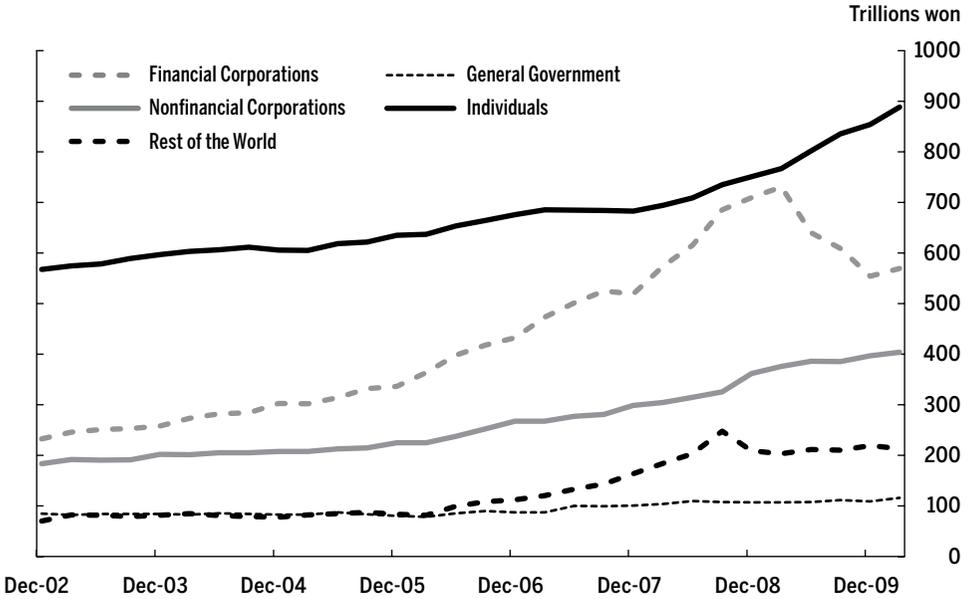
Source: Flow of funds data, Bank of Korea.

held by households and by nonfinancial corporations increased steadily without much fluctuation around the crisis, which is a typical feature of core liabilities.<sup>10</sup>

During the boom, as bank lending increases, the liabilities also increase. Since core liabilities are quite stable, if total liabilities increase rapidly, then the increase must be mainly through the buildup of noncore liabilities, as shown above. Hence the financial cycle shows up in the composition of liabilities; the share of noncore liabilities increases rapidly before the crisis, only to collapse with the crisis.

Figure 8 exhibits the ratio of noncore to core bank liabilities. It is defined as the ratio of noncore liabilities held by financial corporations and the foreign sector to core liabilities held by households and nonfinancial corporations. The figure also illustrates the quarterly average exchange rate of the Korean won against the U.S. dollar. As foreign borrowings are a major source of noncore liabilities, changes in the noncore-to-core ratio are expected to be closely associated with the movement of the exchange rate as discussed in the previous section. Indeed, the figure shows that the peak of the noncore-to-core ratio was followed by a sudden plummet of the exchange rate.

FIGURE 7  
**Bank Liabilities by Claimholders**



Source: Flow of funds data, Bank of Korea.

#### 4.2.2. Procyclicality of bank liability aggregates

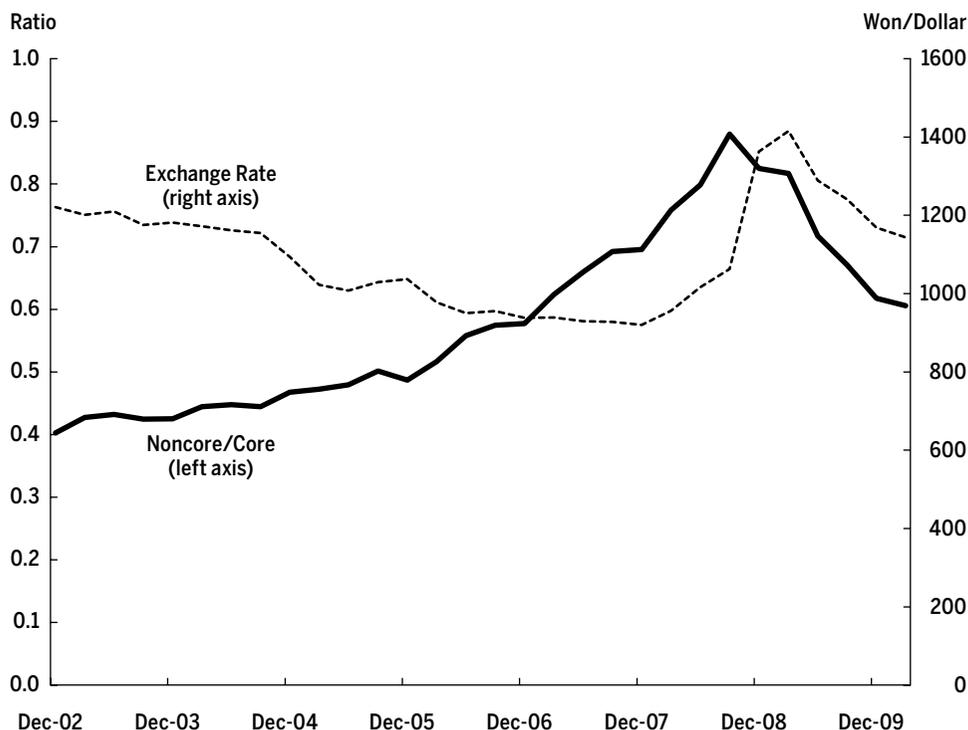
As discussed in Section 3, mitigating procyclicality is a key challenge for macroprudential policies. However, for policymakers to apply any macroprudential tools, it is necessary to monitor and identify the relevant stage of financial cycles. We hypothesize that the degree of financial procyclicality is amplified by the expansion and shrinkage of noncore liabilities. During the boom, when bank lending increases, liabilities also increase but all liabilities do not increase evenly. Namely noncore liabilities will be more procyclical than core liabilities.

To confirm this claim and estimate the responsiveness of bank liabilities over the business cycle, we rely on the simplest possible measure: the elasticity of the liability with respect to real GDP. The elasticity of each liability  $i$  with respect to real GDP is calculated through regressions of the following form:

$$\ln(L_{it}) = \beta_0 + \beta_1 \ln(y_{t+\tau}), \tau = -1, 0, 1. \tag{1}$$

Here,  $L_{it}$  is bank liability  $i$  at date  $t$ , and  $i$  denotes core and noncore liabilities, respectively;  $y_{t+\tau}$  is real GDP at date  $t + \tau$ , where  $\tau$  takes values  $\tau = -1, 0, 1$ . In the regression, the estimated value of  $\beta_1$  represents the elasticity of liability  $i$

FIGURE 8  
**The Noncore to Core Ratio and the Won/Dollar Exchange Rate**



Source: Bank of Korea.

Note: The noncore to core ratio is defined as the ratio of noncore liabilities held by financial corporations and the foreign sector to core liabilities held by households and nonfinancial corporations. The exchange rate is the quarterly average of the Korean won/U.S. dollar exchange rate.

with respect to current real GDP ( $\tau = 0$ ), lagged real GDP ( $\tau = -1$ ), and lead real GDP ( $\tau = 1$ ).<sup>11</sup>

In Table 3 we present the estimated elasticity with respect to real GDP of core and noncore bank liabilities as classified by claimholders. As can be seen in the table, noncore liabilities provided by financial institutions and the foreign sector are much more procyclical than core liabilities held by households and nonfinancial firms. The real GDP elasticity of contemporaneous noncore liabilities is estimated to be 4.26 while the real GDP elasticity of core liabilities is relatively low at 1.74.<sup>12</sup> The estimation results suggest that bank liabilities can be classified as core versus and noncore depending upon who holds the claim, and this classification well captures the differential degree of respective liabilities' contribution to financial procyclicality.

**TABLE 3**  
**Real GDP Elasticity of Bank Liabilities**

	Real GDP Elasticity (02Q4-10Q1)		
	-1	0	1
Core liability	1.75*** (11.25)	1.74*** (11.88)	1.68*** (11.51)
Noncore liability	4.36*** (17.75)	4.26*** (14.99)	4.28*** (12.62)

**Note:** T-values are reported in parentheses and the statistical significance at 10%, 5%, and 1% levels is denoted by \*, \*\*, and \*\*\*, respectively.

**4.2.3. Responsiveness of bank liabilities to the policy interest rate**

Given the positive results, we proceed to estimate the responsiveness of bank liabilities with respect to the stance of monetary policy as measured by Korea’s short-term policy interest rate, and investigate whether core and noncore liabilities show a differential responsiveness. For instance, a permissive monetary policy environment and low interest rates may lead to amplification of financial cycles through expansion of short-term market-based borrowings. Furthermore, from the perspective of financial stability policy, for central banks to use monetary policy to lean against the excessive buildup of bank liabilities, a necessary condition is that bank liabilities respond to the change in the policy interest rate.

In this section, to examine this possibility, we estimate a semi-elasticity of bank liabilities with respect to the policy interest rate by modifying the equation as follows:

$$\ln(L_{it}) = \beta_0 + \beta_1 \ln(y_t) + \beta_2 i_{t+\tau}, \tau = -1, 0, 1. \tag{2}$$

Here,  $i_{t+\tau}$  is the domestic policy interest rate at time  $t + \tau$ . In the regression the estimated value of  $\beta_2$  represents a semi-elasticity of liability  $i$  with respect to the policy rate after controlling for the impact of real GDP.

Table 4 reports estimates of the semi-elasticity for the domestic policy interest rate of core and noncore bank liabilities. Interestingly, the semi-elasticity of

**TABLE 4**  
**Domestic Policy Interest Rate Semi-elasticity of Bank Liabilities**

	Interest Rate Elasticity (02Q4-10Q1)		
	-1	0	1
Core liability	-3.88*** (-3.29)	-5.13*** (-6.08)	-5.55*** (-8.83)
Noncore liability	4.25 (1.64)	-0.92 (-0.36)	-5.99*** (-2.72)

**Note:** T-values are reported in parentheses and the statistical significance at 10%, 5%, and 1% levels is denoted by \*, \*\*, and \*\*\*, respectively.

core liabilities with respect to the contemporaneous policy rate is  $-5.13$ , which is quite high and very significant, while the semi-elasticity of contemporaneous noncore liabilities is not statistically different from zero.<sup>13</sup> While our regression results do not demonstrate any causal relationship, if we take the policy rate to be exogenous, the results suggest that domestic monetary policy may not be an effective macroprudential tool to lean against the excessive growth of noncore liabilities, while it may be able to contain core liabilities. This finding is consistent with the discussion in Section 2 about the constraints on monetary policy placed on the central bank of a country with open capital accounts.

To explore the possibility of domestic bank liabilities being responsive to global liquidity shocks, we now replace the domestic policy rate with the foreign policy rate. For the foreign policy rate, we use the U.S. federal funds rate set by the Federal Reserve. Table 5 reports estimates of the semi-elasticity with respect to the U.S. policy rate of core and noncore bank liabilities. Since U.S. policy rates are exogenous to the Korean economy, these estimates are more likely to provide information about causality, and they are quite different from those when we use the domestic policy rate. The semi-elasticity of noncore bank liabilities with respect to the U.S. policy rate is negative and statistically significant. The semi-elasticity of noncore liabilities with respect to the current U.S. policy rate is  $-3.49$  while the semi-elasticity of the core liabilities is  $-2.97$ .

Overall, we find that Korean banks' noncore liabilities are much more negatively related to the U.S. policy rate than to the domestic policy rate. One plausible interpretation is that, for emerging economies such as Korea, banks' noncore liabilities tend to build up more vigorously when global liquidity conditions are lax. For instance, when foreign interest rates are low, financial intermediaries are more engaged in the carry trade of borrowing through the low foreign interest rate instruments and investing in higher domestic interest rate instruments. This carry trade leads to more foreign borrowing and thus larger bank liabilities held by the foreign sector.

TABLE 5  
**U.S. Policy Interest Rate Semi-elasticity of Bank Liabilities**

	US Fed Fund Rate Elasticity (02Q4-10Q1)		
	-1	0	1
Core liability	-3.14*** (-8.30)	-2.97*** (-8.09)	-2.55*** (-5.99)
Noncore liability	-2.74** (-2.12)	-3.49*** (-3.08)	-4.43*** (-4.55)

Note: T-values are reported in parentheses and the statistical significance at 10%, 5%, and 1% levels is denoted by \*, \*\*, and \*\*\*, respectively.

The intermediaries with more funding from foreign sources are capable of lending to other intermediaries as well as to ultimate borrowers. Hence, bank liabilities held by other financial corporations also increase. Since these two noncore liabilities, held by the foreign sector and by financial corporations, are the major source of rapid accumulation of bank liabilities, it is not surprising to see that the foreign interest rate plays such an important role in emerging market countries such as Korea. If the negative relationship between bank liabilities and the U.S. policy rate can be interpreted to reflect a causal relationship, our results suggest that accumulation of Korean noncore bank liabilities is much more affected by the U.S. policy rate than the domestic policy rate. This implies that there is not much scope for domestic monetary policy to play in controlling bank liabilities for prudential purposes.

In Section 3 we referred to a recent empirical study by Kim and Shin (2010) that shows how Korean monetary policy is dependent on U.S. monetary policy even after Korea officially adopted a floating exchange rate policy. This fact is clearly reflected in Figure 2, where we observed that the Korean policy rate follows the U.S. policy rate very closely with a few months lag.

Our finding in Table 4 that the lead of the domestic policy rate in Korea is more negatively related to bank noncore liabilities than either contemporaneous or lagged rates can also be understood by the fact that Korea's domestic monetary policy follows the U.S. policy rate with a lag. Since future domestic monetary policy is more or less similar to current U.S. monetary policy, if bank liabilities respond to current U.S. monetary policy, the semi-elasticity of bank liabilities will be more correlated to the lead of the domestic policy interest rate.

Overall, our results confirm that the accumulation of noncore bank liabilities in Korea is more affected by the U.S. policy rate than by the domestic Korean policy rate. This finding strongly suggests that monetary policy has cross-border spillover effects and that the stages of the domestic financial cycle and thus the buildup of financial risks cannot effectively be addressed solely by monitoring domestic monetary policies in emerging economies.

## **5. Macroprudential Policy Frameworks**

Our finding in the previous section suggests that central banks in open emerging economies, even when they have a flexible exchange rate regime, may want tools beyond the traditional policy interest rate to respond preemptively to the buildup of financial risks. A macroprudential policy framework is necessary to complement monetary policy in this respect. This framework should encompass a system of early warning indicators that signal increased vulnerabilities to financial stability and a set of associated policy tools that can address the

increased vulnerabilities at an early stage. The surveys by the Bank of England (2009) and Bank for International Settlements (BIS 2010) give useful taxonomies. Hanson, Kashyap, and Stein (2011) provide further empirical context and support.

### 5.1. Macroprudential Indicators

Excessive asset growth of the banking sector is at the core of increased financial sector vulnerabilities. The challenge for policymakers is knowing when asset growth is “excessive” and finding policy tools that can address and counter the excessive asset growth in a timely and effective manner.

Simple rules of thumb such as the ratio of total credit to GDP may be useful, as demonstrated by Borio and Lowe (2004). This ratio has figured prominently in the discussion of the countercyclical capital buffer under the Basel III framework, which proposes a buffer focused on the credit to GDP ratio as the measure of procyclicality that would trigger increased capital requirements on banks (Basel Committee on Banking Supervision 2009). The idea that the required capital buffer would vary with the financial cycle had been in existence for some time and had been argued in the Geneva Report on bank regulation (Brunnermeier et al. 2009), but the Basel Committee’s approach went one step further in selecting the credit to GDP ratio as the appropriate cyclical indicator.

It is natural that credit growth should be scaled by normalizing it relative to some underlying fundamental measure. Normalizing credit growth by GDP has many advantages, since GDP is an aggregate flow measure of economic activity that reflects current economic conditions. However, more controversial is the choice of the measure of credit growth itself, especially if such a choice entails decisions that are made on a discretionary basis by the relevant authority that is in charge of banking sector oversight.

Further research will be necessary to determine to what extent the simple credit to GDP ratio can serve as a finely calibrated signal that can support the use of automatic tightening of bank capital standards, as envisaged in the Basel III framework.

Edge and Meisenzahl (2011) argue that using the credit to GDP ratio in real time as a guide to policy may be fraught with difficulties due to measurement problems. They identify two types of measurement issues—the first dealing with the underlying components of GDP that may subsequently be revised, and the second dealing with the difficulties of estimating the gap between the current realization and the trend. Since the trend itself must be measured in real time, the gap measure turns out to be highly sensitive to measurement problems.

It would be uncontroversial to say that the less unanimity there is in the interpretation of the signal, the greater will be the political economy challenges faced by policymakers in acting decisively and in a timely fashion to head off financial booms that build up vulnerabilities. Therefore, the use of the credit to GDP ratio in real-time policy can be expected to present formidable challenges.

Given the potential difficulties of using the simple credit to GDP ratio as the appropriate signal of the stage of the financial cycle, alternatives may be preferable. Following from our discussion in previous sections, a more promising set of measures of the financial cycle are those derived from the liabilities side of banking-sector balance sheets. In particular, the growth of various components of noncore to core liabilities of the banking sector may be especially useful in gauging the stage of the financial cycle.

Although balance sheet aggregates are forms of monetary aggregates and liability measures of the banking sector, there are important distinctions with the traditional approach to monetary analysis. Traditional monetary aggregates have been examined by monetary economists for their effect on future inflation through the quantity theory of money. The recent lengthy study by the ECB (Papademos and Stark 2010) is a comprehensive survey of the traditional approach to the study of monetary aggregates.

However, the macroprudential role of monetary aggregates depends on the behavioral and stability properties of such aggregates. As we have seen, the legal form of the claim may not coincide with the behavioral properties of the claim. For instance, we have seen that household deposits have empirical traits that differ from deposits held by other types of owners, even though the legal form of the claims is identical.

In particular, we have shown that a two-dimensional classification of bank liabilities in terms of (1) the holder of the claim and (2) the type of claim provides a much richer texture to the overall picture of banking-sector fluctuations. Further refinements of this two-way classification and further explorations of the predictive properties of the noncore liability aggregates for financial spreads and exchange rate changes may shed light on the optimal set of indicators.

Measures of cross-exposures across intermediaries (such as the conditional value at risk (CoVaR) measure due to Adrian and Brunnermeier 2009) may be useful complementary indicators, bearing in mind that cross-exposures themselves are procyclical, and track noncore liabilities. The study of cross-exposures across financial institutions is still in its infancy, but there has been a growth in interest on this issue, especially from researchers in central banks from those advanced economies that were on the front line of the financial distress during the recent financial crisis.

Among advanced economy central banks, the Bank of England has been one of the most active in research into the systemic risk generated by cross-exposures between financial intermediaries. In November 2009, the Bank of England published a discussion paper on the role of macroprudential policy (Bank of England 2009). The report reflects the issues and policy concerns that reflect the country's experience with the failure of Northern Rock bank and the subsequent intervention and resolution in the U.K. banking system. Although there is some gap between the concerns of an advanced economy and those of an emerging economy, many of the lessons on excessive asset growth and the growth of volatile market-based liabilities are common themes.

The Bank for International Settlements, especially its Committee for the Global Financial System (CGFS) has also conducted extensive study of the role of macroprudential policy. The CGFS published a discussion paper in May 2010 that gives an overview of the instruments and frameworks of macroprudential policies.

## 5.2. Macroprudential Tools

Macroprudential policy tools to mitigate vulnerabilities ideally would be designed to fit closely with the early warning indicators and the conceptual underpinnings for the relevant economic externalities. We proceed to outline the variety of tools that have been used or proposed, but we do not attempt to construct an encompassing framework that can gauge the trade-offs in a systematic way. A promising approach in providing a more systematic framework is given by Goodhart et al. (2012) who examine a micro-founded general equilibrium model with default.

Examples of macroprudential policy tools include the following:

### 5.2.1. *Loan-to-value and debt service-to-income caps*

When monetary policy is constrained, administrative rules that limit bank lending such as caps on LTV and DTI ratios may be a useful complement to traditional tools in banking supervision. Although LTV ratios are more familiar to financial regulators, the use of DTI caps is less widespread. However, for Korea and some Asian economies such as Hong Kong, the use of DTI ratios has been an important supplementary tool for macroprudential purposes. In the case of Hong Kong, the use of DTI rules takes on added significance because Hong Kong has a currency board based on the U.S. dollar, and hence does not have an autonomous monetary policy. As such, monetary policy shocks are transmitted directly to Hong Kong. The flexible use of LTV and DTI rules are key elements of the macroprudential toolkit.

### 5.2.2. *Capital requirements that adjust over the cycle*

Research has shown that the rise in asset values that accompanies a boom results in higher capital buffers at financial institutions, supporting further lending in the context of an unchanging benchmark for capital adequacy; in the bust, the value of this capital can drop precipitously, possibly even necessitating a cut in lending.<sup>14</sup> Capital requirements as currently constituted therefore can amplify the credit cycle, making a boom and bust more likely. Capital requirements that, instead, lean against the credit or business cycle, that rise with credit growth and fall with credit contraction, can thus play an important role in promoting financial stability and reducing systemic risk. Research on how to design such cyclical capital requirements needs to be a high priority for both academia and central banks.

We have already commented on some of the measurement issues associated with implementing countercyclical capital buffers. The framework for countercyclical capital buffers as envisaged in the Basel III framework has focused on the ratio of credit growth to GDP. There are two preconditions for successful implementation of such countercyclical measures. First, the quantitative signals that trigger actions should accurately reflect the features (such as excessive asset growth) that are being targeted by policymakers. Second, the implementation procedure should work better if it allows policymakers to move decisively and in a timely manner to head off the buildup of vulnerabilities. We have already commented on the first point, so here we focus on the second point.

If triggering countercyclical capital requirements is predicated on the exercise of discretion and judgment by the authorities, the political economy problems associated with the exercise of such discretion put the authorities under pressure from market participants and other interested parties. The political economy problem is similar to that of central banks that tighten monetary policy to head off property booms. Since there are private-sector participants who are the beneficiaries of the short-term boom, they can be expected to exert pressure against policymakers. The political economy problems will be more acute if there are controversies on the correctness or accuracy of the quantitative indicators used by the authorities.

Thus, the two issues mentioned above—the accuracy of the quantitative indicators and the political economy problems—are in fact very closely related. One of the disadvantages of the countercyclical capital buffer is that it relies on triggering additional capital requirements in response to quantitative signals. Although such quantitative measures are relatively straightforward in simple theoretical models, there may be considerable challenges to smooth and decisive implementation in practice.

### **5.2.3. Forward-looking provisioning**

Forward-looking provisioning operates in a similar manner to the countercyclical capital requirements discussed earlier, although there are also important differences. The Bank of Spain has pioneered the use of forward-looking (or dynamic) provisioning. A good early reference to the specific rules and procedures as well as the empirical studies that underpin the specific quantitative features of the scheme is given in Fernandez, Pages and Saurina (2000). A more recent update is provided by Saurina (2009) in a World Bank note.

Forward-looking provisioning requires building up a loss-absorbing buffer in the form of provisions at the time of making the loan. In this sense, there is a similarity with the countercyclical capital buffer. However, the main difference between forward-looking provisioning and the countercyclical capital requirement is the accounting treatment. In the case of forward-looking provisioning, the provision passes through the income statement as reduced profit, and hence affects the capital of the bank. By influencing the capital of the bank it is likely to influence bank management that targets a specific return on equity figure.

Although forward-looking provisioning has been important in cushioning the Spanish banking system from the initial stages of the global financial crisis, there is a question mark on whether building up loss-absorbing buffers, by itself, can be sufficient to cushion the economy from the bursting of a major property bubble, as Spain is discovering its cost during the ongoing European financial crisis.

### **5.2.4. Leverage caps and loan-to-deposit caps**

Caps on bank leverage may be used as a way to limit asset growth by tying total assets to bank equity.<sup>15</sup> The rationale for a leverage cap rests on the role of bank capital as a constraint on new lending rather than the Basel approach of bank capital as a buffer against loss.

In June 2010, Korean regulatory authorities introduced a new set of macroprudential regulations to mitigate the excessive volatility of foreign capital flows. Specific policy measures included explicit ceilings on foreign exchange derivative positions of banks, regulations on foreign currency bank loans, and prudential regulations for improving foreign exchange risk management of financial institutions. These policy measures are to limit short-term foreign currency denominated borrowings of banks. Along with these regulations, short-term external debts of Korean banks have remained at approximately US\$200 billion level since early 2009, which is much less than the US\$250 billion at the peak in

2008. Note that foreign borrowing is a key noncore funding source for Korean banks, and reining in foreign borrowing has also contributed to the deleveraging of bank noncore liabilities.

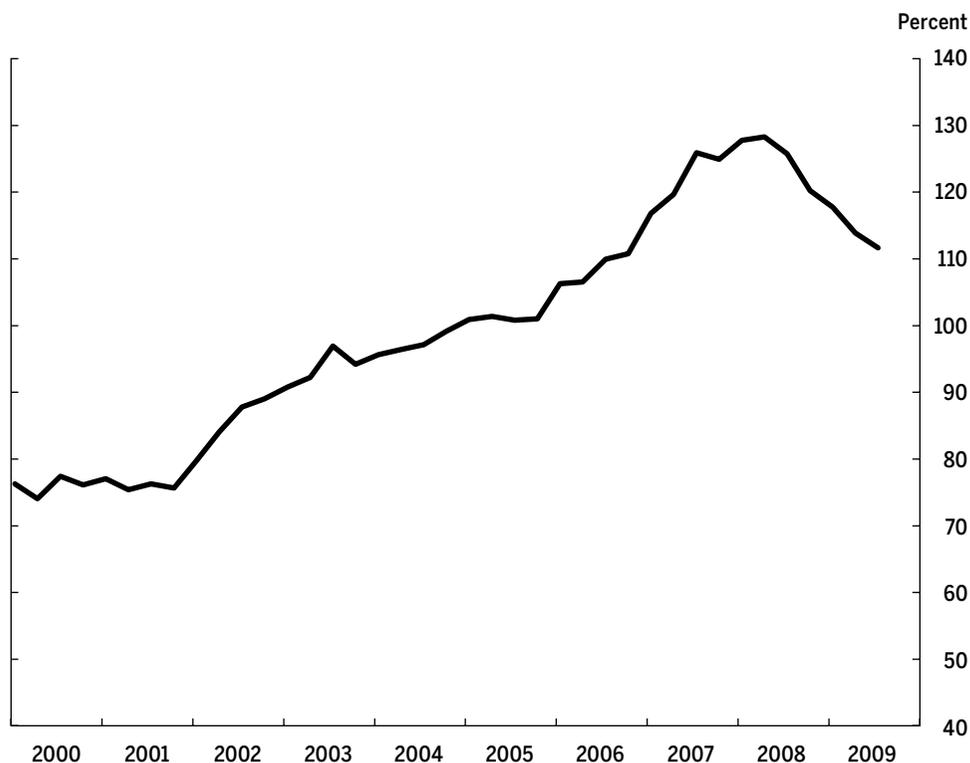
Korea's leverage cap on bank foreign exchange derivative positions introduced in June 2010 is aimed at limiting the practice of banks hedging forward dollar positions with carry trade positions in Korean won funded with short-term U.S. dollar debt. The leverage cap has moderated carry trade capital inflows into Korea, but the primary rationale of the leverage cap is as a macroprudential measure aimed at financial stability rather than as a capital control tool.

Another related measure that is in place in Korea is the cap on the ratio of loans to deposits. The Korean supervisory authority announced in December 2009 that it will reintroduce the loan-to-deposit ratio regulation which had been scrapped in November 1998 as a part of the government deregulation efforts. According to the new regulation, Korean won-denominated loans must be less than 100 percent of Korean won-denominated deposits, with negotiable CDs not being counted as deposits in computing the ratio. The 100 percent ceiling must be met by Korean banks by the end of 2013. As can be seen in Figure 9, the loan-to-value ratio of Korean banks continued to fall after this announcement as banks shifted their funding structure away from wholesale funding through CDs and bank debentures towards taking deposits such as time deposits.

However, the rule does not apply to the Korean branches of foreign banks. By capping the growth of lending to the same pace as the growth of deposit funding, the Korean loan to deposit cap has two effects. First, it restrains excessive asset growth by tying loan growth to the growth in deposit funding. Second, it has a direct effect on the growth of noncore liabilities, and hence on the buildup of vulnerabilities that come from the liabilities side of the balance sheet. In this respect, there are similarities between the loan-to-deposit cap and the levy on noncore liabilities, to be discussed later.

Indeed, at the theoretical level the loan-to-deposit cap can be seen as a special case of a noncore liabilities levy where the tax rate is kinked, changing from zero to infinity at the threshold point. However, the comparison with the noncore liabilities levy is less easy because the loan-to-deposit cap applies only to loans, not total assets or total exposures (including off-balance-sheet exposures). Also, the fact that the loan-to-deposit cap does not apply to the Korean branches of foreign banks means that there are limits on what might be achieved in reining in excesses during booms.

FIGURE 9  
**Loan-to-Deposit Ratio of Korean Banks**



Source: Korea Financial Supervisory Service.

### 5.2.5. Levy on noncore liabilities

The stock of noncore liabilities reflects the stage of the financial cycle and the extent of the underpricing of risk in the financial system. A levy or tax on noncore liabilities can serve to mitigate pricing distortions that lead to excessive asset growth. The Financial Stability Contribution (FSC) recommended by the IMF in its report on bank levies<sup>16</sup> to the G-20 leaders is an example of such a corrective tax. Korea announced its Macroprudential Levy in December 2010, and began operation in August 2011. This levy is applied to the foreign exchange-denominated liabilities of the banking sector, with the rate initially set at 20 basis points for short-term foreign exchange-denominated liabilities.

A levy on noncore liabilities has many desirable features. First, the base of the levy itself varies over the financial cycle. The levy bites hardest during the boom when noncore liabilities are large, so that the levy has the properties of an automatic stabilizer even if the tax rate itself remains constant over

time. Given the well-known political economy challenges to the exercise of discretion by regulators, the automatic stabilizer feature of the levy has important advantages.

Second, a levy on noncore liabilities addresses financial vulnerability while leaving unaffected the essential functioning of the financial system in channeling core funding from savers to borrowers. By targeting noncore liabilities only, the levy addresses externalities associated with excessive asset growth and systemic risk arising from interconnectedness of banks.

Third, the targeting of noncore liabilities addresses the vulnerability of open emerging economies to sudden reversals in capital flows due to deleveraging by banks. Indeed, for emerging economies, a levy on noncore liabilities could be aimed more narrowly at the foreign currency-denominated liabilities only. A levy on the foreign exchange liabilities of the banking sector will have an impact on foreign currency flows, but such a policy is best characterized as a macroprudential tool aimed at financial stability, rather than a tool for capital controls or a tool to manage the exchange rate.

The revenue raised by the levy is a secondary issue. The main purpose of the levy is to align incentives. A good analogy is with the congestion charge used to control car traffic into central London. Under this charge, car drivers pay a daily fee of £8 to drive into central London. The main purpose of the charge is to discourage drivers from bringing their cars into central London, thereby alleviating the externalities associated with traffic congestion. In the same way, the noncore liabilities bank levy can be seen primarily as a tool for aligning the incentives of banks closer to the social optimum. The revenue raised by the levy would also be of benefit (perhaps for a market stabilization fund) but the revenue is a secondary issue.

### **5.2.6. Unremunerated reserve requirements**

A traditional form of capital controls has been unremunerated reserve requirements, where the central bank requires importers of capital to deposit a certain fraction of these inflows at the central bank. The deposit does not pay interest, and so the requirement constitutes a tax on the capital inflow. In Korea, a reserve requirement for deposits is already in place, but there is no similar reserve requirement for nondeposit liabilities. The introduction of a reserve requirement for the nondeposit liabilities of banks would raise the cost of nondeposit funding for banks and thereby restrain the rapid growth of such liabilities during booms. In this respect, a reserve requirement on nondeposit liabilities would have a similar effect to a tax or levy on such liabilities.

However, there are also important differences. The reserves would have to be held on the central bank's balance sheet, with implications for fluctuations in the money supply in line with the private sector's use of nondeposit liabilities, and the selection of counterpart assets on the central bank's balance sheet.

There are also differences in the revenue implications between a reserve requirement and a levy on bank liabilities. The reserve requirement would raise revenue to the extent that the net income on the assets held by the central bank that is funded by the reserves would be positive. The bigger the interest spread, the larger the income.

There is one advantage of the reserve requirement that is not shared by the levy, which is that the banks would have access to a liquid asset in case there is a liquidity shortage or run in the financial market. In this respect, the reserve requirement would have some of the features of the Basel III liquidity requirement on banks.

However, a disadvantage of the reserve requirement is that it applies only to banks, rather than to the wider group of financial institutions that use non-core liabilities. When faced with the possibility of arbitrage, or with structural changes that shift intermediation activity from banks to market-based financial intermediaries, the reserve requirement would be less effective. For Korea, this problem is less acute under the current market structure, but the endogenous evolution of market structure cannot be ruled out.

## 6. Concluding Remarks

The global financial crisis has spurred a fundamental review of the principles of prudential regulation. While microprudential regulations with the objective of strengthening individual financial institutions will have some beneficial effects on strengthening the resilience of the financial system as a whole, such a firm-specific approach has been demonstrated as being insufficient to ensure financial stability. Broader measures to strengthen systems as a whole and reduce the buildup of risks over time are also needed.

The centerpiece of Basel III is a strengthened common equity buffer of 7 percent together with newly introduced liquidity requirements and a leverage cap, to be phased in over an extended timetable running to 2019. However, the elements that were most promising in living up to the macroprudential aims of regulatory reform—the countercyclical capital buffer and the capital surcharge for the systemically important financial institutions (SIFIs)—proved most controversial.

In the case of the countercyclical capital buffer, disagreements between countries meant that the countercyclical buffer will be introduced at the discretion

of national regulators in the range of 0 to 2.5 percent. In other words, there has been a failure to agree on a uniform international standard for countercyclical capital. In the case of the additional restrictions against SIFIs, the G-20 summit in Seoul in November 2010 pointed to a varied approach where individual country regulators will select policies from a large menu that includes contingent capital, leverage caps, or levies.

Thus, under its common denominator that excludes countercyclical capital or SIFI surcharges, Basel III is almost exclusively *micro*-prudential in its focus, concerned with the solvency of individual banks, rather than being *macro*-prudential, concerned with the resilience of the financial system as a whole.

The language of Basel III is revealing in this regard, with repeated references to greater “loss absorbency” of bank capital. However, we have argued in this paper that achieving greater loss absorbency by itself is almost certainly inadequate in achieving a stable financial system, for the following reasons:

- Loss absorbency does not address directly *excessive asset growth* during booms.
- Preoccupation with loss absorbency diverts attention from the *liabilities side* of bank balance sheets and vulnerabilities from the reliance on unstable short-term funding and short-term foreign currency debt.

In this paper, we have given an overview of the policy options that can complement traditional tools of bank regulation and the tools of monetary policy in reining in the excesses in the financial system. Macroprudential policies aim to constrain excessive growth in lending during booms, and thereby attain both a more viable long-term growth in lending and also mitigate the emergence of vulnerabilities on the liabilities side. The current global conjuncture with global liquidity driven by expansive monetary policies pursued by advanced economy central banks makes the topic of macroprudential policies in emerging market economies even more important and pressing than usual. Although the study of macroprudential policy frameworks is in its infancy, there is a quickly accumulating body of work on the subject. We hope that this study makes a contribution in this direction.

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## NOTES

1 This section draws heavily on Mishkin (2011a).

2 One element of monetary policy strategy before the crisis not discussed here is gradualism, in which policy interest rates display a substantial amount of inertia (see Mishkin 2010a). Gradualism is not discussed here because it is not as central to the discussion of macroprudential policies.

3 The rationale for a flexible inflation targeting framework was provided by nine basic principles derived from the science of monetary policy and which have become known as the new neoclassical synthesis (Goodfriend and King 1997). These nine principles, which are discussed in detail in Mishkin (2011a) are: (1) inflation is always and everywhere a monetary phenomenon; (2) price stability has important benefits; (3) there is no long-run trade-off between unemployment and inflation; (4) expectations play a crucial role in the determination of inflation and in the transmission of monetary policy to the macroeconomy; (5) real interest rates need to rise with higher inflation, i.e., the Taylor principle; (6) monetary policy is subject to the time-inconsistency problem; (7) central bank independence helps improve the efficiency of monetary policy; (8) commitment to a strong nominal anchor is central to producing good monetary policy outcomes; and (9) financial frictions play an important role in business cycles.

4 Since the writing of this study, the Federal Reserve announced a 2 percent target in a January 25, 2012, statement.

5 There are two other lessons, not discussed here that are relevant to whether monetary policy changes should exhibit gradualism (see Mishkin 2011a): The macroeconomy is highly nonlinear, and the zero lower bound for policy rates is more problematic than previously recognized. They are not discussed here because our study focuses less on monetary policy issues.

6 Even though objections to the LSAP program on the basis that it would produce a credit bubble are currently not justified, there are features of this program that do raise legitimate concerns (see Mishkin 2010b).

7 Indeed, central banks that continue to give some attention to monetary aggregates have emphasized the financial stability properties of monetary aggregates for this reason. For instance, the ECB has shifted in recent years to interpreting their monetary pillar increasingly as a financial stability pillar. Indeed, the ECB has published a comprehensive and in-depth study of the role of monetary aggregates in the economy (Papademos and Stark 2010). The ECB study, which runs almost 600 pages, covers both the traditional roles of money in the quantity theory of money (and hence on inflation), as well as the more recent attention to the role of monetary aggregates in financial stability issues.

**8** The inclusion of CDs in noncore liabilities is motivated by the fact that CDs are often held by financial institutions engaged in the carry trade, who use CDs as an alternative to holding Korean government securities in their transactions.

**9** The data begin from 2002:Q4 due to the substantial revision of the data collection method following the 1993 System of National Accounts (93 SNA). Before 2002:Q4, no data are reported according to the new 93 SNA and no separate accounts exist for different types of financial corporations. Another advantage of using 93 SNA data is that it reports gross liability data within each sector without netting cross-transactions within the sector, which is more appropriate to capture the expansion and shrinkage of the balance sheet of financial institutions.

**10** In the fuller version of our paper, we also conducted detailed analyses of liabilities held by different claimholders for respective instrument categories. We find that even at the deposit level, those deposits held by financial corporations show the typical dynamics of noncore liabilities, and that the securities held by households show the typical pattern of core liabilities. These findings suggest that the classification of bank liabilities by claimholders should be more informative for the purpose of macroprudential policy analysis.

**11** In this regression, both regressor and regressand may be subject to a nonstationarity problem. In particular, it is well-known that if both variables are nonstationary, this type of regression is vulnerable to a spurious estimation. However, since our objective is to measure the percentage change of the liability in response to a 1 percent change in real GDP, estimating  $\beta_1$  in this double log form is the right way to proceed. For a robustness check, however, we detrended both the regressor and regressand by the Hodrick-Prescott filter and obtained qualitatively similar results.

**12** We also conducted more detailed analyses to estimate real GDP elasticities of respective bank liabilities classified by instruments and claimholders. We find that, when classified by instruments, the elasticity estimates for securities, financial derivatives, and foreign claims are relatively high. When classified by claimholders, elasticity measures for financial corporate and foreign sector are much higher. These results are available upon request.

**13** Quite interestingly, only the lead policy rate is statistically significant with a negative sign. We will revisit and discuss this issue.

**14** For example, see Kashyap and Stein (1994) and Adrian and Shin (2009).

**15** Morris and Shin (2008).

**16** IMF (2010).

## COMMENTARY

**Macroprudential Policies in Open Emerging Economies**

Anil K Kashyap

I would like to thank the organizers for giving me the chance to comment on this excellent paper by Hahm, Mishkin, Shin, and Shin (HMSS). I warned the organizers that, given my past collaboration with Rick and Hyun, my world view is highly aligned with theirs, so I was likely to be quite favorably disposed to the work. And I am. So I am not going to bother to repeat all the points of complete agreement. Instead let me focus on three areas where I would shift the emphasis or interpret things somewhat differently.

**Modeling Macroprudential Regulation**

Let me start by pulling out three points they make in building up to their main argument that I believe should inform future modeling work related to macroprudential regulation. They don't directly connect these observations, but I found them interesting and powerful. First, they observe (in footnote 3) the nine principles that guided policy prior to the crisis. The last of those principles was "financial frictions play an important role in business cycles." Second, they argue that financial regulation should fix market failures. Third, they point to several studies that find that low interest rates seem to trigger increased risk-taking.

Why am I intrigued by these observations? On the first, I suppose it might be true that many policymakers believed that financial frictions mattered, but the reigning models used by central banks did not reflect that belief. Think back to the many presentations we all sat through at conferences like this one that relied on reasoning based on a three-equation model for output, inflation, and interest rates. More specifically, we would have had a dynamic IS curve, a Phillips curve, and a central bank reaction function, often represented by a Taylor-type rule (see for example, Woodford 2003). Financial frictions were typically ignored. Moreover, for many people looking to add financial frictions,

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**Author's note:** *These views are entirely my own and should not be interpreted as reflecting any of the organizations with which I am affiliated. For disclosure on my outside activities see <http://faculty.chicagobooth.edu/anil.kashyap/>*

the natural path to doing it would have started with the Bernanke, Gertler, and Gilchrist framework (1999).

During the crisis, this way of looking at the world was completely unhelpful. It gave no guidance about how to think about many competing policy choices (for example, buy toxic assets vs. recapitalize banks). The crisis revealed that we needed models of financial frictions where the frictions arose from problems with credit supply. We had no workhorse model of this type, and really still do not.

If we follow their second dictum, that regulation should attend to market failures, then the absence of a model is a major problem. How do we assess policies if we can't model the problem that they are going to fix?

Fortunately, their third observation about the risk-taking channel of monetary policy, provides some guidance on where we should go. But what exactly is the failure of the Modigliani-Miller propositions that lead agents in the economy to shift behavior when interest rates are very low? The paper mentions a bunch of hypotheses, such as investors searching for yield or valuation effects for financial institutions, without really committing to any particular view. I think that is appropriate given our ignorance about this issue.

Sorting this out is a high priority for future work. Notice even for the purpose of interpreting some of the HMSS evidence, sorting this out matters. For example, the correlation between U.S. rates and noncore liabilities must reflect another deep contracting friction that violates the Modigliani-Miller assumptions. It would be very helpful to have a unified theory that brings all these observations together and fits with the view of the world that says the credit supply matters.

## **Interactions between Monetary Policy and Macroprudential Policies**

A second underdeveloped observation is the potential tension between monetary policy and macroprudential policymaking. HMSS observe that the two are, in their words, "intrinsically linked." They go on to say that coordination is required if the objectives of price stability, output stability, and financial stability are to be pursued. I completely agree with this.

But I would go further. I think that without a doubt in the United States we have set up our institutional structure so that this coordination is unlikely to happen. An important part of the way we should insure that coordination is achieved is through forcing policymakers to be accountable. As the events in Europe show, the financial crisis is still not over. But the framework we have settled upon, at least in the United States and Europe, has come up woefully short in terms of improving the macroprudential outcomes.

The key deficiency is the emphasis on a committee structure, the Financial Stability Oversight Council (FSOC) in the United States and the European Systemic Risk Board (ESRB) in Europe. For Europe it has been entirely obvious that the weak capital positions of the major banks was a significant source of systemic risk; at this point, the sovereign funding problems are also critical, but for over a year European banks have been blatantly undercapitalized. Yet, no one felt obliged to do anything about it. The lack of accountability still suggests to me that it is not clear which group would even be blamed for this failure.

Likewise, in the United States it has been clear for four years that money market mutual funds pose a major threat to U.S. financial stability. The fact that monetary policy considerations imply low interest rates are now relatively certain to prevail for at least another 18 months directly raises the odds that these institutions might do something reckless. Yet, here they sit essentially unchanged, and we cannot be sure that an unexpected failure would not lead to the same terrible choices for the regulators as when the Primary Reserve Fund broke the buck. This lack of action seems to me to be only explicable because the FSOC structure is too weak to force changes on the system. If we can't address the risks that are blindingly obvious, what faith can we have that the hidden risks are being attended to?

We ought to scrap these committee arrangements and charge a single entity with systemic risk management. For the reasons laid out in French et al. (2010), I favor making the central bank that agency, but if that is not politically acceptable, then some other institution should be given this charge.

## **Regulatory Options for Managing Systemic Risk**

This brings me to the last point that they highlight, the limited toolkit being considered for managing macroprudential problems. One of the nicest parts of the paper is their review of the many policy levers that have been deployed in emerging market economies. It would be a welcome development if margining rules, loan-to-value regulation, and provisioning requirements were added to the Basel discussions about capital and liquidity.

I share their view that the threat of runs by short-term debt is a core feature in most crises. Their emphasis on noncore liabilities is appropriate, since that designation is a good way to capture the many channels through which runs can happen. So I would like to go one step further and ask, exactly how does the deleveraging that they identify spill over to infect the real economy?

Here I want to call attention to some recent work that I have done with Charles Goodhart, Dimitrios Tsomocos, and Alex Vardoulakis (2012), which

naturally complements the HMSS analysis. In our research we study an economy that is at risk for an occasional asset price collapse. Banks and shadow banks in our economy play a valuable role by extending credit to help consumers smooth their consumption. But if asset prices collapse, the consumers default and the financial system amplifies the effects.

As conjectured by HMSS the “lean versus clean” tension is present in our framework. What we find is that it is actually helpful to group tools according to the channels through which they combat market inefficiencies, rather than according to the market or institutions which they directly impinge upon. What does this mean? Let me give an example. In our framework, loan-to-value restrictions on bank lending and margin requirements on shadow bank repurchase agreements are substitute tools. Why? Because both regulations limit the amount of ex ante risk that the financial system can take on by limiting leverage. Conversely, a provisioning rule that mandates building reserves whenever lending growth is high works to partially slow a lending boom. Interestingly, capital rules are not very effective for this purpose. The problem is that when asset prices are very high then all levered financial institutions are going to look well-capitalized; this reminds me of the assessment that most of us had about large global financial institutions in early 2007. I don't recall people claiming that U.S. or European banks were thinly capitalized then, yet 18 months later that was obviously the case.

A third regulatory approach in our economy is a kind of clean-up strategy that forces banks to rebuild capital after a default. This regulation operates differently than the other two channels I have mentioned.

We are early in this research program, but even with our very simplified model one can see that managing financial instability will take multiple tools because the instability operates through multiple mechanisms. In particular, an asset price collapse not only leads to defaults and a possible credit crunch, but also can generate a fire sale in which impaired banks dump assets to cover deposit outflows. So these three externalities cry out for regulatory tools that operate through each of the channels I have mentioned (Kashyap, Berner, and Goodhart 2011).

Finally, let me highlight one last consideration that is mentioned by HMSS but I think deserves extra attention. My concern is that, especially if the global regulatory process proceeds in its current direction, we are creating massive incentives to engage in regulatory arbitrage. I have explained elsewhere that there is little reason to worry about raising capital regulations substantially (say even 10 percentage points) on the interest rates charged to borrowers. But what I do worry about with large capital charges are the incentives they set up

for creating nonbank banks to engage in maturity transformation while avoiding capital regulations.

HMSS mention the example of regulating loan-to-deposit ratios as another way to make the financial system less fragile. But they note that, in Korea, branches of foreign banks are exempt from complying. I am not sure why that is the case, but it seems to reflect the generic difficulty in taking a holistic approach to regulation and closing down all the loopholes that appear once we start intervening. I think this interacts with my second point about accountability. Unless there is some institution that is vigilantly looking across the entire financial system, watching as it morphs, we are likely to be way behind.

Let me close with a tweak on a nice analogy they proposed. They mentioned that a levy on noncore liabilities is a good way to align incentives, much like the charge for driving into central London to reduce congestion. I just want to us to think about all the extra traffic we got on Marylebone Road, Euston Road, and the rest of the perimeter once the surcharge went into effect. Thanks for your attention.

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**GENERAL DISCUSSION**  
**Macroprudential Policies in Open Emerging Economies**

**Chair: Sarah Bloom Raskin**

**Ms. Raskin:** Let's have the authors respond to Anil's comments and then we will go to the floor for questions.

**Mr. Mishkin:** The issues that Anil raised about the European situation illustrate a counter to the view that central banks should not deal with financial stability problems because it can compromise their independence. One of the things that has been very disappointing to me is that the European Central Bank has not been blowing the whistle on problems in the European banking sector. I think that is really the ultimate source of their problems, because it is very difficult for them to deal with sovereign debt haircuts, which are going to have to take place, if it then means losses that the banks are not capable of handling. Central banks actually have an obligation to get involved in this. And indeed, I think that the European Central Bank's independence is at enormous risk right now because, as a result of not dealing with the problems earlier, they're now being forced to bail out the entire euro system. The good outcome would be if they bail it out and the system survives. But even that outcome is still pretty terrible, because they will have severely compromised their independence. So I think the situation in Europe right now, which is extremely scary, illustrates the point Anil raised very clearly.

**Mr. Shin:** Thank you very much. I agree with most of the comments, and also believe that we need a better understanding of the causes of market failures and financial crises in order to improve financial regulation. I also would like to emphasize that the central bank has an advantage in doing macroprudential regulation. In the past, financial regulators focused on the soundness of individual institutions, but this singular focus ignored the buildup of systemic risk, which they could not deal with. The central bank with its aggregate perspective can deal better with systemic risk. In that sense, macroprudential regulation can be handled by the central bank.

**Ms. Raskin:** Thank you. Questions from the floor?

**Mr. McKinnon:** I like Mishkin's distinction between core and noncore liabilities, the cyclical nature of noncore liabilities, and thinking about putting restraints on these liabilities through various forms of taxation. One of the main noncore liabilities of banks is what they borrow in the interbank market from other banks. So, the question is, should there be restraints on this borrowing? In particular, at the present time in the United States trading in the interbank market has shrunk dramatically. I think that's one of the reasons we can't get credit expansion at the moment, because once interest rates go to zero, short-term interbank rates go to zero, and large banks with excess reserves don't want to lend them out to anybody. So there's a contraction in the interbank market. This hurts smaller banks, which might have good retail lending opportunities, but depend on the interbank market as a liquidity backup to whatever retail credit lines they extend. So, in a way, we've got a problem opposite to what Rick said happened in Korea before 2008; we've got tremendous shrinkage in interbank trading. I attribute it to the zero interest rate policy, which I think is a very bad policy.

**Mr. Mishkin:** I don't know if I'd attribute weak credit expansion to the zero interest rate policy, but you've illustrated one of my key points, that the U.S. is not in the upside of a leverage cycle right now. It's actually on the downside, in a deleveraging cycle, and that's very important in terms of arguing whether there's a problem with zero interest rates.

**Mr. Shin:** I agree that the shrinkage of interbank loans is the problem now. But the point we are making is that policymakers need to prevent increases of interbank loans before they become too excessive.

**Mr. Hatzius:** I have a question for Rick, although I could have asked the same question of Lars earlier. I wonder how compatible in practice flexible inflation targeting is with a dual mandate that puts a significant weight on unemployment. There is a fundamental asymmetry between inflation and unemployment. Deviations from the inflation target are plain for the public and everybody around the FOMC table to see. But deviations from full resource utilization are not plain for everybody to see, and there's a lot of debate and disagreement about it. So I wonder whether you can really have flexible inflation targeting that is approximated by the Fed's dual mandate. I have two questions. One, do you agree that fulfilling the dual mandate is a potential problem, especially in the current situation, where inflation is pretty close to most people's perception of the target but there appears to be a large amount of cyclical unemployment? Number two, do you have any thoughts on nominal GDP targeting—could that

be a way for the Fed to put a large weight on real output and employment without having to commit themselves to a particular estimate of the natural rate or structural rate of unemployment? I'd be interested in Lars's view, as well.

**Ms. Raskin:** Lars, do you want to pipe in?

**Mr. Svensson:** On the last question, I don't think it's very difficult to see that unemployment in the U.S. is above any reasonable sustainable rate. There are other situations when it may be more difficult to assess resource utilization. The Riksbank's *Monetary Policy Report* has several measures of resource utilization, and you can see that there's considerable disagreement among the Board about the relative importance of different measures. Chairman Bernanke has obviously thought about these things, and he thinks that the Fed is actually doing flexible inflation targeting.

But on what Rick and Anil have said about the role of the policy rate in maintaining financial stability, I think one has to acknowledge that things are quite different across countries. In some countries, financial stability policy is a big mess. In other countries, it works reasonably well. Also, the political economy considerations which Rick brought up, can be quite different. When the Bank of Israel introduced a loan-to-value restriction, there was a big uproar and a lot of criticism. When we did the same in Sweden, nothing happened. Also, most financial systems are quite different. Canada and Sweden have financial systems dominated by an oligopoly of old-fashioned commercial banks. That may be good or bad, but it certainly brings a bit of stability and much less aggressive risk-taking. Whether you have a big, difficult-to-regulate federal banking sector or not matters a lot, and the availability of tools in the regulatory system is also quite different.

We now see big problems in Europe. I don't think anyone has accused the ECB of conducting too easy monetary policy and therefore causing the financial crisis in Europe. What has happened, of course, is that a number of countries—Greece, Ireland, Portugal, and Spain—have not had an independent monetary policy. They had the average euro-area policy, which happened to be too expansionary for them. So they got an overheated economy, with all the problems that follow. We don't know what would have happened if those countries had had a good, independent monetary policy that would have prevented inflation and overheating.

Finally, on the issue of the role of financial frictions in everyday monetary policy, if you have a crisis every 20 or 30 years, then things will probably be quite different in each crisis. But during normal times, I believe that the financial frictions and interest rate spreads are reasonably stable and constant. And

that means that developing new models for monetary policy where there are lots of financial frictions is not very beneficial because in normal times these frictions are fairly stable and constant, and the usual models and forecasts of inflation and the real economy work reasonably well. I think one has to distinguish between normal policy in normal times and crisis prevention during those times, and crisis management when something really serious happens. These are different regimes, and we will need different policies in each situation.

**Mr. Mishkin:** I want to agree with Lars on a number of points, but with some nuances. First, I should say that I was hired by the Swedish Parliament to do a report on monetary policy, and I had to talk to a lot of Swedish politicians. There are differences across countries. They're a much better class of people than the people I had to deal with in Washington [laughter], so I think that differences in political economy considerations matter importantly.

Jan, I think the issue you raised is very central right now. What concerned me about some of the recent Federal Reserve policies, which involved credit policies, such as large-scale asset purchases, for example, is that they're not put in the context of an overall, long-run strategy for the Federal Reserve. So I think that the Fed needs to explain its policies in terms of interest rate paths and paths on asset holdings in the context of a long-run strategy. This emphasizes the issue of why you have a particular inflation goal—mandate-consistent inflation rate is the term used by the Federal Reserve—but you also have to worry about the second part of the dual mandate, what's happening with unemployment. You are right that there is a difference between inflation and unemployment goals. An inflation goal is something that, if central banks can actually achieve it, it turns out that simply picking a number gets you the right answer, as long as it's not a wild and crazy number. So as long as you choose a number between 1 and 3 percent, the welfare function is so flat that it's not going to make much difference in the steady state. Just having a number gets all the right dynamics for efficient policy.

An inflation target is different from an objective in terms of output or unemployment. This is very relevant for Charlie Evans's proposal to allow inflation to rise at times above the Fed's long-run target, because I think what he is trying to get at is this dual mandate. I think there are real problems with the way he has communicated it, because I don't think he's saying that we want to have a higher inflation target. The danger of this is that we'll be able to tolerate 3 percent inflation—and that's never the way we should talk about it. Instead, we should have a midpoint for an inflation objective, let's say 2 percent, which is a number I like. Then, if you use expansionary policy to deal with excessive slack

in the economy and you happen to overshoot the inflation goal for a short period of time, that's okay. That's exactly the way the Norges Bank and the Riksbank talk about it, and this is where Lars and I are in strong agreement.

Another issue that I think is really critical: if the Fed is going to talk about unemployment, it needs to make it absolutely clear that an unemployment objective is very different from an inflation goal. Why? Because, number one, the Fed can't control it. Number two, we really don't know what the long-run sustainable rate of unemployment is, and in fact, we don't even know theoretically what it should be. For example, my view is that the long-run sustainable rate of unemployment, the natural rate of unemployment, is somewhere between 4½ and 7 percent, but probably somewhere in the middle. But that represents a huge amount of uncertainty. That doesn't mean that you shouldn't worry about unemployment. If you have 9 percent unemployment, as we do now, with no prospect of it lowering very fast, you actually should do something about it. I think that the subtlety is that it's really critical that the Federal Reserve communicate the difference between an inflation goal and an unemployment "goal"—but I don't want to call it that—as well as the information it uses in setting the interest rate path and in justifying any quantitative easing. I had a lot of problems with QE2, not because of the monetary policy aspects, but because it was done under pure discretion without a longer-term framework. I think this is consistent with some of the issues that Marvin was talking about earlier.

**Mr. Kashyap:** Can I make just two small points? I guess, Lars, that we should have a side bet: Reinhart and Rogoff give us 700 years of financial instability before we hit the Great Moderation. I think the Great Moderation is the outlier. I'm willing to gamble that for the next 40 years there'll be a lot more financial instability and nonconstant financial frictions than we had during the moderation, and I agree with you that the politics and the institutions differ greatly across countries. But one constant was that banks everywhere tried to get around the Basel Accord. Regulatory arbitrage is like a constant force of nature, and it's just a question of whether you can beat it down. I think the shadow banking system will be more endogenous than it was in the past, the farther we make the capital standard from what the market seems willing to finance. So I just hope that places that have been well-regulated in the past can keep out in front of this, because I think those guys are going to show up on your doorstep.

**Ms. Raskin:** Well, with that, we will take a break before the next session.



# The Renminbi's Role in the Global Monetary System

Eswar Prasad and Lei Ye

We analyze three related but distinct concepts concerning the renminbi's role in the global monetary system: internationalization of the currency; currency convertibility; and reserve currency status. Their sequencing in relation to other policy goals such as financial sector reforms and exchange rate flexibility will affect their benefit-risk trade-offs. We describe the measures taken and progress attained in each of these areas, and discuss the implications of these changes for the balance and sustainability of China's own economic development, as well as the associated implications for the global monetary system.

China runs the risk of putting the cart in front of the horse by pushing forward more aggressively with capital account liberalization than with exchange rate flexibility and financial system reforms. While China is actively promoting the internationalization of its currency, it is a long way from attaining full convertibility or meeting other prerequisites for achieving reserve currency status. Ultimately, China will proceed with capital account convertibility in its own controlled and gradual manner, with the goal being an open capital account but with significant administrative and other soft controls. The renminbi will play an increasingly important role in the international monetary system, but is unlikely to displace the U.S. dollar anytime soon.

## 1. Introduction

China's economy is now the second largest in the world and is a key driver of global growth. Of the currencies of the world's six largest economies, China's renminbi is the only one without reserve currency status. Even though the economy has neither a flexible exchange rate nor an open capital account, the Chinese government has recently taken a number of steps to increase the international use of the renminbi. Given China's sheer size and its rising shares of global GDP and trade, these steps are gaining traction and portend a rising role for the renminbi in global trade and finance.

In this paper, we analyze three aspects of the renminbi's role in the international monetary system: (1) the trajectory of the renminbi's use in the

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denomination and settlement of cross-border trade and financial transactions, referred to as the currency's "internationalization"; (2) the likelihood and timing of China's path to currency convertibility; and (3) the prospects for the renminbi attaining reserve currency status. The paper investigates these three related but distinct elements within a unified conceptual framework and evaluates their implications in two dimensions: first, for the balance and sustainability of China's own economic development; and second, for the associated implications for the global monetary system.<sup>1</sup>

A currency's international usage and its convertibility are different concepts, and neither one is a necessary or sufficient condition for the other. Both conditions have to be met, however, for a currency to become an international reserve currency. Given China's size and growth prospects, it is widely seen as inevitable that the renminbi will eventually become a reserve currency.<sup>2</sup> Here we consider the typical prerequisites for a reserve currency and evaluate China's progress in each of these dimensions. These prerequisites include:

- **Economic size:** A country's GDP as well as its shares of global trade and finance are important, although not crucial, determinants of its reserve currency status.
- **Open capital account:** Reserves must be acceptable as payments to a country's trade and financial partners, which requires that the currency be easily tradable in global financial markets. This is difficult if a country imposes restrictions on capital flows and if its foreign exchange markets are thin and subject to the government's direct control.
- **Flexible exchange rate:** Reserve currencies are typically traded freely and their external value is determined by the market, although this does not preclude occasional bouts of intervention by the country's central bank in foreign exchange markets. It is worth emphasizing that an open capital account is not synonymous with a freely floating exchange rate.
- **Financial market development:** A country needs to have a broad range of deep and liquid financial markets, especially government bond markets, to provide safe assets that can be held by other countries' central banks. Turnover in these bond markets, which is a measure of liquidity, is also important.
- **Macroeconomic policies:** Investors in a country's sovereign assets must have faith in its economic policies, especially the commitment to low inflation and sustainable levels of public debt, so the value of the currency is not in danger of being eroded.

This study seeks to provide fresh analytical perspectives on the relative importance of these factors and trade-offs among them. For instance, the Swiss

franc is a global reserve currency even though Switzerland's shares of global GDP and trade are quite modest. Moreover, many of the major reserve currency economies—the euro zone, Japan, and the United States—have large and rising public debt burdens, which raises questions about their macroeconomic stability but has not (yet) affected their currencies' status as reserve currencies. Some analysts have in fact extrapolated from the U.S. experience to argue that China must run large current account deficits if it wants to provide reserve assets to the rest of the world. But this is neither a necessary nor sufficient condition for attaining reserve currency status.

We begin, in Section 2, by documenting and evaluating the evolution of China's capital account openness in both *de jure* and *de facto* terms. These measures together reflect the extent to which broad restrictions on capital inflows and outflows are relaxed through official policy changes or the avoidance of capital controls. This analysis is complemented by a narrative account of measures to open up the capital account as well as an empirical evaluation of how China's capital flows and stocks of external assets and liabilities have evolved during the last decade. Although a number of restrictions on both inflows and, especially, outflows have been loosened in recent years, China still has a substantial capital control regime. In *de facto* terms, however, its integration into global financial markets has proceeded more quickly.

In Section 3, we analyze the costs and benefits of capital account liberalization for China and how its sequencing relative to other policy changes affects the risk/benefit trade-off. A large literature documents that opening up the capital account without a flexible exchange rate is risky. In addition, the level of domestic financial market development and the composition of a country's external balance sheet also affect the magnitude of these risks. An examination of China's international investment position, both in terms of evolution over time and from a cross-country perspective, suggests that the economy faces only modest risks from a more open capital account in terms of vulnerability to external shocks. The bigger risks may be domestic ones that are related to sequencing—a more open capital account can hurt financial stability and constrain monetary policy in the absence of a more flexible exchange rate and a better-developed financial system. There is also a larger debate about the ultimate objective—free convertibility, which involves minimal restrictions, or full convertibility, defined as unrestricted capital flows but with significant regulatory oversight through reporting and registration requirements (Yam 2011).

In Section 4, we investigate the renminbi's potential to become a global reserve currency. Attaining reserve currency status has both intangible benefits, such as prestige, and tangible ones. A reserve currency earns seigniorage

revenues from abroad—inflation reduces the value of foreign (and domestic) investors' holdings of the currency—and provides easier access to cheap foreign financing of debt issued in the domestic currency, a privilege that in the case of the United States has been called an “exorbitant privilege.” To the extent that this status results in a greater denomination of trade transactions in China's own currency, domestic importers and exporters would face lower currency risk. The potential costs of having a reserve currency include reduced control of the currency's external value and possibly a more volatile exchange rate. This status in principle entails a greater burden of responsibility because domestic monetary policy has more spillover effects to other economies.

We provide an empirical evaluation of the progress China has made, and how it compares with other reserve currency and major emerging market economies, in terms of the prerequisites for attaining reserve currency status. Given China's specific circumstances, we discuss the relative importance of these prerequisites and the dimensions in which China might break the mold. We discuss how factors like greater exchange rate flexibility, deeper financial markets, and interest rate liberalization can promote the process of internationalization of the renminbi while maintaining a favorable benefit-risk trade-off during the transition.

In Section 5, we show that the renminbi is already on the path to ascendance as a global currency. Renminbi trade settlement in Hong Kong has expanded rapidly, the issuance of renminbi-denominated bonds both in Hong Kong and the mainland is picking up, and there are signs that some central banks are considering holding renminbi-denominated assets in their foreign exchange reserve portfolios. These shifts are still modest in terms of their absolute magnitudes and could soon hit their limits unless China's capital account becomes more open.

In Section 6, we review the implications of the increasingly prominent renminbi for the global monetary system, with a particular focus on the implications for the U.S. dollar. We examine trends in the quantity and composition of renminbi-denominated assets and the pace of China's financial development. We then assess the implications of China's capital account convertibility for the pace of its reserve accumulation and its reliance on U.S. dollar assets for these reserves. We also examine different policy measures taken by the Chinese government to diversify foreign assets through purchases of hard assets and investments managed by a sovereign wealth fund, along with encouragement of foreign investment by Chinese corporations and households. This has major implications for discerning future patterns of global financial flows.

Finally, we discuss the potential inclusion of the renminbi in the special drawing rights (SDR) basket, which currently includes the reserve currencies of four advanced economies. We analyze the economic and political factors that will guide the decision of whether or not to incorporate the renminbi into the SDR basket and highlight the economic and geopolitical implications of this decision.

## 2. Openness of the Capital Account

We begin by evaluating the degree of openness of China's capital account, using both de jure measures of capital account restrictiveness and de facto measures of financial integration. Conventional measures of de jure integration show little, if any, change for China over the past decade. For example, the popular Chinn-Ito index (Chinn and Ito 2008) has not registered any change in China's de jure openness since 1993. Such measures rely on binary indicators from the International Monetary Fund's *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)*. These binary measures change only when there is a relatively drastic policy change related to specific capital account items.<sup>3</sup> By contrast, de facto capital account openness has gone up by leaps and bounds.

### 2.1. Capital Controls

Although de jure measures may not capture changes over time in a country's openness to capital flows, they are still useful as an indicator of the relative degree of openness across economies in a given year. Table 1 shows the Chinn-Ito index for all the reserve currency economies and several key emerging markets in 1990 (when data are available), 2000, and 2009.<sup>4</sup> A higher value corresponds to a greater degree of de jure openness. The reserve currency economies all have the same index value of 2.48, which is the maximum and indicates a fully open capital account. The value of the index for China in 2009 is  $-1.15$ , signaling a relatively closed capital account and indicating that China's capital controls are, on paper, quite stringent.

Despite the broad capital account restrictions, the Chinese government has taken a number of steps to ease these restrictions. In 2007, the limit on foreign exchange purchases by residents for remittance abroad for personal reasons was increased to \$50,000 a year. More recently, the government has been encouraging outflows by institutional investors (e.g., pension funds and insurance companies) and corporations in order to offset some of the pressures for currency appreciation arising from trade surpluses and capital inflows. For

TABLE 1  
**Chinn-Ito Measure of De Jure Financial Openness**

Country	1990	2000	2009
United States	2.48	2.48	2.48
United Kingdom	2.48	2.48	2.48
Switzerland	N.A.	2.48	2.48
Japan	2.48	2.48	2.48
Germany	2.48	2.48	2.48
Brazil	-1.84	-1.15	0.43
Russia	N.A.	-0.79	0.17
South Africa	-1.84	-1.15	-1.15
India	-1.15	-1.15	-1.15
China	-1.84	-1.15	-1.15

**Note:** This index is calculated from binary dummy variables that reflect a variety of restrictions on cross-border financial transactions reported by the International Monetary Fund, *Annual Report on Exchange Arrangements and Exchange Restrictions*. N.A. = not available.

**Source:** Updated version of Chinn and Ito (2008) data set.

instance, in 2009, the government dropped ex ante review and approval requirements for outward remittances of funds for direct investment abroad. Controls on inflows are also being gradually eased, although with many restrictions still in place. The upper limit on portfolio investments by individual qualified foreign institutional investors has been raised but still remains at a modest \$1 billion, and the period for which these investments are locked up has been reduced.

There are many other subtle or limited changes that are often not captured by standard de jure indexes, which tend to be aggregated across different categories of inflows or outflows. In Appendix A, we provide a detailed documentation of significant changes to capital account restrictions during the past decade, based on annual IMF *AREAER* reports. The appendix indicates that the number and magnitude of relaxations to capital account restrictions have intensified in the past few years, consistent with the active promotion of the renminbi as an international currency. In most cases, constraints on inflows and outflows have been made less stringent rather than being eliminated entirely.

## 2.2. De Facto Openness

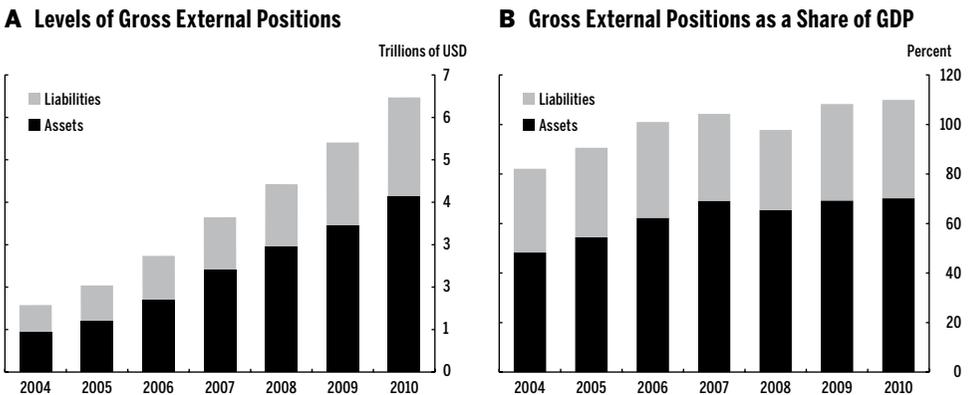
An alternative and complementary approach to evaluating an economy's financial openness is to analyze de facto measures of integration into global financial markets. A standard measure in the academic literature is the economy's gross

assets plus liabilities position (i.e., its gross external position) in either levels or as a ratio to GDP (see Kose et al. 2009). Figure 1 shows these two measures for China from 2004 to 2010. The level of its gross external position has grown rapidly, roughly tripling in size over the last five years to more than \$6 trillion. The ratio of its gross assets plus liabilities to GDP is now greater than one.

Next, we examine the degree of China's financial openness relative to the reserve currency areas and other key emerging markets. In terms of levels, China's gross external position exceeds those of all the other key emerging markets and also Switzerland (Figure 2). As a share of GDP, its openness lags behind those of the reserve currency economies. Among emerging markets, however, China's de facto measure of openness is relatively high, exceeding the levels of countries such as Brazil and India. To the extent that de facto openness is somewhat higher and grows more than the rise in de jure openness, recent steps taken to selectively loosen capital account restrictions do seem to have stoked greater financial flows (see Box 1).

To summarize the evidence from de facto and de jure measures of openness, China still has an extensive capital control regime in place, but it is selectively and cautiously dismantling these controls. Partly as a result of this dismantling, the country's capital account is becoming increasingly open in de facto terms, although even by this measure the degree of China's financial openness is much lower than that of the reserve currency economies.

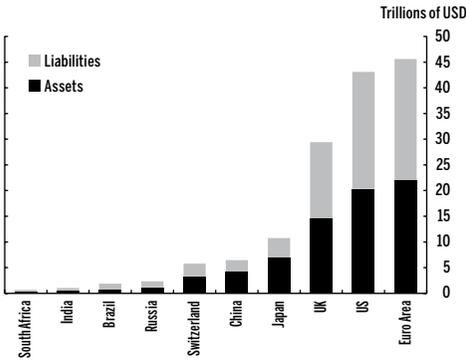
FIGURE 1  
De Facto Financial Openness in China, 2004–10



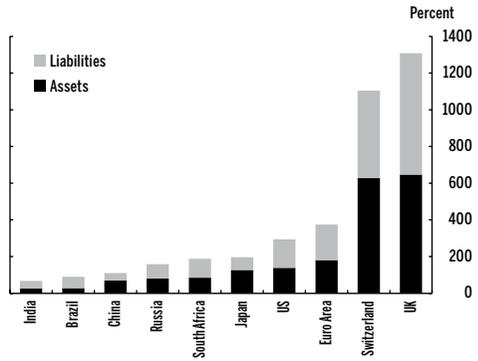
Sources: International Monetary Fund, International Financial Statistics and World Economic Outlook.

FIGURE 2  
De Facto Financial Openness across Economies

**A Levels of Gross External Positions**



**B Gross External Positions as a Share of GDP**



Source: International Monetary Fund, International Financial Statistics and World Economic Outlook.

### 3. Sequencing and Cost-Benefit Trade-Offs Related to Capital Account Liberalization

The literature on financial openness indicates that its potential benefits—both in terms of risk sharing and growth—become apparent only after a country has attained a high level of financial integration. For a country that is in the process of opening up its capital account, there are significant transitional risks if it falls below certain threshold conditions, especially those related to domestic financial and institutional development. A difficult paradox results from the fact that financial opening itself serves as a catalyst for financial market development and improvements in institutions, especially corporate governance. There is no general recipe for how to strike the right balance between these collateral benefits and the risks of premature capital account liberalization (see Kose et al. 2009). The transitional risks cannot be eliminated, but they can be mitigated through supporting conditions such as greater exchange rate flexibility and a more selective approach to capital account liberalization that is designed to attain certain specific collateral benefits (Prasad and Rajan 2008, Prasad et al. 2007).

There is a large literature indicating that opening up the capital account without a flexible exchange rate is risky.<sup>5</sup> A fixed or tightly managed nominal exchange rate makes it harder to cope with capital flow volatility because the exchange rate cannot act as a shock absorber. This combination of policies also reduces the independence of domestic monetary policy, impeding the central bank's ability to use monetary policy instruments such as interest rates to

## BOX 1

**Capital Flows and China's Capital Exports to the Rest of the World**

China's capital inflows and outflows have expanded rapidly over the last decade. Gross inflows more than quadrupled from 2000 to 2007 (see column A in the table below). Following a temporary setback during the global financial crisis, inflows surged to \$406 billion in 2010, reflecting continued interest in China as a destination for foreign investment. Outflows other than official accumulation of international reserves have also grown substantially, albeit from a low base. Gross outflows fell sharply in 2009 but hit a new high of \$184 billion in 2010 (column B). Since 2000, accumulation of international reserves has dominated China's overall outflows (column C). From 2000 to 2010, China built up \$2.8 trillion of reserves, while other gross outflows amounted to about \$845 billion (including \$219 billion in outward foreign direct investment, FDI). In other words, about three-quarters of its gross capital outflows were accounted for by official accumulation of reserves. During this period, gross inflows amounted to \$1.8 trillion, with about two-thirds of that (\$1.1 trillion) accounted for by gross FDI inflows.

China's overall exports of capital (the sum of official and private *net* flows) peaked at \$436 billion in 2008 and then fell by about half in 2009 as reserve accumulation remained strong but other net outflows fell sharply (column E). In 2010, reserve accumulation rose to \$472 billion and other outflows rebounded sharply to \$184 billion, but gross inflows strengthened as well, to a historic high of \$406 billion.

*During the period 2000–10, China on net exported about \$1.9 trillion of financial capital to the rest of the world* (by the balance of payments identity, this is the sum of China's current account surpluses over this period).

**China's Gross Capital Flows, 2000–10 (in billions of U.S. dollars)**

Year	A. Gross Inflows	B. Gross Outflows (excluding reserves)	C. Reserve Assets Accumulation	D. Financial Account Balance (excluding reserves)	E. Financial Account Balance (including reserves)
2000	58.0	-56.1	-10.7	2.0	-8.7
2001	41.6	-6.7	-47.4	34.8	-12.6
2002	50.0	-17.7	-75.2	32.3	-42.9
2003	67.6	-14.8	-137.5	52.8	-84.7
2004	104.1	6.7	-189.8	110.7	-79.1
2005	183.4	-86.4	-251.0	96.9	-154.0
2006	212.1	-163.4	-284.7	48.6	-236.0
2007	262.9	-170.8	-460.7	92.0	-368.6
2008	170.1	-126.8	-479.6	43.3	-436.3
2009	201.5	-24.6	-400.5	176.9	-223.7
2010	405.5	-184.1	-471.7	221.4	-250.2
2011 <sup>a</sup>	116.5	-31.8	-141.2	84.7	-56.5

**Note:** Gross outflows do not include reserve asset accumulation. The financial account reflects the balance of both official and nonofficial inflows and outflows.

<sup>a</sup> This is for the first quarter of 2011.

**Source:** International Monetary Fund, International Financial Statistics.

maintain domestic price stability. Despite its relatively closed capital account, this constraint applies to China as well because the capital account tends to become porous as interest differentials with the rest of the world increase and the incentives to evade controls become larger (Goodfriend and Prasad 2007). Moreover, if either expectations or fundamentals shift in a way that makes it difficult to sustain the existing level of a managed exchange rate, capital flows could intensify and make the exchange rate harder to manage.

The value of the renminbi is tightly managed against the U.S. dollar, but it was allowed to appreciate gradually against the dollar starting in July 2005. With the onset of the global financial crisis, the hard peg to the dollar was reinstated before being relaxed again in June 2010. Table 2 provides a cross-country comparison of exchange rate volatility, measured as the standard deviation of changes in monthly exchange rates over the relevant period. The volatility of China's nominal exchange rate against the dollar is the lowest among the major emerging market economies.

To get a broader perspective on de facto exchange rate flexibility, we examine the volatility of the trade-weighted nominal and real effective exchange rates. China's effective exchange rate measures, which tend to track each other closely, are more volatile than the nominal exchange rate. The gap in exchange rate volatility relative to other emerging markets is smaller using these measures, but China still has the lowest level of volatility in this group. In other words, China displays more flexibility in its effective exchange rate, which is ultimately what matters for trade competitiveness. But the tight control of the nominal value of the renminbi relative to the dollar still has the effect of

TABLE 2  
**Exchange Rate Volatility**  
(percentage standard deviation of monthly log changes)

Country	1995–2011			2005–11 <sup>a</sup>		
	Nominal	NEER	REER	Nominal	NEER	REER
Brazil	4.2	4.0	4.0	3.7	3.2	3.1
China	0.3	1.3	2.0	0.4	1.3	1.9
India	1.6	1.5	1.6	2.0	1.6	1.7
Russia <sup>b</sup>	6.1	6.1	5.3	2.8	2.1	4.1
South Africa	3.9	3.5	3.4	4.4	3.5	3.5

**Note:** “NEER” and “REER” stand for the (trade-weighted) nominal effective exchange rate and real effective exchange rate, respectively. The NEER for each currency is its monthly period-average exchange rate relative to the U.S. dollar.

<sup>a</sup> Data for 2011 go through October.

<sup>b</sup> NEER data for Russia start in July 1995.

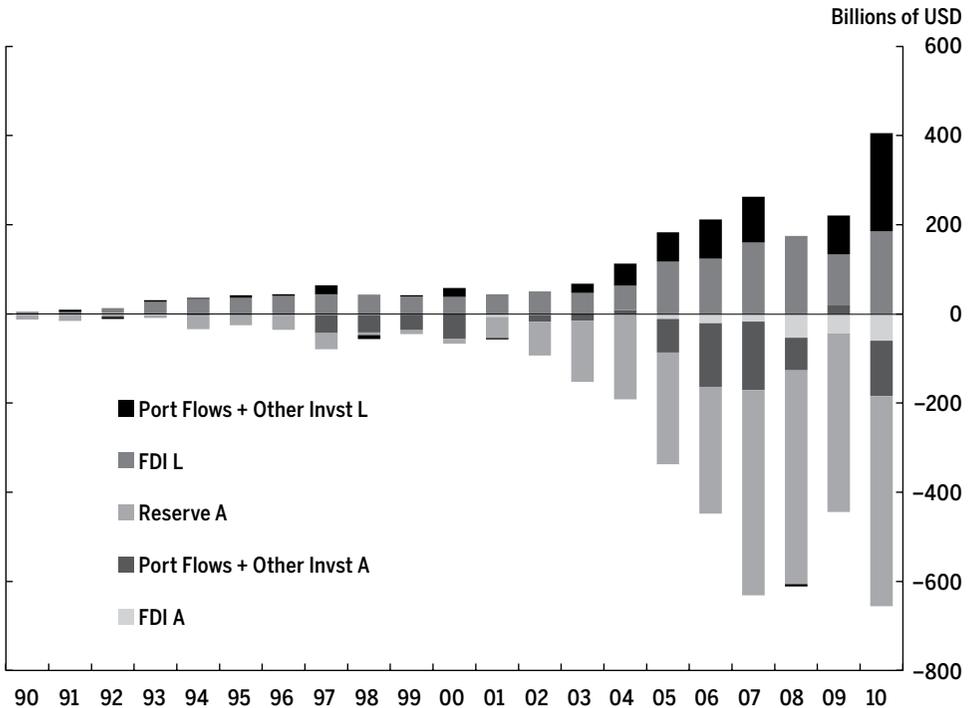
**Sources:** International Monetary Fund, International Financial Statistics; NEER and REER data are from Bank for International Settlements data using broad weights (58 economies).

hindering the independence of monetary policy and creating other adverse side effects that inhibit the rebalancing of the economy.

Two factors are crucial in determining the magnitude of the risks from an open capital account in the presence of a fixed exchange rate. One is the level of financial development. Broader and deeper financial markets help absorb capital inflows and direct them to productive activities and, more broadly, help to cope with capital flow volatility. We discuss China's financial market development in greater detail later in the paper. The second factor is the structure of a country's capital flows, especially inflows. We now examine this factor.

Figure 3 shows that China's gross capital inflows since 2000 have been mostly in the form of foreign direct investment (FDI). The amount of portfolio inflows and other investments together have traditionally been small, although in 2010 total inflows in these categories exceeded FDI inflows. An examination of China's international investment position confirms that FDI liabilities account for 63 percent of China's total (gross) external liabilities (Table 3). FDI and portfolio

FIGURE 3  
China's Balance of Payment Flows



Source: International Monetary Fund, International Financial Statistics.

equity together account for 72 percent of external liabilities. FDI is considered the best type of capital inflow because it is stable and often brings with it transfers of technological and managerial expertise. Portfolio equity flows tend to be associated with the collateral benefit of developing and deepening domestic equity markets, but tend to be more volatile than FDI. Nevertheless, this structure of liabilities—dominated by FDI and portfolio equity—is consistent with the objective of sharing risk across countries, with foreign investors bearing capital as well as currency risk on such investment (Kose, Prasad, and Terrones 2009).

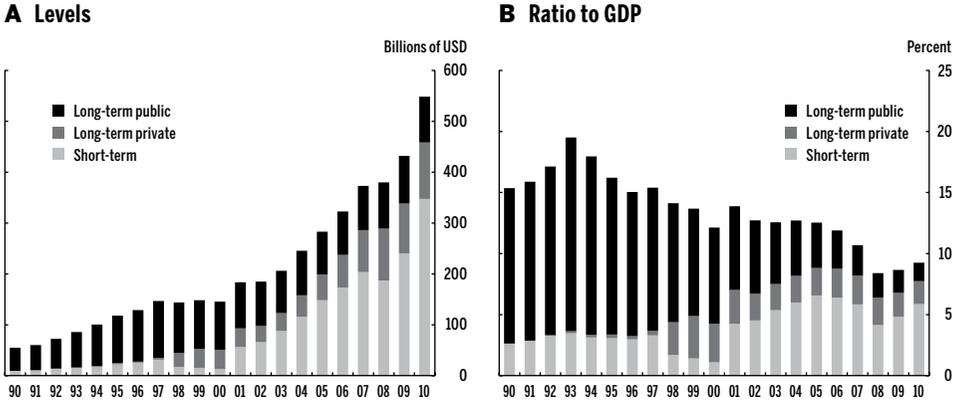
Another determinant of external vulnerability for emerging market economies, particularly those with fixed or managed exchange rates, is the level of external debt. Short-term foreign-currency-denominated external debt has been the scourge of emerging markets and was a major source of vulnerability for Latin American and Asian economies during the 1980s and 1990s. China has traditionally had a low level of external debt, and the ratio of external debt to GDP in fact declined from a peak of 18 percent in 1993 to just 8 percent in 2009 (Figure 4). China's external debt level is also low by international standards (Figure 5), suggesting that this is not a source of risk from capital account opening. And of course the stock of foreign exchange reserves of more than \$3 trillion provides an additional level of insurance.

TABLE 3  
**China's International Investment Position**  
(in billions of U.S. dollars)

Aspect of Position	2004	2005	2006	2007	2008	2009	2010
Net position	281	413	640	1,188	1,494	1,511	1,791
<b>A. Assets</b>							
Total	933	1,229	1,690	2,416	2,957	3,457	4,126
1. FDI	53	64	91	116	186	246	311
2. Portfolio	92	117	265	285	253	243	257
Equity	0	0	1	20	21	55	63
Debt	92	117	264	265	231	188	194
3. Other invst.	166	216	254	468	552	515	644
4. Resv. assets	623	831	1,081	1,547	1,966	2,453	2,914
FX reserves	610	819	1,066	1,528	1,946	2,399	2,847
<b>B. Liabilities</b>							
Total	653	816	1,050	1,228	1,463	1,946	2,335
1. FDI	369	472	614	704	916	1,315	1,476
2. Portfolio	57	77	121	147	168	190	222
Equity	43	64	106	129	151	175	206
Debt	13	13	14	18	17	15	15
3. Other invst.	227	267	315	378	380	442	637

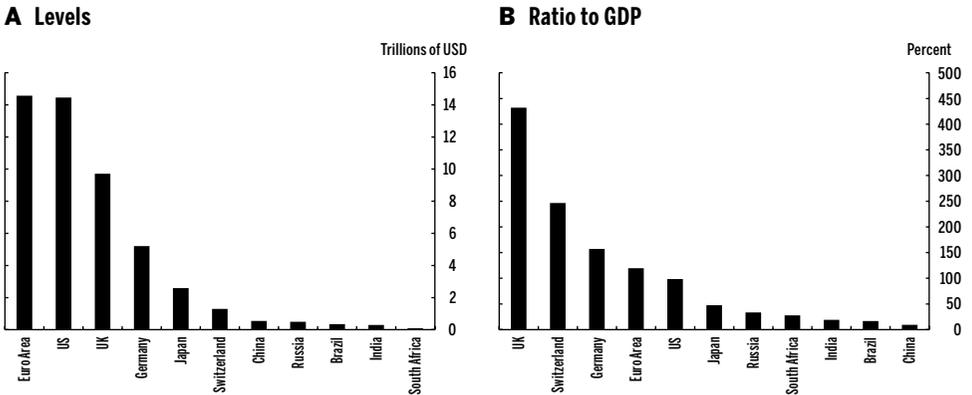
Source: International Monetary Fund, International Financial Statistics.

**FIGURE 4**  
**Evolution of External Debt, China, 1990–2010**



Source: World Bank, Global Development Finance; International Monetary Fund, World Economic Outlook.

**FIGURE 5**  
**Comparative Perspective on Gross External Debt in 2010**



Sources: World Bank, Quarterly External Debt Data and Global Development Finance; Economist Intelligence Unit, country data.

Note: Gross external debt includes those owed by the sovereign, corporate and banking sectors.

Indeed, China’s overall external balance sheet shows that its economy is quite well-insulated from external shocks as net foreign assets amounted to nearly \$1.8 trillion at the end of 2010. In other words, China has enough foreign assets to not only meet all its external debt obligations but also to more than cover all its foreign liabilities. By contrast, other emerging markets—like Brazil, India, and South Africa—have negative net foreign asset positions, although these are quite small for the latter two countries (Table 4).

TABLE 4  
**International Investment Positions in 2010**  
(in billions of U.S. dollars)

Aspect of Position	Euro Area	Germany	Japan	Switzerland	UK	US	Brazil	China	India	Russia	South Africa
Net Position	-1,649	1,383	3,088	786	-317	-2,471	-698	1,791	-223	16	-65
<b>A. Assets</b>											
Total	2,1971	8,550	6,919	3,285	14,539	20,315	595	4,126	410	1,173	304
1. FDI	6,277	1,426	831	911	1,675	4,429	175	311	94	369	89
2. Portfolio	6,466	2,581	3,346	1,117	3,240	6,694	17	257	2	37	131
Equity	2,550	765	679	441	1,159	4,486	1	63	2	5	123
Debt	3,916	1,817	2,667	676	2,082	2,209	16	194	0	33	8
3. Other invst.	6,791	3,279	1,592	802	5,984	5,050	115	644	17	286	40
4. Resv. assets	790	217	1097	269	78	489	289	2914	298	479	44
FX reserves	207	37	1036	217	49	52	281	2847	268	433	35
5. Fin. derivatives	1,648	1,048	53	186	3,563	3,653	0	0	0	2	0
<b>B. Liabilities</b>											
Total	23,620	7,167	3,831	2,499	14,857	22,786	1,294	2,335	633	1,157	369
1. FDI	4,967	957	215	576	1,076	2,659	473	1,476	198	493	148
2. Portfolio	9,852	3,020	1872	767	3,939	11,709	656	222	171	278	180
Equity	4,243	590	989	672	1,472	3,510	430	206	138	233	138
Debt	5,608	2,430	883	95	2,467	8,199	226	16	33	45	42
3. Other invst.	7,094	2,140	1,680	1,005	6,375	4,876	161	637	264	383	42
4. Fin. derivatives	1,708	1,051	65	150	3,467	3,542	4	0	0	3	0

Source: International Monetary Fund, International Financial Statistics.

The reserve currency economies have diverse net international positions. The United States has a particularly large negative net foreign asset position, amounting to \$2.5 trillion in 2010. Germany, Japan, and Switzerland have net asset positions, with Japan's position in particular being a massive \$3.1 trillion. The United Kingdom and the euro area as a whole have negative net asset positions. This diversity suggests that the signs of the net positions are themselves not crucial for reserve currency status. In other words, it is not essential for a country to run persistent current account deficits, as suggested by the Triffin dilemma, for its currency to attain reserve currency status. In fact, the average current account balance as a ratio to GDP during the period 2000–07 was positive (or, in the case of the euro zone as a whole, essentially zero) for all reserve currency economies except the United Kingdom and the United States (Table 5).

In short, China is not subject to the traditional risks associated with opening up the capital account in advance of increasing exchange rate flexibility. Nevertheless, this combination of policies could complicate domestic macroeconomic policy management as a more open capital account with an inflexible exchange rate further erodes the operational independence of monetary policy.

TABLE 5  
**Average Current Account Balances, 2000–07**  
 (percentage of GDP)

Country or Region	Balance
Euro area	0.3
Germany	3.2
Japan	3.4
Switzerland	11.7
United Kingdom	-2.3
United States	-4.9

Sources: International Monetary Fund, World Economic Outlook; authors' calculations.

Moreover, liberalizing capital flows poses significant short-term risks to the financial system if not coupled with appropriate domestic financial reform policies. Liberalizing outflows further without interest rate liberalization could cause households to shift deposits out of the banking sector. The return on those deposits is constrained by the government and has resulted in real rates that are significantly negative. Banking sector earnings are heavily dependent on net interest margins that are mandated by the government through the deposit rate ceiling and lending rate floor (Lardy and Douglass 2011). Hence, massive deposit withdrawals can impose systemically damaging liquidity shocks on the banking sector, with potentially broader macroeconomic repercussions. Related concerns that speculative and volatile capital inflows might destabilize the financial system could be mitigated with a more flexible exchange rate (Eichengreen 2011b). Indeed, the expectations of renminbi appreciation that have resulted from the tight management of the renminbi's value may be fueling more speculative inflows.

The data on the international investment position that we have presented and the combination of policies discussed highlight the major risk for China's external balance sheet, which is in fact the asset position (Prasad 2011). As noted earlier, China's external liabilities are not vulnerable to the valuation changes associated with an appreciating foreign currency, because they are mostly denominated in renminbi. But with foreign exchange reserves accounting for nearly 70 percent of total external assets, the risk comes from valuation losses that would result from the renminbi's eventual appreciation. If the managed exchange rate results in further reserve accumulation through foreign exchange intervention to offset the effects of trade surpluses and capital inflows, then these risks will continue to rise.

Liberalization of outflows would not only reduce reserve accumulation but would also generate more collateral benefits. Indeed, a number of steps have already been taken in this direction and could be intensified and broadened to involve more private-sector participation. Liberalizing outflows provides Chinese households with opportunities to diversify their savings portfolios internationally and stimulates domestic financial reforms by creating competition for domestic banks that currently have a captive domestic source of funds. Initiatives to encourage corporate outflows have focused on large state-owned firms and a concentrated set of sectors such as natural resources (Scissors 2011; Rosen and Hanemann 2009). For the renminbi to take on a more international role, FDI outflows should involve more participation from the private sector.

The issue of sequencing becomes complex in this context. In the absence of financial market development, the benefits of capital account opening may be limited even if the risks are low, as in the case of China. For instance, Chinese households are in principle allowed to send the equivalent of \$50,000 a year out of the country, a large amount for an economy with a per capita income of about \$5,000. But the absence of well-developed securities markets makes it difficult for most households to take advantage of these opportunities to pursue the international diversification of their savings portfolios.

In this context, the liberalization of inflows is an important part of the overall picture. This liberalization would allow foreign investors to play a role in developing and deepening China's financial markets. For instance, there is a large body of evidence that liberalizing portfolio inflows helps improve liquidity in the domestic equity markets of emerging economies. This, along with the entry of foreign banks, would increase competition in the banking sector, which in turn would be beneficial for private savers and borrowers. Other segments of China's financial sector, including the insurance sector, have been dependent on capital controls and other entry restrictions to stay competitive. These segments will face greater competition with more open inflows. With effective regulation, this could lead to significant efficiency gains.

Capital account liberalization could also have broader benefits. An open capital account would catalyze progress toward China's objective of making Shanghai an international financial center. Capital account opening, especially if accompanied by greater exchange rate flexibility, could also strengthen China's domestic economic structure. It would facilitate financial sector reforms, allowing for a rebalancing of growth away from reliance on exports and investment-driven growth, to a more balanced model of growth, with higher private consumption.<sup>6</sup>

An interesting issue is whether there is a policy goal short of full capital account convertibility that provides a better risk/benefit trade-off. Yam (2011) has argued that the long-term objective for China ought to be full capital account convertibility, which he defines as relaxation of capital controls but maintenance of soft controls in the form of registration and reporting requirements for regulatory purposes. He draws a careful distinction between this and an entirely unfettered capital flow regime, referred to as free capital account convertibility. This is a subtle but important distinction that may resonate well with the Chinese leadership, given that full convertibility by this definition provides a path to an open capital account without entirely ceding control to market forces.

## 4. Evaluating China on Conditions for Attaining Global Currency Status

In this section, we review China's progress in meeting the criteria thought to be essential for a reserve currency and also provide cross-country perspectives on these indicators.

### 4.1. Domestic Financial Market Development

Financial market development in the home country is one of the key determinants of a currency's international status.<sup>7</sup> Historically, each reserve currency has risen on the international stage under unique circumstances and spurred by different motivations. But one constant is that this rise has always required financial markets that can cope with the varied and voluminous demands of financial market participants. The relevant aspects of financial market development are the following:

- **Breadth:** the availability of a broad range of financial instruments, including markets for hedging risk;
- **Depth:** a large volume of financial instruments in specific markets; and
- **Liquidity:** a high level of turnover (trading volume).

Without a sufficiently large debt market, the renminbi cannot be credibly used in international transactions. If there is insufficient liquidity in markets for renminbi-denominated assets, the currency will not be attractive to foreign investors. Other central banks and large institutional investors will demand renminbi-denominated government and corporate debt as safe assets for their portfolios. At the same time, both importers and exporters may be concerned about greater exchange rate volatility resulting from an open capital account if they do not have access to derivatives markets to hedge foreign exchange risk. Thus, breadth, depth, and liquidity are all relevant considerations in assessing

the readiness of a country's financial sector to cope with an open capital account and elevate its currency to reserve currency status.

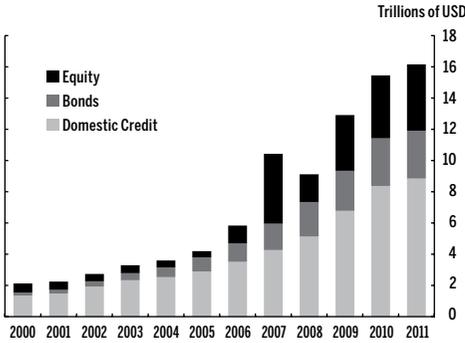
Furthermore, from a political-economic perspective, a large financial sector helps overcome objections to a more international currency from the exporting sector, which may fear lost competitiveness if demand for the currency as a reserve asset leads to its appreciation. Historical episodes of the rise of international currencies such as the dollar, the mark, and the yen suggest that this factor has in fact played an important role in the past (Eichengreen and Flandreau 2010). In China's case, these pressures may be balanced. The exporting sector indeed benefits substantially from the managed exchange rate but, conversely, China's internationalization of the currency is driven by a national-scale promotion unseen in previous historical episodes (Frankel 2011). This should mitigate any pressures that may arise from exporting interests.

In this section, we assess the progress that China has made in various aspects of financial market development and discuss the close relationship among those reforms, capital account openness, and the international role of the currency. Our main conclusion is that China falls short on many key dimensions of financial market development, and its steps to aggressively promote its currency's international role are likely to be impeded over the medium term by the weaknesses of its financial system.

China's financial system remains bank-dominated, with the state directly controlling most of the banking system. Figure 6 shows that total domestic credit provided by the banking sector, which stood at \$8.8 trillion as of March 2011, outweighs the size of the equity and bond markets combined. Domestic credit allocation is still very much controlled by the state and is disproportionately directed toward enterprises, especially state-owned enterprises, rather than households. Table 6 shows the breakdown of total loans from the banking system to the resident and corporate sectors for 2007–10. In these years, the share of loans to the corporate sector remained at roughly 80 percent. Credit allocation through the banking sector is supported by massive deposits in the banking system, amounting to 186 percent of GDP in 2010. This ratio is far higher than that of the other major reserve currency economies, except for the United Kingdom, and also other major emerging market economies (see Figure 7).

The size and structure of the banking sector in China seem unsuitable for promoting the international use of the renminbi on a large scale. Policies that favor the banking sector relative to the rest of the financial system—including the interest rate structure that inhibits competition by setting a floor for lending rates and a ceiling for deposit rates—are detrimental to broader financial

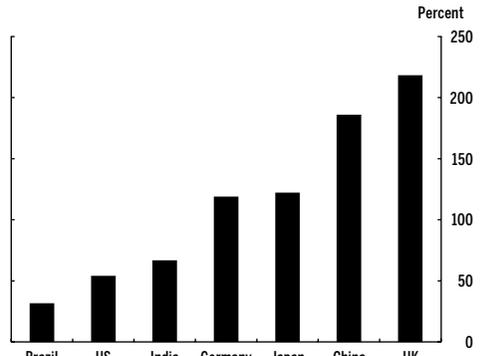
**FIGURE 6**  
**Domestic Financing Profile, China**



**Note:** This figure shows the sum of total domestic credit provided by the banking sector, total local currency bonds outstanding and total equity outstanding.

**Sources:** AsianBondsOnline, Asian Development Bank.

**FIGURE 7**  
**Bank Deposits, 2010**  
**(as a ratio to GDP)**



**Sources:** CEIC; authors' calculations.

**TABLE 6**  
**Use of Loans of Financial Institutions in China, 2007-10**  
**(in trillions of U.S. dollars)**

Use	2007	2008	2009	2010
Total	3.58	4.44	6.23	7.57
Resident/household	0.69	0.83	1.20	1.70
Nonfinancial corporate	2.89	3.60	5.03	5.87

**Note:** End-of-year data were converted from renminbi to U.S. dollars using end-of-period exchange rates.

**Source:** People's Bank of China.

market development. The future reforms and development of the banking system will have significant implications for the development of China's more nascent financial markets, including the corporate bond market (Hale 2007). The credit distortions in the banking system also hamper the development of a more competitive domestic private enterprise sector. It will be difficult to achieve a liquid debt market without more active participation from private firms as well as households.

One dimension in which China has made progress is the development of its equity markets. In 2005, reforms were introduced to allow nontradable shares in Chinese companies to float freely. These reforms had a dramatic effect. Market capitalization and turnover surged immediately thereafter and have grown sixfold since 2005, while trading volume has climbed more than tenfold (Table 7). Both stock market capitalization and turnover took a big hit in 2008 in absolute

TABLE 7  
**Evolution of Equity Market in China, 2000–2011**

Year	Market Capitalization (billions of U.S. dollars)	Stocks Traded (billions of U.S. dollars)	Turnover Ratio
2000	581	722	1.58
2001	524	449	0.81
2002	463	333	0.68
2003	681	477	0.83
2004	640	748	1.13
2005	781	586	0.83
2006	2,426	1,635	1.02
2007	6,226	7,792	1.80
2008	2,794	5,471	1.21
2009	5,008	8,956	2.30
2010	4,763	8,030	1.64
2011 <sup>a</sup>	3,650	—	—

**Note:** The turnover ratio is defined as the value of stocks traded during each year divided by the average market capitalization between the end of the current and previous years. Data include both the Shanghai and Shenzhen stock exchanges.

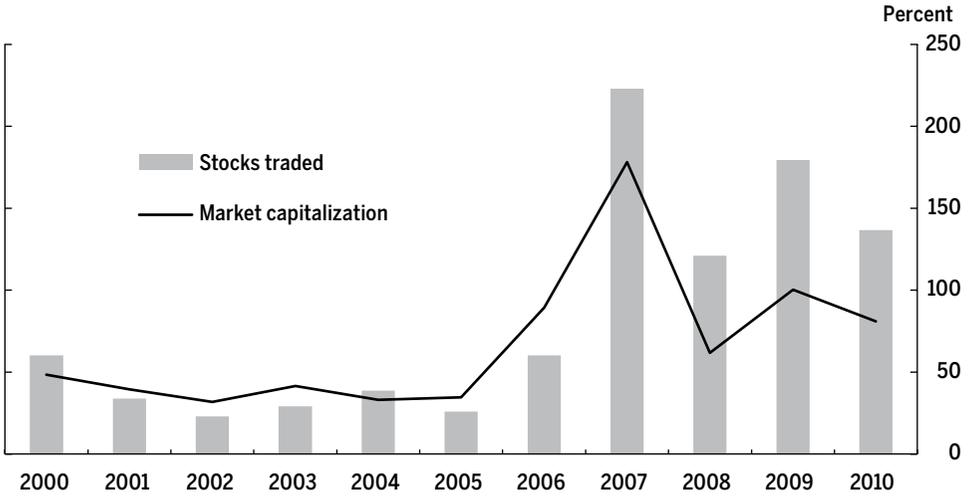
<sup>a</sup> Data are through November.

**Sources:** World Bank, World Development Indicators; CEIC.

terms and relative to GDP, as a result of the global financial crisis (Figure 8). Both measures rebounded sharply in 2009 before declining modestly in 2010. As of 2010, capitalization and turnover in Chinese equity markets exceeded those of other individual economies—with the notable exception of the United States, which remains dominant in terms of its share of global equity market capitalization and turnover (Table 8). Although equity markets do in principle provide renminbi-denominated instruments that can be held by both domestic and foreign investors, there are still significant restrictions on foreign investors' participation in these markets. Moreover, Chinese stock markets are volatile and prone to concerns about governance. For these reasons, the country's deep equity markets may be of limited help in making the renminbi an international currency in the near future.

Next, we examine the current state of the debt market in China and how well-prepared it is for supporting the renminbi's role as an international currency. Figure 9 shows that the stock of domestic debt securities has risen sharply during the last few years, but from a very low base. Nonfinancial corporate debt was practically nonexistent until 2005. Table 9 shows that the turnover in both government and corporate debt markets has also risen sharply in recent years.

FIGURE 8  
**Equity Markets in China, 2000–10**  
 (percentage of GDP)



Note: Data include both the Shanghai and Shenzhen stock exchanges.

Source: World Bank, World Development Indicators.

TABLE 8  
**Equity Markets across Countries in 2010**

Aspect	Brazil	China <sup>a</sup>	Euro Area	Germany	India	Japan	Russia	Switzerland	South Africa	United Kingdom	United States
Market capitalization (billion dollars)	1,546	4,763	6,277	1,430	1,616	4,100	1,005	1,229	1,013	3,107	17,139
Stocks traded (billion dollars)	901	8,030	4,656	1,405	1,057	4,280	800	869	340	3,007	30,455
Turnover ratio	0.66	1.64	0.75	1.03	0.76	1.14	0.86	0.76	0.40	1.02	1.89

Note: The turnover ratio is defined as the value of stocks traded during each year divided by the average market capitalization between the end of the current and previous years.

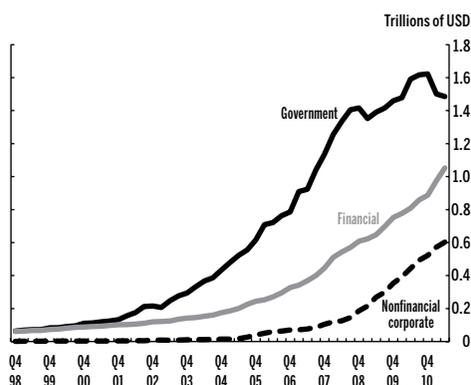
<sup>a</sup> Data for China include both the Shanghai and Shenzhen stock exchanges.

Source: World Bank, World Development Indicators.

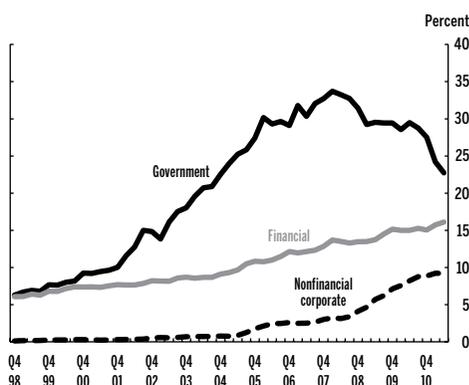
By most measures, the size and liquidity of China’s debt market currently lag far behind those of existing reserve currency economies. Table 10 provides a broad comparison of government and corporate bond market size and turnover in 2010 across a number of key economies. The U.S. debt market remains unrivaled both in terms of depth and liquidity, with the turnover in the Treasury bond market dwarfing the turnover in government debt markets of other major economies. The size of China’s government bond market, measured by the market value of the stock of outstanding bonds, was about \$2.4 trillion at the end of

FIGURE 9  
Evolution of Domestic Debt Securities, China

## A Levels



## B Ratio to GDP



**Note:** This figure shows data through June 2011. Ratios are calculated using rolling GDP over the past four quarters.

**Source:** Quarterly data from Bank for International Settlements; Economist Intelligence Unit, country data; authors' calculations.

TABLE 9  
Turnover of Government and Corporate Bonds, China

Year	Government Bonds		Corporate Bonds	
	Turnover (billions of U.S. dollars)	Turnover Ratio	Turnover (billions of U.S. dollars)	Turnover Ratio
2002	11	0.03	0.3	0.04
2003	105	0.25	0.2	0.02
2004	97	0.17	0.6	0.03
2005	214	0.27	40	0.73
2006	273	0.26	78	0.78
2007	623	0.43	114	0.79
2008	1,518	0.79	213	0.91
2009	1,170	0.57	478	1.12
2010	2,299	0.96	776	1.25

**Note:** Turnover is defined as the value of bonds traded on the secondary market. Turnover ratio is defined as total turnover divided by the average amount of bonds outstanding between the end of the third and four quarters each year. Repurchase transactions are excluded. Corporate bonds include those issued by nonfinancial and financial corporations.

**Sources:** AsianBondsOnline, Asian Development Bank; authors' calculations.

2010, compared with \$8.9 trillion for the United States. The turnover ratio on government bonds in China is 1.0, compared with a ratio of 14.3 for the United States. The turnover of government bonds in India is also roughly twice that in China, although the absolute size of India's government bond market is much smaller.<sup>8</sup> Both these countries restrict foreign investors' participation in their government bond markets, an issue that could affect their two currencies' scope to become reserve currencies.

TABLE 10  
**Government and Corporate Bond Turnover, 2010: A Cross-Country Perspective**  
 (billions of U.S. dollars or ratio)

Country	Government			Corporate		
	Amount Outstanding	Turnover	Turnover Ratio	Amount Outstanding	Turnover	Turnover Ratio
United States	8,853	126,756	14.3	7,519	3,922	0.5
Euro area	7,926	—	—	5,536	—	—
Germany	1,400	7,834	5.6	335	—	—
China	2,388	2,299	1.0	620	776	1.3
Japan	10,480	12,076	1.2	1,107	76	0.1
India	520	1,155	2.2	191	141	0.7

**Note:** The amounts of government and corporate bonds outstanding and their turnover are expressed in billions of U.S. dollars. Corporate bonds for China, the euro area, Germany, and Japan include those issued by nonfinancial and financial corporations. No disaggregated information is given for the United States and India.

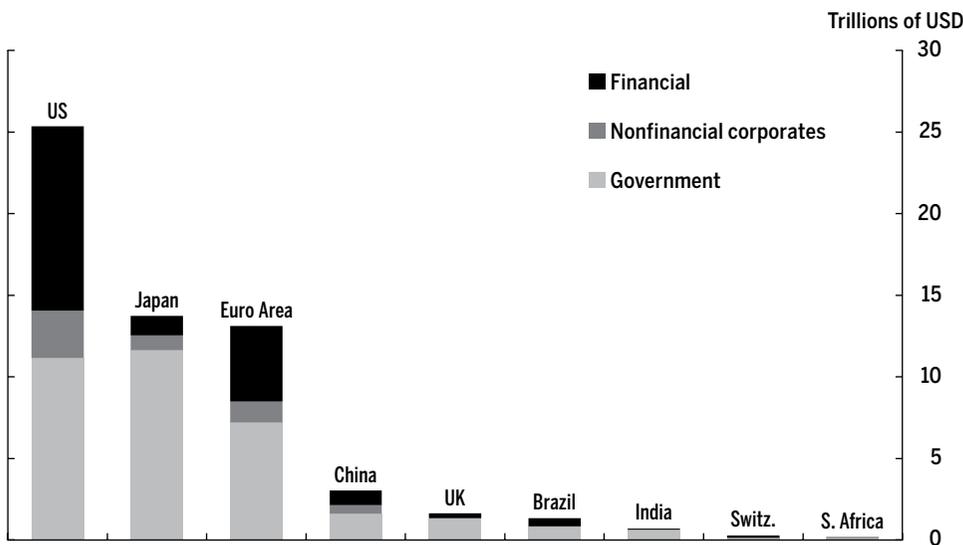
**Sources:** U.S. Census Bureau, *Statistical Abstract of the United States*; Securities Industry and Financial Markets Association; European Central Bank; Bundesbank; Federal Financial Supervisory Authority; AsianBondsOnline, Asian Development Bank; CEIC data; Securities and Exchange Board of India; authors' calculations.

China has a relatively high turnover ratio in its corporate bond market. This is consistent with the rapid growth of the corporate debt market, even though that market is still small in absolute terms, at about one-twelfth the size of the U.S. corporate bond market. It is interesting to note that the market value of outstanding corporate bonds in China is greater than the corresponding figure for Germany and about half that for Japan (in Japan, the turnover ratio on these bonds is very low).

Figure 10 shows the size of the global domestic debt securities market by residence of issuance in December 2010. Although the currency breakdown for domestic debt is not available, sources at the Bank for International Settlements suggest that domestic debt is largely denominated in domestic currency (Committee on the Global Financial System 2007, p. 18). China's domestic debt market is valued at \$3 trillion, significantly lower than that of the top three reserve currency areas—the United States, the euro area, and Japan. The U.S. domestic debt securities market had a capital value of more than \$25 trillion. Interestingly, the quantity of China's outstanding domestic securities is greater than that of the United Kingdom and Switzerland, two reserve currency economies. This suggests that the size of the domestic debt market per se does not necessarily prevent the Chinese currency from going global.

China's aspirations to make the renminbi a global reserve currency rest in particular on the pace of development of the government debt market. Obstfeld (2011a) has argued that the Triffin dilemma today is not a current account issue but, rather, a fiscal issue. In a world with mobile capital flows, the accumulation of reserves by other countries does not necessarily imply that the reserve

FIGURE 10  
**Domestic Debt Securities, by Residence and Sector of Issuance, 2010**



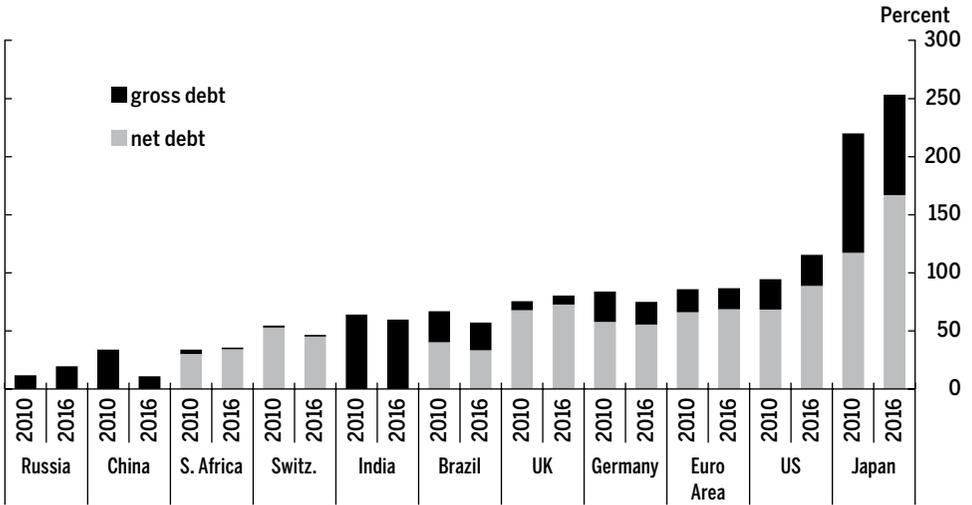
**Note:** This figure shows the outstanding amount of domestic debt by residence of issuance and also by sectors of issuance. Euro area data do not include Estonia.

**Sources:** Bank for International Settlements; authors' calculations.

currency economy has to run current account deficits. However, reserve currencies are expected to issue high-quality and creditworthy government debt or government-backed debt instruments that can serve as a hedge against domestic currency depreciation during a global downturn. With a more international renminbi, China is expected to play a more active role in this regard. This implies that government debt in China should rise as the currency fills the role of a reserve currency.

The current level of government debt in China is relatively low compared with reserve currency areas and with other major emerging markets (Figure 11). This is an *ex ante* advantage for China before internationalizing its currency, given that it provides more credibility about the government's fiscal and inflation policies. If the economy moves toward a more flexible exchange rate and pursues a more independent monetary policy, then it will also require a more diversified set of government bonds across the yield curve spectrum to fully implement its inflation and output objectives. Thus, the structure and size of the government debt market are intimately linked not just to how the renminbi progresses as an international currency but also to China's own economic development.

FIGURE 11  
**General Government Debt as a Share of GDP:  
 Major Advanced, Emerging Market Economies**



**Note:** The grey area represents net debt, and the sum of the grey and black areas represents gross debt. Data on net debt for China, India and Russia were not available, and hence only gross debt is shown for these economies. Total 2010 debt data for China include revised International Monetary Fund estimates of local government debt.  
**Source:** International Monetary Fund, World Economic Outlook.

Although the domestic debt market is a major indicator of financial market development, it does not provide a full picture about the currency’s potential use in international financial transactions. Hence, we also analyze the relative size of international debt securities (i.e., debt issued outside the home country) in different currencies of issuance. The existing reserve currencies clearly dominate, with the U.S. dollar and the euro accounting for 83 percent of outstanding international bonds and notes in 2010 (Table 11). The top five reserve currencies together account for 96 percent of these instruments. Only a paltry 0.1 percent of international debt is denominated in renminbi. The same is true for other major emerging market currencies. For instance, it is interesting to note that India, another large and fast-growing emerging market aspiring to have a reserve currency, also has a minuscule share of international debt securities denominated in its currency.

Although the absolute size of the debt securities market in China is small from a cross-country perspective, it should not mask the country’s rapid growth in these markets. As discussed earlier, domestic debt securities, especially corporate sector debt, were at negligible levels only a decade ago. The domestic debt securities market grew at an average annual rate of 30.3 percent from December 1998 to December 2010 (see Figure 9). Though the outstanding stock

TABLE 11  
**International Bonds and Notes Outstanding**  
 (selected currencies; billions of U.S. dollars)

Currency	2010	Percentage of Total
U.S. dollar	10,503.0	39.2
Euro	11,795.0	44.1
Pound sterling	2,089.0	7.8
Yen	761.0	2.8
Swiss franc	401.0	1.5
South African rand	36.0	0.1
Brazilian real	35.0	0.1
Renminbi	19.0	0.1
Russian ruble	15.1	0.1
Indian rupee	1.5	0.0
Total value	26,773.0	

**Note:** This table shows the breakdown of outstanding international debt securities by their currency denomination. Total value refers to all international debt securities for economies that report data to the Bank for International Settlements.

**Source:** Bank for International Settlements.

of international bonds and notes issued in China was only \$19 billion in 2010, this was up from essentially zero in 2005. The share of nonfinancial corporate debt in total domestic debt outstanding is also rising, accounting for a share of 17 percent and a value of \$522 billion at the end of 2010. Furthermore, as discussed earlier, turnover in the corporate bond market has grown rapidly since the early 2000s.

The growth of China's debt markets suggests that the pace of the country's financial market development is consistent with its intention to make its currency accepted as an international currency. Nevertheless, achieving reserve currency status for the renminbi is probably a much longer-term goal. There is some evidence that the ascension of a country's currency to reserve currency status is best approximated by a logistic, rather than a linear, function of the key determinants of achieving that status (Chinn and Frankel 2007, 2008). In other words, the marginal gain toward reserve currency status would be higher if China were to increase its share of world debt markets from, say, 50 to 51 percent rather than from 5 to 6 percent. If this is the correct model for analyzing reserve currency status, then China still has a long way to go in further developing its financial markets to meet the challenges of an international currency.

Overall, there has been progress in the development of China's financial markets during the last decade, in terms of breadth, depth, and liquidity. But this progress remains modest to date. There are still significant gaps to fill in terms of achieving sufficiently large and liquid debt markets. More important,

the structure and quality of debt markets will also need reorientation to fully prepare for a currency used widely in international financial transactions and reserve holdings. With relatively low external and government debt positions, China's debt markets can in principle expand rapidly without serious threat to inflation credibility or vulnerability to external risks. Effective regulation of corporate debt markets is an important priority so that these markets can expand without generating financial instability. Moreover, to satisfy their demand for relatively safe renminbi-denominated assets, foreign investors—both official and private—will eventually need to be given greater access to China's debt markets if the renminbi is to become a true international currency.

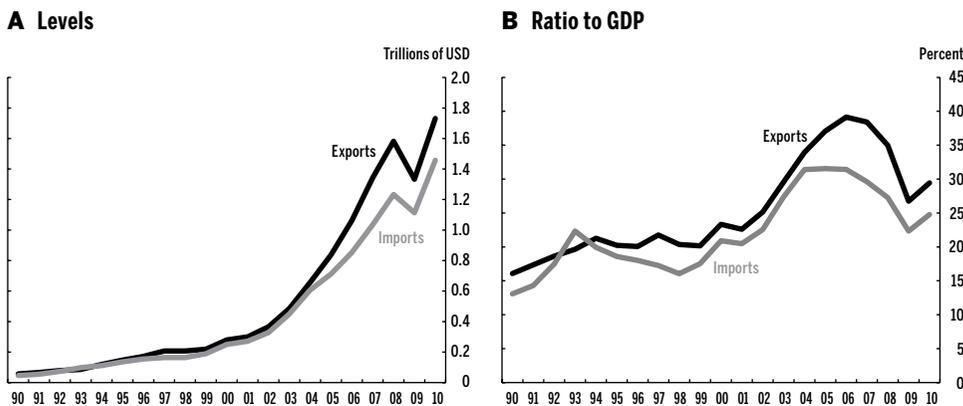
#### **4.2. Financial Market Development Related to International Trade and Financial Transactions**

An important criterion for achieving international or reserve currency status is the share of an economy in world trade and its trade interconnectedness with other economies. Although having large trade flows is neither a necessary nor sufficient condition for a country to have an international currency, it does boost the potential for the economy's currency to serve as an invoice currency. This is an underlying implication of Krugman's (1995) triangle model of currency invoicing—whereby economies are more likely to use the currency of the large nation, as measured by trade, due to economies of scale.

Figure 12 shows that Chinese imports and exports have grown dramatically during the past two decades. Trade flows contracted in 2008–09, but have since rebounded and together stood at \$3.2 trillion, or 54 percent of GDP, in 2010. The value of China's total trade is now only slightly lower than that of the United States (Figure 13). For an economy of its size, China also has a high ratio of total trade to GDP, higher than that of the other key emerging markets and the United States. Table 12 shows that China now accounts for 9 percent of world trade, behind only the shares of the United States and the euro area (figures for the euro area include within-euro area trade). These indicators are suggestive of China's size and rising prominence in world trade.

In addition to trade volumes, another important criterion is the degree to which an economy is interconnected with other economies through trade linkages. This has implications for the incentives of traders in other countries to settle their transactions in the home country's currency. On the basis of a variety of criteria, Errico and Massara (2011) find that, in 2010, China was the second most interconnected country in terms of its trade flows, up from fifth in 2000. China is also ranked second in terms of the size of its trade, giving it the top rank in terms of overall systemic trade importance. The United States

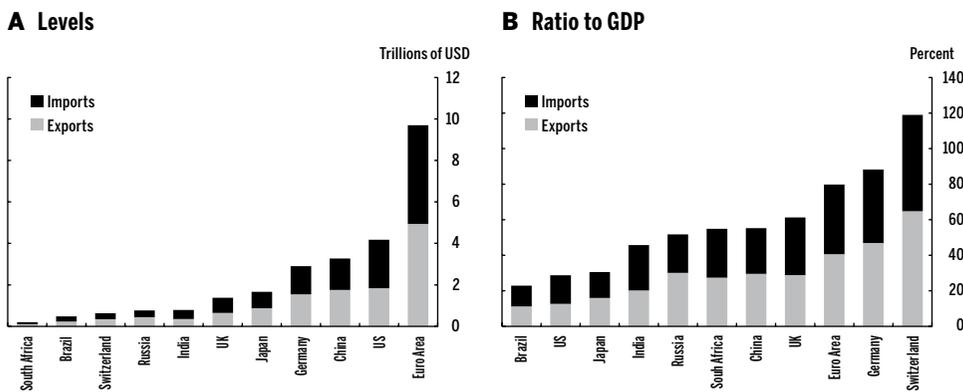
FIGURE 12  
Imports and Exports of China, 1990–2010



Note: Trade data are for trade in goods and nonfactor services.

Source: World Bank, World Development Indicators.

FIGURE 13  
Trade as a Ratio to GDP across Countries in 2010



Note: Exports and imports are for trade in goods and nonfactor services. Figures for euro area include within-euro area trade.

Sources: Economist Intelligence Unit, country data; authors' calculations.

ranks first in size and nineteenth in terms of interconnectedness, giving it the rank of sixth in systemic trade importance.<sup>9</sup>

The pace of the internationalization of China's currency depends on its use in international financial transactions as well. The choice of currency for denomination and settlement of trade flows is contingent on the extent to which that currency can also be used in international financial transactions.

TABLE 12  
**Share of World Trade across Economies in 2010 (percent)**

A. Trade in Goods and Nonfactor Services				B. Trade in Goods			
Country or Region	Exports	Imports	Total Trade	Country or Region	Exports	Imports	Total Trade
Euro area	26.5	26.2	26.4	Euro area	13.0	12.5	12.8
United States	9.9	12.9	11.4	United States	8.5	13.0	10.7
China	9.4	8.4	8.9	China	10.5	9.2	9.8
Germany	8.3	7.5	7.9	Germany	8.4	7.0	7.7
Japan	4.7	4.4	4.5	Japan	5.1	4.6	4.8
United Kingdom	3.5	4.0	3.8	United Kingdom	2.7	3.7	3.2
Russia	2.4	1.8	2.1	Russia	2.7	1.8	2.2
India	1.9	2.4	2.1	India	1.5	2.2	1.8
Switzerland	1.8	1.6	1.7	Brazil	1.3	1.3	1.3
Brazil	1.3	1.3	1.3	Switzerland	1.2	1.1	1.2
South Africa	0.5	0.6	0.5	South Africa	0.5	0.6	0.6

**Sources:** Economist Intelligence Unit, country data; International Monetary Fund, *International Financial Statistics*.

We first examine the renminbi's role in foreign exchange markets. As emerging markets play an increasingly important role in global finance, more international financial transactions will involve direct exchanges of currencies that do not involve the U.S. dollar or other reserve currencies as a vehicle currency. Foreign exchange market turnover is a good indicator of a currency's potential for developing into a vehicle currency. As of 2010, the renminbi accounted for less than 1 percent (out of 200 percent, as each transaction involves two currencies) of all turnover in foreign exchange markets (Table 13). This is true of other emerging market currencies as well. The U.S. dollar is dominant in this dimension, accounting for 85 percent of turnover in 2010. The five reserve currencies together accounted for 162 percent of total turnover.

In terms of the geographic distribution of foreign exchange turnover, however, China has the advantage of having Hong Kong as an important financial center for settling foreign exchange transactions. In 2010, Hong Kong accounted for 5 percent of global foreign exchange market turnover (Table 14). This puts the renminbi on a competitive footing relative to other emerging market currencies in terms of attaining the role of an international currency.

Rather than looking at the foreign exchange market as an aggregate, we can also analyze its various instruments separately. Table 15 shows the shares of average daily turnover in April 2010 in the spot market as well as the markets for outright forwards, foreign exchange swaps, currency swaps, and options and other instruments. Spot transactions make up 24 percent of all foreign exchange

TABLE 13  
**Currency Distribution of Global Foreign Exchange Market Turnover**  
 (selected currencies only; in percent)

Currency	1998	2001	2004	2007	2010
U.S. dollar	86.8	89.9	88.0	85.6	84.9
Euro	—	37.9	37.4	37.0	39.1
Deutsche mark	30.5	—	—	—	—
Japanese yen	21.7	23.5	20.8	17.2	19.0
Pound sterling	11.0	13.0	16.5	14.9	12.9
Swiss franc	7.1	6.0	6.0	6.8	6.4
Indian rupee <sup>a,b</sup>	0.1	0.2	0.3	0.7	0.9
Russian ruble	0.3	0.3	0.6	0.7	0.9
Chinese renminbi <sup>b</sup>	0.0	0.0	0.1	0.5	0.9
South African rand <sup>a,b</sup>	0.4	0.9	0.7	0.9	0.7
Brazilian real <sup>a,b</sup>	0.2	0.5	0.3	0.4	0.7
All currencies	200.0	200.0	200.0	200.0	200.0

**Note:** The percentage shares of individual currencies sum to 200, because two currencies are involved in each transaction. Data are adjusted for local and cross-border interdealer double counting (i.e., “net-net” basis).

**a** For 1998, the data cover local home currency trading only.

**b** Included as main currency separately reported by the Bank for International Settlements from 2010.

**Source:** Bank for International Settlements.

TABLE 14  
**Geographical Distribution of Global Foreign Exchange Market Turnover**  
 (selected economies only; in percent)

Country	1995	1998	2001	2004	2007	2010
Brazil <sup>a</sup>	—	0.2	0.3	0.1	0.1	0.3
China <sup>b</sup>	—	0.0	—	0.0	0.2	0.4
Germany	4.8	4.7	5.4	4.6	2.4	2.1
Hong Kong	5.6	3.8	4.0	4.1	4.2	4.7
India	—	0.1	0.2	0.3	0.9	0.5
Japan	10.3	7.0	9.0	8.0	5.8	6.2
Russia	—	0.3	0.6	1.1	1.2	0.8
South Africa	0.3	0.4	0.6	0.4	0.3	0.3
Switzerland	5.4	4.4	4.5	3.3	5.9	5.2
United Kingdom	29.3	32.6	31.8	32.0	34.6	36.7
United States	16.3	18.3	16.0	19.1	17.4	17.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

**Note:** Data are adjusted for local interdealer double counting (i.e., “net-gross” basis). Estimated coverage of the foreign exchange market ranged between 90 and 100 percent in most countries.

**a** Data for Brazil for 1998 cover only spot transactions.

**b** Data for China from 1998 to 2004 cover only spot transactions.

**Source:** Bank for International Settlements.

TABLE 15  
**Currency and Instrument Distribution of Global Foreign Exchange Market Turnover**  
 (percentage shares of average daily turnover in April 2010)

Currency	Spot	Outright Forwards	Foreign Exchange Swaps	Currency Swaps	Options and Other Instruments
U.S. dollar	35.2	11.6	47.4	1.1	4.7
Euro	44.4	9.6	39.2	1.1	5.6
Japanese yen	39.7	15.2	36.9	0.9	7.2
Pound sterling	41.6	10.7	43.4	0.5	3.9
Swiss franc	36.4	7.5	50.2	0.7	5.3
South African rand	31.7	9.9	54.3	0.5	3.6
Russian ruble	50.6	6.3	39.7	0.5	2.9
Indian rupee	35.8	36.1	18.0	0.1	9.9
Brazilian real	31.3	47.3	2.9	1.4	17.1
Chinese renminbi	23.7	41.6	19.9	0.2	14.6

**Note:** This table shows, for each currency, the relative shares of its turnover in each of the five categories of global foreign exchange market shown in the columns. Data are adjusted for local and cross-border interdealer double-counting (i.e., “net-net” basis).

**Source:** Bank for International Settlements.

transactions in China, a smaller share than for other reserve currency economies or even other emerging markets, all of which have spot transaction shares exceeding 30 percent. Furthermore, China’s use of foreign exchange swaps is limited compared with the reserve currency economies, all of which appear to rely heavily on this derivative instrument. By contrast, China and other emerging markets such as Brazil and India rely much more on outright forwards. Outright forwards are more likely to be used as instruments to hedge foreign currency risk, whereas foreign exchange swaps are often used to fund institutions’ foreign exchange balances. The relatively higher use of outright forwards probably reflects the simpler goal of hedging against the renminbi’s potential future appreciation, rather than more sophisticated forms of foreign exchange risk management.

Table 16 compares the levels of turnover in April 2010 for major currencies across each of these foreign exchange markets. China’s currency has the lowest spot transactions turnover among all economies in the group. Its turnover in outright forwards is higher than that of other emerging markets, which is consistent with the data presented earlier. Levels of activity in renminbi foreign exchange swaps, currency swaps, and options markets are also very limited. The renminbi’s foreign exchange derivatives trading volume across the board is far smaller than that of the major reserve currencies. It is interesting to note that India’s development in these markets appears roughly similar to that of China, though India’s foreign exchange spot transaction turnover is somewhat higher.

TABLE 16  
**Turnover in Global Foreign Exchange Market, April 2010**  
 (daily averages in billions of U.S. dollars during April 2010)

Currency	Spot	Outright Forwards	Foreign Exchange Swaps	Currency Swaps	Options Sold	Options Bought	Total Options	Total Foreign Exchange Contracts Sold
U.S. dollar	1,188	392	1,600	38	106	101	160	3,378
Euro	691	150	610	18	57	55	87	1,555
Japanese yen	300	115	279	7	35	31	55	755
Pound sterling	213	55	222	3	13	13	20	513
Swiss franc	92	19	127	2	9	8	13	253
Indian rupee	14	14	7	0	2	2	4	38
Russian ruble	18	2	14	0	1	1	1	36
Chinese renminbi	8	14	7	0	3	4	5	34
South African rand	9	3	16	0	1	1	1	29
Brazilian real	9	13	1	0	3	3	5	27

Source: Bank for International Settlements.

The underdevelopment of the spot and derivatives markets for trading in the renminbi can be attributed to limited market participation. It was not until 2005 that China allowed nonfinancial firms and nonbanking financial institutions to participate in the spot foreign exchange market on a limited basis. Forward transactions were introduced on the China Foreign Exchange Trade System around the same time.

Some other steps to broaden China's financial markets can also be traced back to the mid-2000s. In 2005, China lifted prohibitions against banks trading in equity and commodity-based derivative products. The development of the over-the-counter (OTC) interest rate derivative market followed that, with the first interest rate swaps issued in 2006. As of October 2011, the gross notional amounts outstanding of OTC interest rate derivatives denominated in euros and U.S. dollars were \$93 trillion and \$86 trillion, respectively (Table 17). The same measure for the renminbi is about \$389 billion, less than half the comparable figures even for Brazil and India.

Although most derivatives markets in China are still nascent, the economy does have a major presence in the commodity futures market. For example, as measured by the number of futures/options traded, three of China's commodity futures exchanges were among the top 20 derivatives exchanges in the world in 2010. Using data from the Futures Industry Association, we calculate that the number of contracts traded at the three exchanges is roughly 7 percent of all trades at the 78 exchanges worldwide for which data are reported. Although this is encouraging in terms of broader financial development, it is not clear that a large commodity derivatives market is as useful as, say, a large financial

TABLE 17  
**Over-the-Counter Interest Rate Derivatives**  
 (gross notional outstanding in billions of U.S. dollars  
 as of October 21, 2011)

Currency	G-14 Dealers	Non-G-14 Dealers	Total
Euro	28,528	64,675	93,203
U.S. dollar	41,950	45,036	86,986
Japanese yen	8,010	24,490	32,500
Pound sterling	7,775	13,625	21,400
Swiss franc	1,098	1,995	3,093
South African rand	491	1,430	1,921
Brazilian real	290	704	994
Indian rupee	317	492	809
Chinese renminbi	124	265	389
Russian ruble	47	86	133

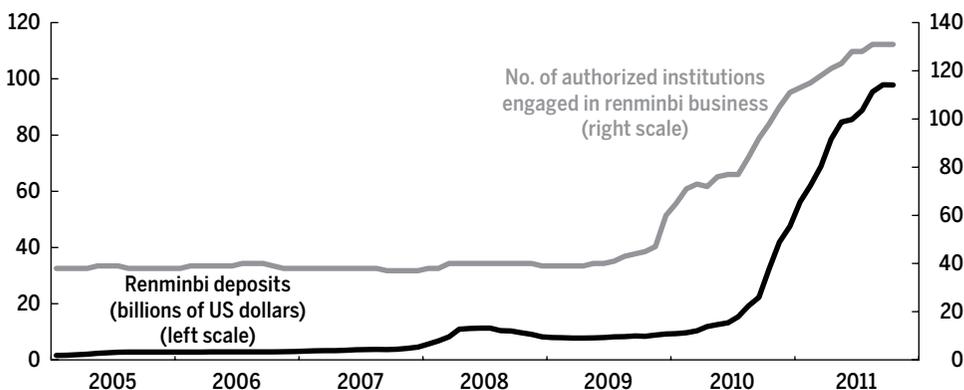
**Note:** “G-14 dealers” refer to the group of 14 financial institutions that reports data weekly to Tri-Optima. “Non-G-14 dealers” refer to all other counterparties.  
**Source:** Tri-Optima.

derivatives market, from the perspective of promoting international use of a currency.

The development of a more diverse and liquid derivatives market in China will support a more global renminbi. To some extent, commercial policies that direct activity toward Hong Kong are substituting for some roles that would normally be provided by vibrant domestic financial markets. Figure 14 shows that both the amount of renminbi deposits and the number of institutions authorized to conduct renminbi businesses in Hong Kong rose sharply from October 2010 to October 2011. As the mainland spot and derivatives markets expand in terms of size, liquidity, and access, it will be possible to conduct more of these activities onshore and set the stage for the renminbi to develop as an international settlement currency.

To sum up, thus far commercial policies designed to increase the offshore use of the renminbi have been the centerpiece of China’s currency internationalization process. Although this has been effective in promoting the renminbi’s global role without risking the potential deleterious effects of capital account liberalization, the full potential of the Chinese currency’s international use cannot be realized without more active onshore development. This development would encourage private initiatives to use the renminbi for trade and financial transactions. Ultimately, it will be difficult to fully develop China’s foreign exchange and derivatives markets in the absence of substantial capital account liberalization.

FIGURE 14  
**Renminbi Deposits in Hong Kong, January 2005–October 2011**



Sources: Monthly data from the Hong Kong Monetary Authority; authors' calculations.

### 4.3. Macroeconomic Policies

A critical attribute of a reserve currency is that it should be “widely acceptable as payment at a predictable value, even when liquidated without notice” (Obstfeld 2011a, p. 3). This implies that macroeconomic policies that anchor long-run inflationary expectations and foster macroeconomic stability are crucial conditions for a reserve currency. As noted earlier, China has a low level of explicit public debt relative to the major reserve currency economies. This is a positive situation from the perspective of macroeconomic stability, even if it means a limited availability of safe renminbi-denominated assets. Moreover, China’s general government budget deficit is small—the International Monetary Fund (IMF) estimates that the country’s deficit was 1.6 percent in 2011, and it is expected to decline to below 1 percent in 2012. In conjunction with the manageable level of public debt, this implies that China has room to counter domestic and external shocks using fiscal policy.

Despite its tightly managed exchange rate, which has compromised the independence of monetary policy, China has had a relatively stable inflation rate in the recent past. Table 18 shows that the reserve currency economies have had relatively moderate levels of inflation volatility in recent decades, as measured by the standard deviation of annual inflation rates. During the years 2000–10, the period of the Great Moderation followed by the global financial and economic crisis, inflation was well-contained in most major economies. The standard deviations of annual consumer price index inflation in the reserve

TABLE 18  
**Volatility of Annual CPI Inflation (standard deviation)**

A. Reserve Currency Economies					B. Key Emerging Markets				
Country or Region	1970–2010	1980–2010	1990–2010	2000–2010	Country	1970–2010	1980–2010	1990–2010	2000–2010
Euro area	—	—	0.6	0.5	Brazil	572.1	640.3	668.1	2.6
Germany	2.0	1.6	1.1	0.7	China	—	7.8	6.6	2.1
Japan	4.8	1.8	1.3	0.7	India	5.8	3.8	4.1	3.6
Switzerland	2.6	1.9	1.5	0.5	Russia	—	—	221.0	3.8
United Kingdom	5.4	3.1	1.8	1.3	South Africa	4.5	4.9	4.0	3.4
United States	3.1	2.3	1.2	1.1					

**Note:** Euro area inflation volatility is calculated using data for 1999 to 2010. Due to limited data availability, for China and Russia the calculations were done for the periods 1987–2010 and 1993–2010, respectively.

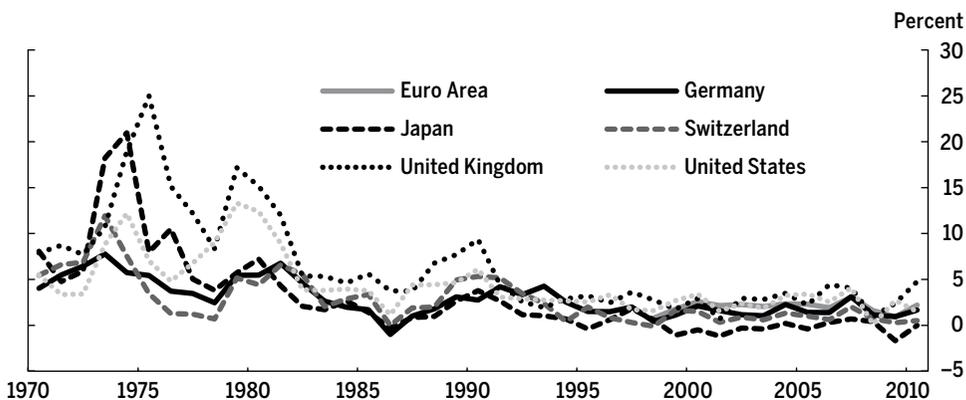
**Sources:** International Monetary Fund, International Financial Statistics, Global Financial Data.

currency economies were all around 1 percent. During this period, the standard deviations of inflation in emerging markets were in the range of 3 to 4 percent, with China coming in lowest, with a standard deviation of 2 percent. In short, China's track record in terms of the level and volatility of inflation should not be an impediment to its status as a global currency. Indeed, even though the major advanced economies had to deal with occasional bouts of high inflation during the 1970s and 1980s, this does not seem to have scarred them in terms of their reserve currency status (Figure 15). One concern, however, is that the People's Bank of China may intrinsically have less credibility vis-à-vis inflation compared with the central banks of the reserve currency economies because its operational independence is constrained by China's managed exchange rate regime. This could become a more serious issue, as discussed earlier, if capital account liberalization proceeds at a fast pace while the exchange rate remains tightly controlled.

## 5. The Renminbi's International Presence

The renminbi is already making its presence felt on the international stage, in part as the result of policy actions by the Chinese government and in part because of the sheer size and growing role of China in international trade and finance. Box 2 provides a summary of the major actions taken by the Chinese government since 2009 to open up its capital account and to promote the international use of its currency. A fuller and more detailed description of all these measures is given in Appendix B. Such a broad and concerted policy of promoting the internationalization of a currency is historically unprecedented (Frankel 2011). In this section, we evaluate the progress that has been made in different dimensions related to the renminbi's ascendance as a global currency.

FIGURE 15  
**Annual Consumer Price Index Inflation Rates of Reserve Currency Economies**



Source: International Monetary Fund, International Financial Statistics, Global Financial Data.

## 5.1. Currency Markets

The renminbi now trades on both onshore (CNY) and offshore (CNH) markets. Onshore trade takes place through the China Foreign Exchange Trade System, which is in effect managed by the People's Bank of China (PBOC). The offshore trades mostly take place on the Hong Kong Interbank Market. Two separate exchange rates prevail due to mainland government regulations that mandate these separate markets for the trading of renminbi. Contrary to the CNY, which is subject to the mainland's capital account restrictions, the CNH market is relatively less regulated and not subject to direct official control or intervention (Hui and Bunning 2010).

Figure 16 shows the exchange rate of the renminbi against the U.S. dollar on both onshore and offshore exchanges.<sup>10</sup> Despite the absence of exchange controls on the CNH, the two rates have moved in lockstep for much of the period since the end of 2010. The two exchange rates became more closely linked after a series of developments in the last quarter of 2010 boosted renminbi-denominated financial transactions. This includes the approval granted to financial institutions and banks in Hong Kong to open renminbi accounts and for Hong Kong banks to access the onshore interbank market; activation of a swap line between the PBOC and the Hong Kong Monetary Authority (HKMA); and a flurry of renminbi-denominated bond issuance activities. These measures have lowered transaction costs for (eligible) financial market participants to access both markets.

## BOX 2

## Summary of Changes to Capital Controls in China and Major Steps Taken to Internationalize the Renminbi (RMB), 2009–11

### Changes to Capital Controls

**August 2009.** Review and approval requirements dropped for outward remittance of funds for direct investment abroad. Ex post registration replaces ex ante review for source of foreign exchange for outward direct investment. Certain portion of total outward investment can be remitted, subject to approval by the State Administration of Foreign Exchange, before a foreign project starts.

**September 2009.** Limit on investments by Qualified Foreign Institutional Investors is increased to \$1 billion, and the principal lock-up period is lowered to three months for pension funds, insurance funds, and open-end funds' medium- and long-term investments and lowered to one year for other institutions.

**August 2010.** Foreign central banks, Hong Kong and Macao RMB clearing banks, and foreign banks conducting RMB trade settlement clearing are allowed to invest in the Mainland interbank bond market, subject to limits.

### Major Steps toward RMB Internationalization

**April 2009.** State Council announces pilot program on RMB cross-border settlement in five cities. Commences in July 2009.

**September 2009.** Ministry of Finance issues the first sovereign RMB-denominated bond in Hong Kong.

**November 2009.** Interbank Market Clearing House is founded in Shanghai.

**March 2010.** PBOC and the National Bank of Belarus sign local-currency settlement agreement, the first of its kind with a nonneighboring country.

**June 2010.** RMB trade settlement program is extended to 20 provinces.

**July 2010.** Bank of China (Hong Kong) authorized to clear RMB bank notes in Taiwan.

**July 2010.** Hong Kong financial institutions allowed to open RMB accounts.

**July 2010.** Hopewell Highway issues the first corporate RMB-denominated bond in Hong Kong.

**August 2010.** First offshore RMB mutual fund is started.

**August 2010.** McDonald's issues RMB bonds in Hong Kong, the first by a multinational.

**October 2010.** Overseas institutions allowed to apply for RMB accounts for trade settlement.

**October 2010.** Pilot project for deposits of export proceeds abroad launched in four areas.

**December 2010.** Chinese exporters eligible for cross-border settlement rises from 365 to 67,359.

**January 2011.** Residents of 20 provinces and cities are allowed to use RMB for outward FDI.

**January 2011.** Bank of China allowed to offer RMB deposit accounts in New York City.

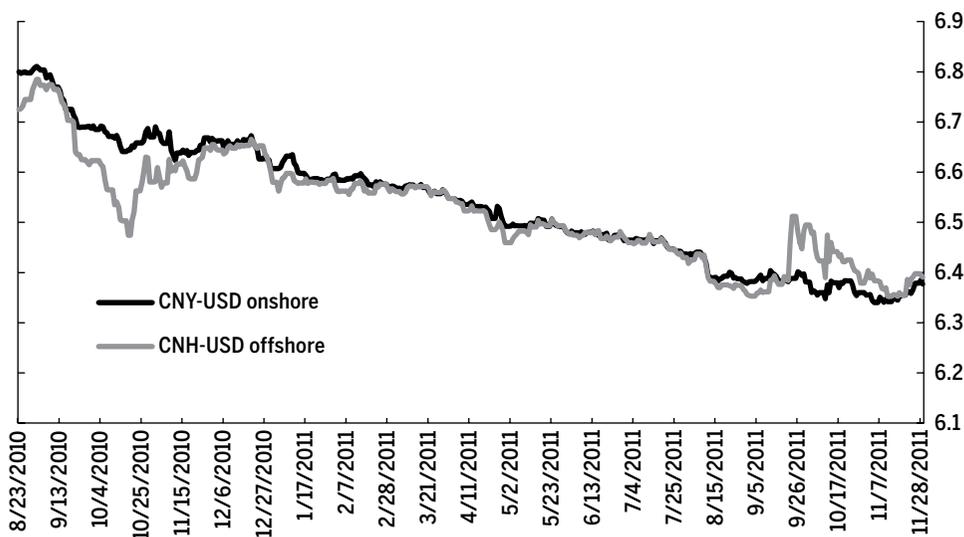
**August 2011.** Cross-border trade settlement in RMB is extended to the whole nation.

**October 2011.** Banks are allowed to provide settlement services to overseas entities that made RMB-denominated investments.

**November 2011.** JP Morgan Asset Management is allowed to create a \$1 billion RMB-denominated fund under the Qualified Limited Partners Program, making it the largest foreign manager of RMB-denominated fund so far.

Before this period, renminbi-related activities in the offshore market were quite limited, which contributed to a marked deviation of the CNH exchange rate from that of the CNY—the renminbi was more valuable offshore. The direction of this persistent gap is something of a puzzle. Equally oddly, a deviation of the two exchange rates appears to have resurfaced temporarily during

FIGURE 16  
**Onshore and Offshore Renminbi–U.S. Dollar Exchange Rates**



**Note:** This figure shows the daily midquote exchange rate of the renminbi against the U.S. dollar on onshore (CNY) and offshore (CNH) markets, from August 23, 2010, to November 29, 2011. CNH represents offshore deliverable renminbi. The exchange rate on each nontrading day is that of the previous trading day.

**Source:** Bloomberg.

the middle of 2011, but this time in the opposite direction—the CNH exchange rate rose markedly above the CNY exchange rate, and this gap persisted for a while. Although discerning the factors behind the relative movements of these exchange rates is beyond the scope of this paper, the offshore renminbi market and its diversified set of trading environments for the same currency highlight the increasing use of the renminbi in Hong Kong for bond issuance and other financial activities. At the same time, it is a reflection of the unique path that the Chinese government has chosen for internationalizing its currency. Such markets will no doubt contribute to a more global Chinese currency. At present, however, offshore renminbi trading is still restricted by a variety of regulations that limit market participation to a select group—most notably, financial institutions. The extent of the influence of offshore financial transactions on the global use of the renminbi will depend on how these regulations evolve over time.

## 5.2. Cross-Border Renminbi Settlement in Hong Kong

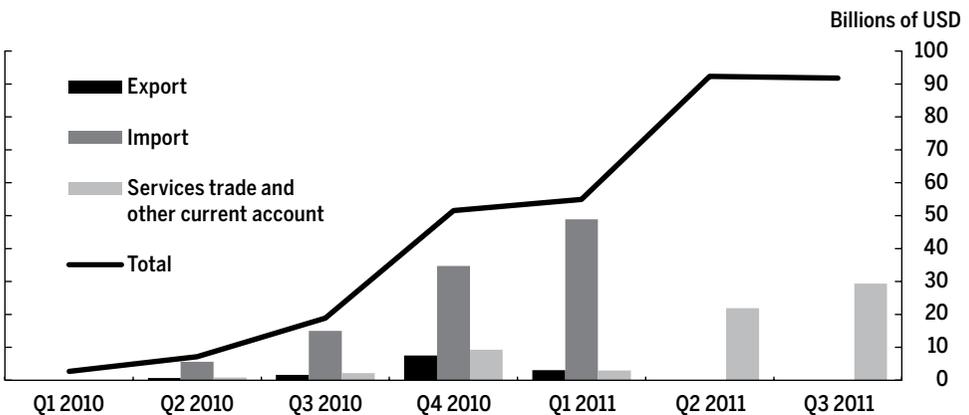
China has a major advantage in undertaking capital account liberalization in a controlled manner—its access to an international financial center, Hong Kong.

Indeed, Hong Kong has become the testing ground for a number of initiatives to promote the international use of the renminbi. In 2004, personal renminbi business was initiated in Hong Kong by allowing residents there to open deposit accounts denominated in renminbi. Since then, a number of initiatives have been put in place, including allowing cross-border settlements of trade transactions and bond issuances in renminbi.

Given China's rapidly expanding trade volumes, which we documented earlier, promoting a greater use of the renminbi in trade settlement is a logical first step in the currency's internationalization process (Eichengreen 2011b). Figure 17 shows data on cross-border settlements of trade in renminbi since the first quarter of 2010. In a relatively short period, cross-border trade settlement in the Chinese currency has expanded to \$93 billion (at the end of the third quarter of 2011). During the first three quarters of 2011, renminbi trade settlements amounted to about 8 percent of China's total trade in goods and services.

Data for these settlement transactions broken down by imports and exports are available on a limited basis and indicate that most of the renminbi trade settlement is for imports by China, which allows foreign traders to acquire renminbi. By contrast, there is little settlement in renminbi of China's exports, suggesting that recipients of exports from China either have limited amounts of the currency or are disinclined to reduce their holdings. One interpretation of this one-sided pattern of trade settlements is that it reflects the desire of foreign traders to go long on the renminbi in anticipation of its appreciation and

FIGURE 17  
**Cross-Border Renminbi Settlements**



**Note:** This figure shows quarterly data on cross-border renminbi settlements and the breakdown of this measure by export, import, and services trade and other current account items, when available.

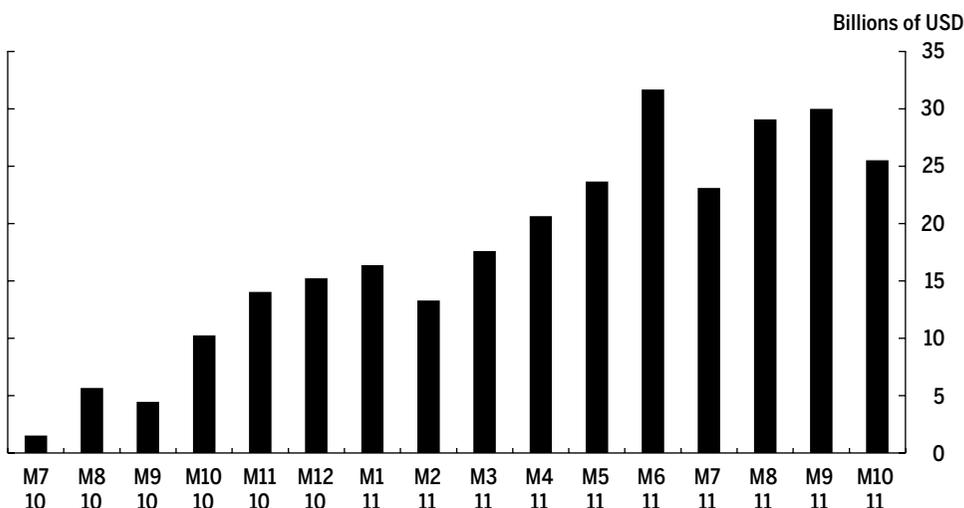
**Sources:** CEIC; authors' calculations; International Monetary Fund estimates for the fourth quarter of 2010.

that trade settlement provides one channel for doing so. This is another indication of how China's rising trade and financial integration with global markets will make it increasingly difficult to tightly manage the currency's external value.

Figure 18 provides a complementary perspective by showing the monthly amount of remittances of renminbi used for cross-border settlement in Hong Kong. During 2011, these remittances averaged roughly \$25 billion per month, more than double the average for 2010. Cross-border renminbi settlement is not confined exclusively to Hong Kong, but its banks play a dominant role. It is estimated that Hong Kong banks handled about 73 percent of China's renminbi trade settlement in 2010 and that this proportion rose to 86 percent in the first quarter of 2011 (HKMA 2011). The geographic coverage for cross-border trade settlement in renminbi has been expanded rapidly during the past two years and was extended to the entire mainland on August 23, 2011.

Another major development is the rising issuance of renminbi-denominated bonds in Hong Kong, otherwise known as dim sum bonds. Panel A of Figure 19 shows that from 2007 to 2010, the issuance of these bonds nearly tripled, to about \$6 billion in 2010. In the second quarter of 2011 alone, issuance surged to nearly \$11 billion, a pace that was sharply higher than in 2010 and that signaled a rapid expansion of these instruments (panels B and C). Issuances fell

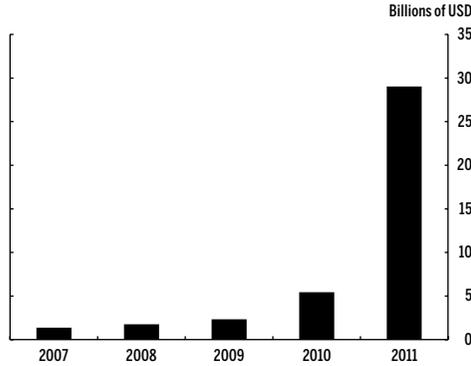
FIGURE 18  
**Renminbi Remittances: Cross-Border Trade Settlements**



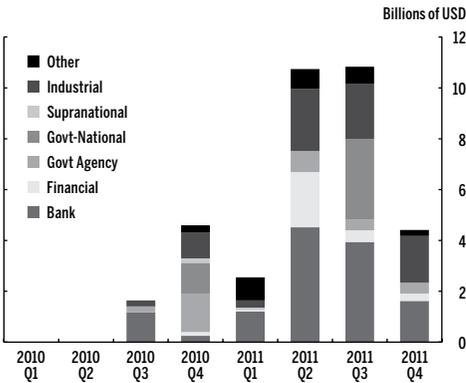
Sources: CEIC and authors' calculations.

**FIGURE 19**  
**Renminbi Bond Issuance in Hong Kong**

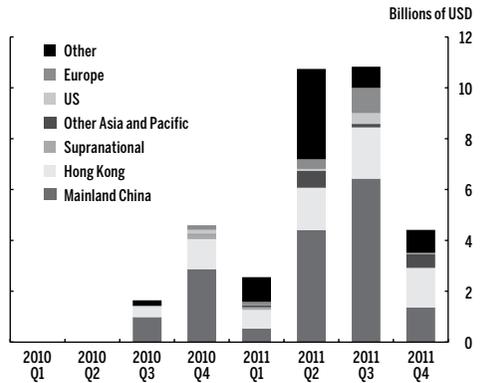
**A Annual**



**B Quarterly, by Industry of Issuance**



**C Quarterly, by Source Country**



**Note:** “Government agency” includes state-run policy banks such as the China Development Bank. “Supranational” refers to international economic organizations such as the Asian Development Bank. Data for 2011 represents the latest issuance amount as of scheduled issuance on December 2, 2011. Annual data for 2010 in Panel A are \$5.44 billion, while the sum of all quarterly data in 2010 for Panels B and C is \$6.24 billion. This discrepancy is due to different data sources. Panel A utilizes data from the Hong Kong Monetary Authority by way of CEIC. Panels B and C utilize Bloomberg bond database.

**Sources:** CEIC; Bloomberg.

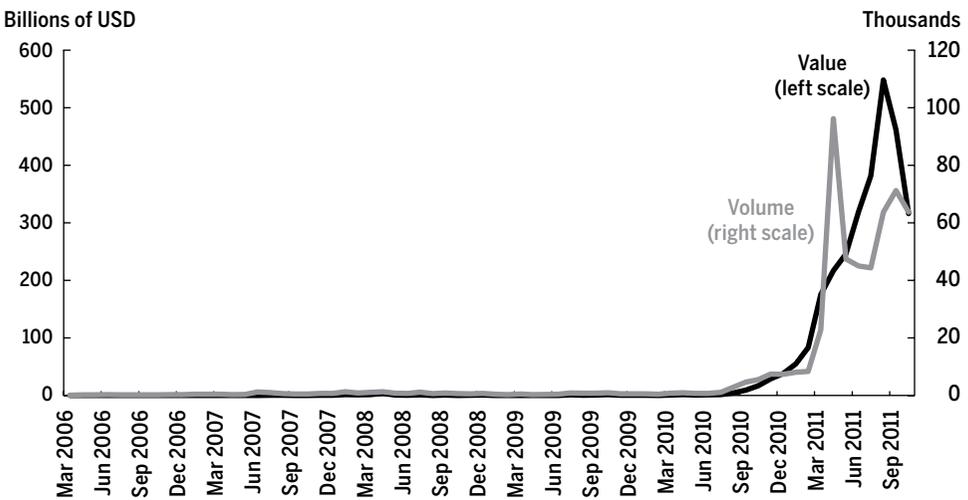
off in the last quarter of 2011, although it is hard to tell if this signaled a shift in the attractiveness of these bonds for issuers or simply reflected weaker global financial market conditions as the euro debt crisis continued to fester.

An alternative approach to gauging the importance of the offshore use of renminbi is to see how much the currency is used for interbank clearing transactions. After various lines of renminbi business had been started, as discussed earlier, the Hong Kong Interbank Market initiated a renminbi settlement

system on March 6, 2006, to provide a variety of check clearing, renminbi square position, remittance processing, and bank card payment services. Figure 20 shows that renminbi clearing transactions were virtually zero until mid-2010, when financial institutions in Hong Kong were allowed to open renminbi-denominated accounts. Since then, both the volume and value of transactions have increased dramatically. The total value of transactions hit a peak of nearly \$550 billion in August 2010, but both transaction volume and value fell in September 2011.

Although the scale remains modest, the initiation and rapid expansion of different elements of the offshore renminbi market are encouraging signs of the currency's prospects of getting a significant foothold in the Asian region's trade and financial transactions. Some caveats are in order, however. First, dim sum bond issuance remains somewhat narrow in scope, in that such issuance is still heavily confined to banking and financial institutions. Second, a large portion of the issuance currently comes from mainland China. These two trends are evident from the breakdowns shown in panels B and C of Figure 19. Third, various reports suggest that a significant portion of cross-border renminbi settlement is used mainly for cross-border arbitrage between mainland China companies and their Hong Kong subsidiaries.<sup>11</sup> These factors imply that the influence of offshore renminbi use still has some ways to go to reach its full potential.

FIGURE 20  
**Renminbi Clearing Transactions: Hong Kong Interbank Market**



Source: CEIC.

### 5.3. The Renminbi Creates Ripples in the Central Banking World

The PBOC has established a series of bilateral swap lines with other central banks to facilitate and expand the use of the renminbi in international trade and financial transactions. China had in fact established swap lines with other central banks even before it started to actively promote the international use of its currency. Most notably, it had arranged six of them with other Association of Southeast Asian Nations + 3 (ASEAN+3) economies under the Chiang Mai Initiative in the early 2000s.<sup>12</sup> Although China established bilateral local currency swap agreements with the Philippines, South Korea, and Japan, most of the other swap arrangements (e.g., the one with Thailand) were dollar-renminbi swaps. Under these arrangements, China would provide U.S. dollars in exchange for the local currency of the counterparty economy.<sup>13</sup> In other words, the foreign exchange reserves of economies like China would often serve as an additional credit line facility if the counterparty economy were to face a liquidity crunch due to a balance of payments or financial crisis.

Since 2008, China's bilateral swap lines with foreign central banks have directly supported the renminbi's greater international use, though their liquidity-supporting role remains relevant. Appendix C shows the counterparty, date, and the value of each of these swap lines. In contrast to the norm for previous swap lines, these arrangements are all designed for settlement in local currencies. The amounts of these bilateral agreements have been relatively small so far, no more than the equivalent of \$200 billion. The extent to which these swap lines have been drawn upon appears to be limited. The HKMA activated its bilateral swap line with the PBOC in October 2010, more than a year and a half after the swap line was set up. At the end of 2010, the amount of bilateral swaps outstanding for the HKMA was 20 billion yuan, or about \$3 billion (HKMA 2010). The PBOC mentions in its 2010 *Annual Report* that "at end-2010, overall volume of currency swap agreements reached 803.5 billion yuan. The PBOC also conducted 30 billion yuan of local currency swap operations at the request of a number of monetary authorities" (PBOC 2010, p. 33). This suggests that only 10 billion yuan, about \$1.5 billion, was drawn outside of Hong Kong. Nevertheless, the PBOC is clearly making an active effort to make the central banks of a broad group of economies comfortable and familiar with renminbi-denominated instruments and financial facilities.

Another noteworthy development is that, despite its lack of convertibility, the renminbi is already beginning to play a modest role in a few central banks' reserve portfolios. Malaysia and Nigeria are widely believed to have pioneered this trend, starting in the second half of 2011. The Central Bank of

Nigeria issued a statement on September 5, 2011, announcing that it “has finalized arrangements to diversify its external reserves holdings by including the Chinese renminbi (RMB) to the existing currency mix of United States dollars (USD), the euro (EUR) and the British pound sterling (GBP).”<sup>14</sup> Furthermore, Chile’s internally managed Central Bank investment portfolio now has 0.3 percent of its assets allocated to renminbi-denominated instruments, according to its September 2011 *Monetary Policy Report*.

Official statements and other accounts suggest that other central banks are also considering adding renminbi assets to their reserve portfolios (see Appendix D). An interesting point is that these holdings cannot in principle be counted as reserves by the IMF, given the present status of the renminbi’s (lack of) convertibility. But this does not seem to matter for these central banks, because they view renminbi-denominated assets, just as they do other major reserve currency-denominated assets, as providing insurance against balance of payments pressures. All these moves are modest in size but are symbolically important in signaling the shift in perception about the renminbi’s stability and its future role in the international monetary system.

In December 2011, China and Japan signed a pact to promote the use of their currencies for bilateral trade and investment flows.<sup>15</sup> Trade between the two economies amounted to about \$300 billion in 2010, while bilateral financial flows are estimated to be less than \$100 billion. Assuming that all these transactions are currently settled in dollars and will eventually be settled in the two countries’ currencies, the effect on switching from dollar-intermediated transactions would still be relatively modest at the global level. Moreover, given the lack of convertibility of the renminbi, these moves may have a limited impact in the short run. Over time, the effects could be larger, especially because the decline in currency transaction costs and exchange rate uncertainty could boost trade and financial flows between the two countries. China has also given permission for Japan’s Bank for International Cooperation to issue a yuan-denominated bond, while Japan has indicated that it will buy some Chinese government bonds, presumably to add to its reserve portfolio. Again, these moves are more important symbolically than quantitatively, but they may be setting the stage for more significant developments as China’s capital account becomes more open.

## **6. Implications of the Renminbi’s Ascendance for the International Monetary System**

The analysis so far has made the point that the renminbi’s prospects as a global currency will be shaped by broader domestic policies, especially those related

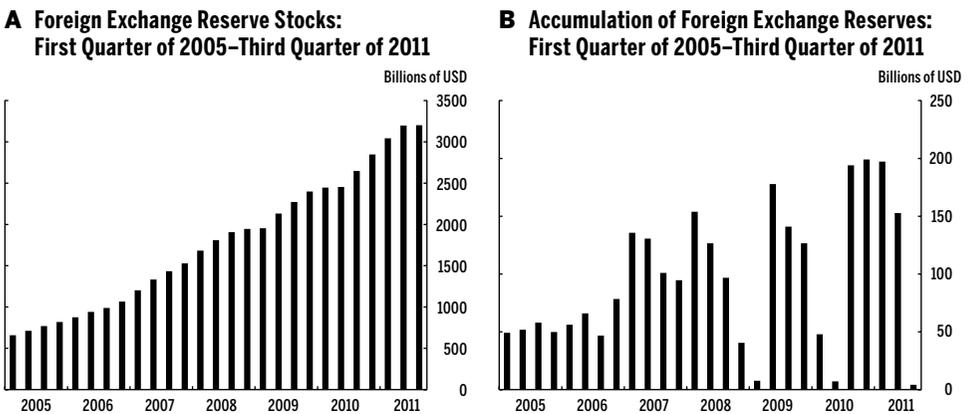
to financial market development, exchange rate flexibility, and capital account liberalization. In this section, we discuss the potential impact of the renminbi's rise on the competitive balance among global reserve currencies. We also discuss the effects that the internationalization of the renminbi could have on the structure of global capital flows.

### 6.1. Implications of a Rising Renminbi for China-U.S. Financial Flows

One of the defining statistics in global finance is China's massive stock of foreign exchange reserves, which stood at \$3.3 trillion at the end of the third quarter of 2011 (Figure 21, panel A). This level of reserves—the equivalent of about 50 percent of China's GDP, and more than all of China's external liabilities combined—is far greater than any level that could be justified on the basis of precautionary reasons. In the last quarter of 2010 and the first two quarters of 2011, reserve accumulation averaged nearly \$200 billion each quarter (Figure 21, panel B). This pace fell off sharply in the third quarter of 2011, down to nearly zero, but is expected to pick up again when—or if—global financial markets settle down and the euro zone and U.S. economies begin to recover.

China does not report the currency composition of its foreign exchange reserve holdings, but it is widely believed that about two-thirds are in U.S. dollar-denominated instruments. Data based on the U.S. Treasury International Capital System (TIC) provide at best a partial picture because they track the country of the purchasing agents rather than the owners of U.S. securities.

FIGURE 21  
China's Foreign Exchange Reserves



Note: Data shown are end-of-quarter figures.

Source: International Monetary Fund, International Financial Statistics.

Table 19 indicates that, based on the TIC data, China holds about 12 percent of outstanding Treasury bills, notes, and bonds, up from 2 percent a decade ago. The total value of China's reported holdings of Treasuries and agency bonds at the end of 2010 was \$1.3 trillion, which is almost certainly an underestimate of the actual amount. Panel A of Figure 22 shows that China's vast holdings of U.S. securities are mostly in the form of long-term Treasury bonds and, second to that, agency debt.<sup>16</sup> China invests a relatively small amount in U.S. equities.

TABLE 19  
China's Holdings of U.S. Government Debt

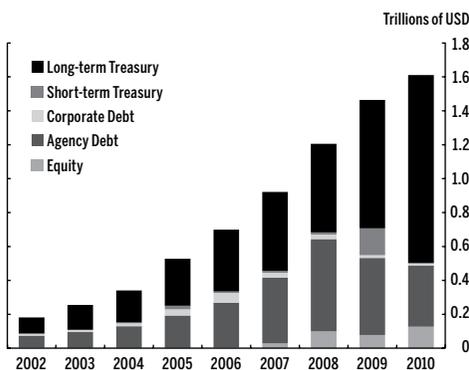
Aspect of Holdings	As of March 30, 2000		As of June 30, 2011	
	Treasuries	Agencies	Treasuries	Agencies
Total outstanding held by the public	3,519	3,334	9,742	7,185
Total held by foreigners	884	261	4,501	1,197
China's holdings	71	20	1,166	332
China's share of foreign holdings	8.0%	7.5%	25.9%	27.8%
China's share of total outstanding	2.0%	0.6%	12.0%	4.6%
Foreign share of total outstanding	25.1%	7.8%	46.2%	16.7%

**Note:** The first three rows are expressed in billions of U.S. dollars. Treasury debt is defined as "debt held by public." Including "Intragovernmental holdings," total Treasury debt was \$5.8 trillion on March 30, 2000, and was \$14.3 trillion on June 30, 2011. Total agencies outstanding represents total debt owed by government-sponsored enterprises (GSEs) and by GSE-backed mortgage pools, less agency and GSE-backed securities owned by GSEs. Chinese and total foreign holdings of agencies in June 30, 2011, were estimated from total stock data in June 30, 2010, and net purchases of long-term agency debt in all subsequent months over the next year. The U.S. Treasury International Capital System contains data on holdings by Chinese official and nonofficial institutions, and not just by the Chinese government. Some of the Treasury and Agency holdings reported in this table may not be held by the State Administration of Foreign Exchange.

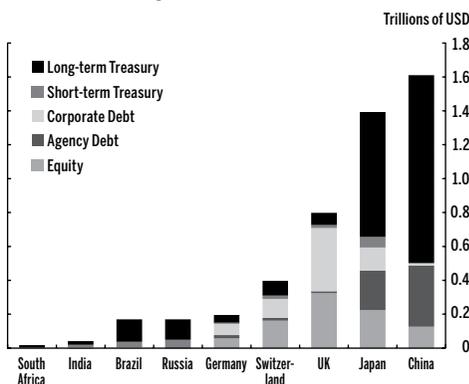
**Sources:** U.S. Treasury International Capital System; Federal Reserve Flow of Funds; Treasury's Bureau of Public Debt; authors' calculations.

FIGURE 22  
Foreign Portfolio Holdings of U.S. Portfolio Securities

### A China



### B Cross Country, June 2010



Source: U.S. Department of the Treasury.

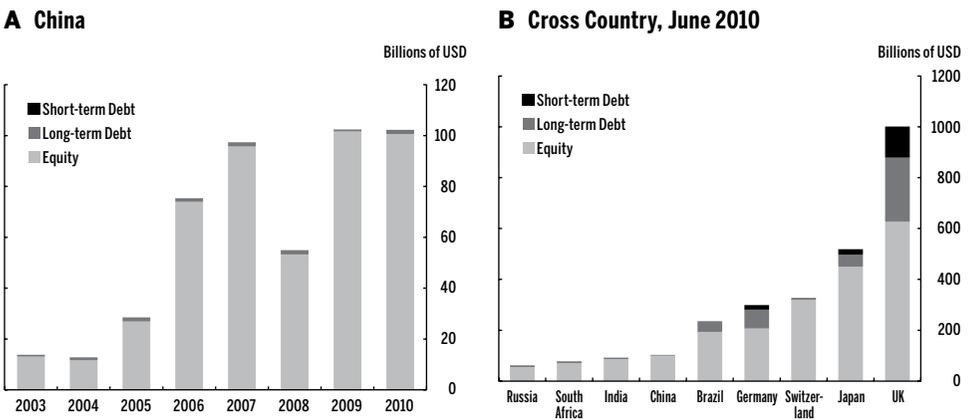
From a cross-country perspective, as of June 2010 China's total holdings of U.S. securities ranked as the highest in absolute volume (Figure 22, panel B), notwithstanding the likely underestimation. One striking feature is that China holds only a small amount of U.S. equities, compared with the reserve currency economies.

The composition of U.S. portfolio investment in Chinese securities (which excludes foreign direct investment) is quite different. Figure 23 shows that the United States invests only a modest amount of roughly \$100 billion in Chinese securities. More important, most of this investment goes into Chinese equity markets as opposed to debt. The same pattern holds for U.S. investment in other key emerging markets and advanced economies.

China's capital account liberalization could have significant effects on the volume and, more important, the composition of investments in the United States. The major channel for capital flows to the United States is of course the official accumulation of foreign exchange reserves. This pattern of flows poses a significant risk for China on the asset side of its external balance sheet. High and rising U.S. debt levels are likely to adversely affect productivity growth in the United States. Given the relatively high productivity growth in China, even a slowdown in its growth could leave a large productivity growth gap between the two countries. The resulting appreciation of the renminbi against the dollar, whenever it happens, will erode the domestic currency value of China's stock of U.S. Treasuries.

Why is China continuing to accumulate so many reserves? In addition to the precautionary motive for holding reserves, a more straightforward explanation

FIGURE 23  
**U.S. Portfolio Holdings of Foreign Securities**



Source: U.S. Department of the Treasury.

of China's reserve accumulation is that it results from a mercantilist policy of keeping the currency undervalued to gain a competitive advantage for the country's exports. China has in fact tried to offset some of this pressure on its currency by liberalizing outflows, as discussed earlier. But the lack of financial market development makes it difficult for households to diversify their portfolios internationally. Moreover, it contributes to the high and rising household saving rate in China (Chamon, Liu, and Prasad 2010; Lardy 2011). A more flexible exchange rate and a broader financial system that facilitates hedging against currency risk would reduce reserve accumulation, while simultaneously reducing the "fear of floating." A deeper and broader financial system would also reduce the risks from the greater capital flow volatility to which China will be exposed as the capital account becomes more open. For instance, a richer set of derivatives markets would enable private agents, including corporations, to insure against a variety of risks associated with capital flows, mitigating the need for reserves as a public insurance mechanism.

Shifting away from policies that intensify reserve accumulation would also allow China to change the structure of its foreign investments. In particular, capital outflows would reduce the pressure on the currency. In the absence of well-developed financial markets that facilitate foreign investments by households, this is to some extent being done by the government. China's sovereign wealth fund, the China Investment Corporation (CIC), and other large institutional investors are already moving aggressively into investments that offer higher yields than U.S. Treasuries or government bonds of other reserve currency economies. Table 20 shows that CIC is shifting away from government bonds into higher-yielding assets. The share of equity holdings in its portfolio rose from 36 percent in 2009 to 48 percent in 2010. Among its diversified fixed-income securities, roughly a third were invested in corporate bonds in 2010, compared with 13 percent in 2009.

As Chinese financial markets become more developed and private investors increase the international diversification of their portfolios, these shifts in China's outward investment patterns are likely to become more pronounced. Thus, the various policy reforms that are needed to support the international role of the renminbi could also create significant changes in China's economy and the patterns of its capital inflows and outflows.

## 6.2. Will the Renminbi Knock the Dollar Off Its Pedestal?

The U.S. dollar remains by far the dominant global reserve currency. Its status was threatened by the rising prominence of the euro, with that currency's share of global foreign exchange reserves rising by nearly 7 percentage points,

from 18 to 25 percent, during the period 1999–2003 (Figure 24). Much of the increase in the euro’s share was matched by a decline in the dollar’s share. Since then, however, the shares of the euro and dollar have stabilized, with the dollar’s share standing at 63 percent in 2010. However, these figures need to be interpreted with caution, because a rising share of global reserves cannot be allocated across the reserve currencies (Figure 25). This is because certain

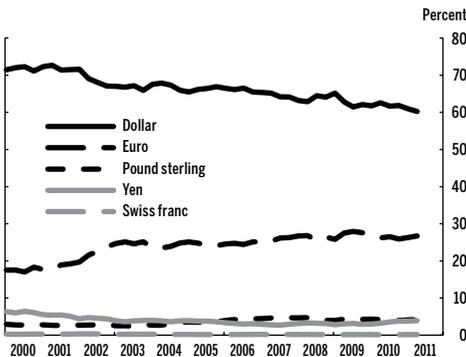
TABLE 20  
**CIC’s Global Portfolio Distribution**  
 (percent)

Aspect of Distribution	2009	2010
Total holdings		
Cash funds and other	32	4
Equity	36	48
Fixed income securities	26	27
Alternative investments	6	21
Diversified fixed-income securities		
Government agency bonds	27	9
Government bonds	44	38
Asset-backed securities	8	12
Corporate bonds	13	32
Other structured products	8	9

**Note:** CIC reported total “owner’s equity” of \$374 billion at the end of 2010, with the global portfolio (including cash) amounting to \$135 billion (CIC *Annual Report* 2010, p. 9).

**Sources:** Figures 2 and 3 of China Investment Corporation *Annual Report*, 2010; Figure 5 of China Investment Corporation *Annual Report*, 2009.

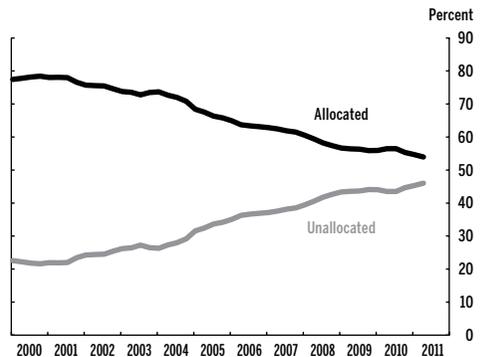
FIGURE 24  
**Reserve Currency Shares of Total Allocated Reserves**



**Note:** Data from the third quarter of 2010 to the second quarter of 2011 are preliminary.

**Source:** Quarterly data from International Monetary Fund, Currency Composition of Foreign Exchange Reserves.

FIGURE 25  
**Shares of Allocated and Unallocated Reserves**



**Note:** Data from the third quarter of 2010 to the second quarter of 2011 are preliminary.

**Source:** Quarterly data from International Monetary Fund Currency Composition of Foreign Exchange Reserves.

countries do not report the currency composition of their reserve holdings to the IMF. Two prominent cases are China and India, which together account for about \$3.5 trillion of global foreign exchange reserves. Given the sheer size of their reserve holdings, however, it is highly probable that the currency composition of these two countries' reserves is largely concentrated in dollars and that the broader composition is similar to that of global allocated reserves. Other indicators, such as the dollar's share of cross-border foreign currency liabilities of non-U.S. banks, confirm the currency's dominance in global finance (Figure 26).

Despite its status as the dominant existing reserve currency, there are major concerns about the future of the U.S. dollar, related to the uncertain prospects for U.S. macroeconomic stability. Although the Federal Reserve clearly has strong worldwide credibility for its inflation-fighting credentials, rising public debt poses a more serious concern. Figure 27 shows that U.S. gross general government debt is about 90 percent of GDP, and IMF forecasts indicate that it could reach 110 percent of GDP, or nearly \$21 trillion, by 2016. This is dangerous and unprecedented terrain for the world's largest economy. The paradox is that, given the weaknesses in Japan and the euro zone, along with emerging markets' demand for safe assets as they accumulate even more reserves, this rising debt may cement the dollar's dominant status in the global financial system.

Figure 27 also shows the gulf that still exists between China and the United States in the availability of safe and liquid assets such as government bonds. The

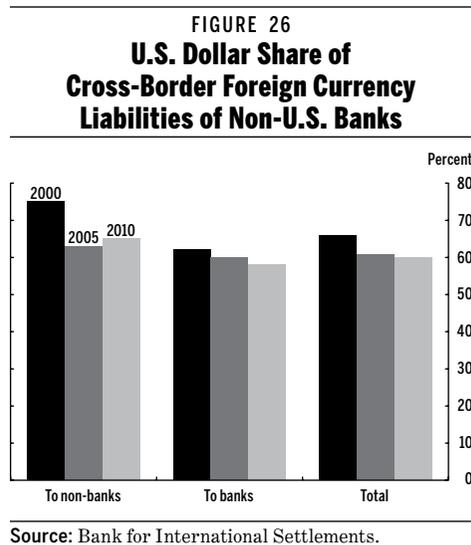
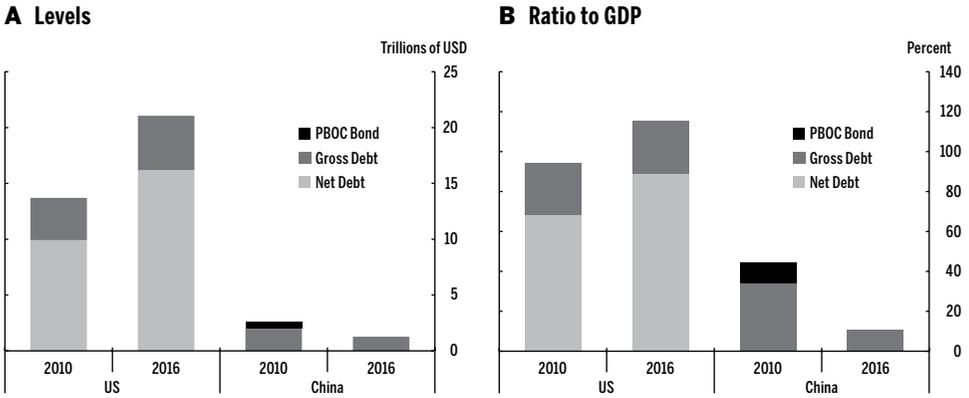


FIGURE 27  
**Gross and Net General Government Debt**



**Source:** International Monetary Fund, World Economic Outlook; CEIC; authors' calculations.

**Notes:** Data on net debt for China were not available, and hence only gross debt is shown. Total 2010 debt data for China include revised International Monetary Fund estimates of local government debt.

breadth, depth, and liquidity of U.S. financial markets suggest that its currency will serve as a potent buffer against threats to its dominant status. Rather than catching up to the United States by building up debt, the challenge for China is to develop its other financial markets and increase the availability of high-quality renminbi-denominated assets.

### 6.3. The Renminbi and Special Drawing Rights

The IMF's special drawing rights (SDRs) constitute an international reserve asset created by the IMF. Its value is based on a basket of four reserve currencies—the U.S. dollar, the euro, the Japanese yen, and the British pound sterling. SDRs are distributed among IMF members on the basis of their quotas at their institution. The stock of SDRs now stands at roughly \$320 billion.<sup>17</sup> SDRs can in principle be exchanged for freely usable currencies but cannot be used directly in private transactions. This means that increasing the stock of SDRs does not increase the total liquidity of the global monetary system unless a substitution account is used. But such substitution accounts that would result in the net creation of global liquidity via SDR issuance may not be practical, in part because SDRs are not backed by a global central bank and have no support from a fiscal authority (Obstfeld 2011b).

There was considerable discussion in 2011 about a proposal to include the renminbi in the basket of currencies that constitute the SDR. The French government, during its presidency of the Group of Twenty in 2011, promoted this proposal at different venues, viewing it as an important component of the reform

of the international monetary system. At a G-20 conference in Nanjing, China, in March 2011, French president Nicolas Sarkozy put the issue squarely on the table: “Isn’t it the time today to reach agreement on the timetable for enlarging the basket of SDRs to include new emerging currencies, such as the yuan? Who could deny the major role the yuan plays in the international monetary system? Tribute is thus paid to the economic power and the political power of China, a major monetary power.”

The communiqué issued at the conclusion of the November 2011 G-20 Summit in Cannes contained this language:

We agreed that the SDR basket composition should continue to reflect the role of currencies in the global trading and financial system and be adjusted over time to reflect currencies’ changing role and characteristics. The SDR composition assessment should be based on existing criteria, and we ask the IMF to further clarify them. A broader SDR basket will be an important determinant of its attractiveness, and in turn influence its role as a global reserve asset. This will serve as a reference for appropriate reforms. We look forward to reviewing the composition of the SDR basket in 2015, and earlier if warranted, as currencies meet the criteria, and call for further analytical work of the IMF in this regard, including on potential evolution. (G-20 2011)

During his final press conference at the conclusion of that summit, Sarkozy was more explicit: “The yuan is a clear candidate [for inclusion in the SDR basket], given China’s commitment—which I noted with satisfaction—to gradual convertibility.”

China itself has been more circumspect about the prospects of expanding the SDR basket. The deputy governor of the PBOC (and also head of the State Administration of Foreign Exchange), Yi Gang, urged the IMF to conduct more research into a shadow SDR and argued that “the IMF should consider including currencies of the BRICS [Brazil, Russia, India, China and South Africa—the world’s largest fast-growing emerging economies] countries and other emerging economies when it next reviews its special drawing right (SDR) system by 2015.” But Yi was also quoted as saying that “China is in no hurry as the SDR has so far been only a symbolic currency basket.”<sup>18</sup>

SDRs currently account for about 5 percent of world official reserve asset holdings, so the direct effect of including the renminbi in the SDR basket would not be substantial. But the symbolic effect would be substantial, as even the prospect of the renminbi becoming a part of the SDR basket would encourage central banks around the world to begin adding renminbi assets to their

reserve portfolios. Technically, the renminbi cannot become a part of the SDR basket because it is not a convertible currency. However, the notion that a freely usable currency ought to qualify for the SDR basket has been thrust into the debate, based on the argument that the renminbi already meets the criteria for a freely usable currency, given that it is being increasingly used in trade settlement transactions and in the denomination of deposit accounts offshore.

The IMF's position in 2010 was clear and was summarized as follows in a report on its Executive Board's discussion of the matter: "Directors noted that although China has become the third-largest exporter of goods and services on a five-year average basis and has taken steps to facilitate international use of its currency, the Chinese renminbi does not currently meet the criteria to be a freely usable currency and it would therefore not be included in the SDR basket at this time. Directors urged that this issue be kept under review in light of developments."<sup>19</sup> Thus, it appeared that the IMF intends to apply the convertibility criterion strictly, which would be logical because any currency that is part of the SDR basket would presumably automatically be counted as an official reserve currency.

Technically, the SDR basket consists of the four currencies that are (1) issued by IMF members (or monetary unions that include IMF members) that are the largest exporters, and (2) have been determined by the IMF to be "freely usable." The latter condition was added as a formal criterion only in 2000 and is clearly open to interpretation, as is the number of countries whose currencies are in the SDR basket. The IMF's operational definition of a freely usable currency requires that it be (1) widely used to make payments for international transactions, and (2) widely traded in the principal exchange markets. Thus, the criterion of convertibility is not strictly essential for a currency's inclusion in the SDR basket. By contrast, the IMF's own balance of payments definition of a freely usable currency is one that is liquid, convertible, and used for the settlement of international transactions. The composition of the SDR basket is governed by operational rather than technical criteria, so the lack of convertibility is not a hindrance to including the renminbi (or other emerging market currencies) in the basket.

In November 2011, the IMF proposed the following indicators for evaluating a currency's potential for inclusion in the SDR basket:<sup>20</sup>

- volume of transactions in foreign exchange spot markets
- volume of transactions in foreign exchange derivatives markets and over-the-counter derivatives
- existence of an appropriate market-based interest rate instrument
- currency composition of official reserve holdings.

There are no clear benchmarks for any of these criteria, suggesting that—as long as some minimal thresholds are met on each of them—whether or not to include a currency in the SDR basket is ultimately a political decision. China probably already meets the first criterion and is making progress on the second one. Interest rate liberalization would be necessary to meet the third one. The IMF has left itself considerable room to maneuver in response to shifting political winds. For instance, when considering the currency composition of reserves, the IMF coyly suggests that an ancillary indicator could be the number of countries holding a currency in their international reserve portfolios. This would certainly suit China well—as indicated in Appendix D, a number of countries have begun to publicly discuss the possibility and desirability of holding renminbi assets in their reserve portfolios, even if the actual (or proposed) amounts are small as of now.

## 7. Conclusion

Given its size and economic clout, China is adopting a unique approach to the renminbi's role in the global monetary system, which we call “capital account liberalization with Chinese characteristics.” As with virtually all other major reforms, China is striking out on its own path to a more open capital account. This is likely to involve removing explicit controls even while attempting to exercise soft control over inflows and outflows through administrative and other measures. The medium-term objective, which we believe will be achieved in the next five years, is an open capital account but with numerous administrative controls and regulations still in place. This will allow the renminbi to play an increasingly significant role in global trade and finance, but in a manner that allows the government to retain some control over capital flows.

Indeed, the renminbi is beginning to play a role in international trade transactions and also starting to appear in the reserve portfolios of certain emerging market central banks. The bilateral currency pact to which China and Japan agreed in December 2011 is an interesting example of how China is attempting to reduce its dependence on the dollar while other countries, especially in the Asian region, appear eager to participate in such agreements because they see advantages to tighter trade and financial links with China. These shifts, which are more symbolic than substantive at present, will develop critical mass over time and have the potential to start transforming the global monetary system.

The Chinese government's recent policy actions are indicative of its serious intent to broaden the global role of its currency. The potential for the renminbi to develop quickly into an international currency is not without historical precedent. The U.S. dollar rose from being a currency with a limited international

role to being a serious competitor to the pound sterling in just over a decade (Eichengreen and Flandreau 2010). The big challenge for the Chinese government is to back up its modest international policy actions with substantial domestic reforms. To promote its broader international ambitions without waiting for its domestic policy reforms to catch up, China will need to continue promoting the international use of the renminbi using Hong Kong as a platform. Over the medium term, as the capital account becomes more open and financial markets become more developed, this strategy will shift more toward the promotion of Shanghai as an international financial center.

Although China's rapidly growing size and dynamism are enormous advantages that will help promote the international use of its currency, its low level of financial market development is a major constraint on the likelihood of the renminbi attaining reserve currency status. Moreover, in the absence of an open capital account and free convertibility of the currency, it is unlikely that the renminbi will become a prominent reserve currency, let alone challenge the dollar's dominance. On the basis of the anticipated pace of reforms, we believe that the renminbi will become a competitive reserve currency within the next decade, eroding but not displacing the dollar's dominance.

Even with only gradual financial market development, we foresee that the renminbi will be included in the basket of currencies that constitute the IMF's special drawing rights basket within the next five years. The IMF needs China a lot more than China needs the IMF, and the prospect of the renminbi's inclusion in the SDR basket could be seen as a way for the IMF—and the international community that it represents—to exercise leverage over China in internalizing the global repercussions of its domestic policies.

The Chinese government's approach to policies that promote the renminbi's use as an international currency is inherently linked to domestic macroeconomic objectives and financial market development. The impact of the renminbi on the global monetary system and whether it contributes to greater global financial stability depends on the manner and speed with which China opens up its capital account and develops its financial markets, what other policy changes are put in place to support this process, and what the implications are for China's own growth and stability.

The big question now is whether China's government will use the goal of making the renminbi a global currency to catalyze momentum on a broad agenda of domestic policy reforms that are required to support this goal. Ultimately, the path of China's growth and its role in the global economy will depend on those policy choices.

## APPENDIX A

**Changes to Capital Controls in China, 2004–10**

This appendix extends the documentation of changes to capital controls in Prasad and Wei (2007) to January 31, 2011. Reference source: IMF's *Annual Reports on Exchange Arrangements and Exchange Restrictions (AREAER)*, 2004–11. All items are quotations from original source.

**Changes during 2004**

**January 1.** Under the Closer Economic Partnership Arrangement, (1) the asset requirement for Hong Kong Special Administrative Region (SAR)–incorporated banks to open branches in mainland China was reduced to \$6 billion from \$20 billion; (2) the requirement that a representative office be set up in mainland China before a Hong Kong SAR bank established a joint venture bank or joint venture finance company in mainland China was lifted; and (3) for mainland China branches of Hong Kong banks to apply to conduct renminbi business, the minimum number of years of business operations on the mainland required of the banks was reduced to two years from three years.

**June 27.** Foreign-funded domestic banks were not permitted to convert proceeds from debt contracted abroad into renminbi and were not allowed to purchase foreign exchange for servicing such debts.

**June 27.** Capital remitted as inward foreign direct investment can be converted into renminbi only on the basis of a written payment order by the foreign-invested enterprise.

**December 1.** Foreign heirs, including those from Hong Kong and Macao, were permitted to take inheritances out of the country. Emigrants were allowed to take legally obtained personal assets up to the equivalent of \$200,000; for larger amounts, staggered transfers were required to be made over a minimum period of two years.

**Changes during 2005**

**January 15.** The reserve requirements on accounts denominated in domestic and foreign currencies were unified at 3 percent.

**Changes during 2006**

**April 13.** Domestic banks' overseas foreign exchange fund management services for customers was expanded; qualified banks are allowed to combine renminbi funds of domestic institutions and individuals and purchase foreign exchange within limits to invest in fixed-income products abroad; qualified fund management firms and other securities firms are allowed to combine within limits foreign exchange funds of domestic institutions and individuals for overseas portfolio investments, including for stocks; insurance institutions' securities investment business abroad was expanded; qualified insurance companies are allowed to purchase foreign currency to invest in fixed-income products and currency market instruments abroad, with the foreign exchange purchase amount subject to a certain proportion of the insurance institution's total assets.

**July 1.** The limit on the amount of foreign exchange used in Chinese enterprises' direct investments abroad was abolished.

**September 1.** Nonresidents may purchase domestic real estate based on actual needs and for their own use.

**Changes during 2007**

**February 1.** The limit on foreign exchange purchases by residents for remittance abroad for personal reasons was increased to \$50,000 a year. Resident individuals' foreign exchange receipts up to \$50,000 may be processed with a bank on proof of identity.

**March 2.** The State Administration of Foreign Exchange (SAFE) reduced the 2007 short-term external debt quotas of Chinese-funded banks to 30 percent and those of nonbank financial institutions and foreign-funded banks to 60 percent of their 2006 equivalents. In addition, Chinese-funded banks were required to reduce their outstanding short-term external debts to 30 percent or less and nonbank financial institutions and foreign-funded banks to 60 percent or less of their 2006 quotas by March 31, 2008.

**August 30.** The SAFE fully decentralized the task of verification of sources of foreign exchange capital for outward investment. SAFE branches were authorized to verify sources of foreign exchange capital for outward investment projects of \$10 million or more.

**December 9.** The overall Qualified Foreign Institutional Investors (QFII) quota was raised to \$30 billion from \$10 billion.

### Changes during 2008

**March 7.** Regulated financial institutions that meet risk management requirements were allowed to trade in gold futures on the domestic market.

**July 14.** The registration management system for the provision of trade credit between residents and nonresidents was implemented for advance receipts of export payments.

**August 29.** The amount of capital remitted as inward foreign direct investment that may be converted to renminbi only with a written payment order by the company making the foreign investment was reduced to \$50,000 from \$200,000.

**October 1.** The registration management system for the provision of trade credit between residents and nonresidents was implemented for deferred payments of imports.

**November 15.** The registration management system for the provision of trade credit between residents and nonresidents was implemented for advance receipts of import payments.

**December 1.** The registration management system for the provision of trade credit between residents and nonresidents was implemented for deferred payments of exports.

### Changes during 2009

**August 1.** The protocol for review of the source of foreign exchange funds for outward direct investment changed from ex ante examination to ex post registration, and the review and approval requirement for outward remittances of funds for outward direct investments was canceled. During the preparatory stage before the formal startup of the foreign project, with SAFE approval, domestic institutions may remit a certain percentage of the total investment abroad.

**September 29.** With respect to Qualified Domestic Institutional Investors, the net amount of funds remitted abroad by securities dealers for investment in securities abroad must not exceed approved investment limits.

**September 29.** The upper limit on individual QFII investments was raised from \$800 million to \$1 billion, and the principal lock-up period for medium- and long-term investments by pension funds, insurance funds, and open-end funds was decreased to three months from 6 to 12 months; the principal lock-up period for other institutions was decreased from three years to one year.

### Changes during 2010

**August 17.** Foreign central banks, monetary authorities, Hong Kong SAR and Macao SAR RMB clearing banks, and foreign banks engaged in RMB trade clearing were allowed to invest in the China interbank bond market. These investments have several limitations, but there is no minimum holding period.

## APPENDIX B

**Recent Developments Pertaining to the International Use of the Renminbi**

This appendix documents recent developments related to the greater international use of the renminbi and other relevant financial market developments. A variety of official and unofficial sources were used in compiling this appendix. "AREAEER" refers to the IMF's *Annual Reports on Exchange Arrangements and Exchange Restrictions*; "HKMA" is the Hong Kong Monetary Authority; and "PBOC" stands for the People's Bank of China.

**Changes during 2004**

**January 18.** Mainland residents are allowed to use renminbi-denominated bankcards for tourism-related payments in the Hong Kong Special Administrative Region (SAR). (AREAEER 2004, 229, "Arrangement for payments and receipts" change.)

**January.** Personal renminbi businesses are launched. (HKMA)

**February 25.** Participating banks in the Hong Kong SAR can establish renminbi-denominated accounts, accept renminbi deposits, provide RMB–Hong Kong dollar exchange services, and effect renminbi remittances for residents and specified commercial customers in Hong Kong. (AREAEER 2004, 229, "Arrangement for payments and receipts" change.)

**February 25.** The number of primary dealers for open market operations is raised by the PBOC after some securities companies, insurance companies and rural credit cooperative unions were approved as primary dealers. (PBOC)

**April 1.** The amount for which documentary evidence is required in order to surrender foreign exchange is raised to the equivalent of \$50,000 from \$20,000. (AREAEER 2004, 229, "Proceeds from invisible transactions and current transfers" change.)

**May 1.** The amount of previous current account foreign exchange income that qualifying enterprises are allowed to retain is increased to the equivalent of 30 percent or 50 percent from 20 percent. (AREAEER 2004, 229, "Exports and export proceeds" change.)

**May 1.** The definition of qualifying enterprises is adjusted to include enterprises with specifically allowed foreign exchange business. Previously, the list included enterprises with specific foreign exchange volume or capital amounts. (AREAEER 2004, 229, "Exports and export proceeds" change.)

**August 12.** The PBOC puts forth clearing and reflow mechanisms for banking in renminbi in the Macao SAR. (PBOC)

**September 8.** Mainland China residents are allowed to use renminbi-denominated bank cards for tourism-related payments in the Macao SAR. (AREAEER 2005, 235, "Arrangement for payments and receipts" change.)

**November 1.** The PBOC allows qualified securities firms to issue short-term financing bills to qualified institutional investors in the interbank market. (PBOC)

**November 3.** Participating banks in the Macao SAR are allowed to open renminbi-denominated accounts; accept renminbi deposits; provide exchange services between renminbi, the Hong Kong dollar, and the Macao pataca; and effect renminbi remittances for residents and designated commercial customers in the Macao SAR. (AREAEER 2005, 235, "Arrangement for payments and receipts" change.)

**November 17.** The China Development Bank is approved for the issuance of bonds with floating interest rates around the seven-day repo benchmark rate on the interbank market. (PBOC)

**December 28.** For the first time, the PBOC issues forward central bank bills. (PBOC)

## Changes during 2005

**January 1.** The limit on the amount of renminbi that a domestic or foreign resident can bring in and out of China per time is increased to 20,000 yuan from 6,000 yuan. (PBOC)

**January 1.** Persons paying for their own studies abroad are allowed to purchase foreign exchange up to \$20,000 in addition to tuition and fees. The amount had been \$20,000, including tuition and fees. (*AREAER* 2006, 300, "Payments for invisible transactions and current transfers" change.)

**January 10.** Residents of mainland China may use certain renminbi-denominated bank cards for purchases in Thailand and for withdrawing cash and making purchases in Korea and Singapore. (*AREAER* 2006, 300, "Arrangements for payments and receipts" change.)

**January 15.** The reserve requirements on accounts denominated in domestic and foreign currency are unified at 3 percent. (*AREAER* 2006, 300, "Provisions specific to commercial banks and other credit institutions" change.)

**February 18.** The PBOC and other government ministries announce that international development organizations that are eligible can issue renminbi-denominated bonds. (PBOC)

**April 6.** A pilot program intended to allow commercial banks' setup of fund management firms is announced. (PBOC)

**April 30.** The PBOC approves the Pan-Asian Index Fund's access to the interbank bond market in China, making it the first institutional investor outside China to do so. (PBOC)

**May 18.** The interbank foreign exchange market formally puts forth foreign currency trading. The China Foreign Exchange Trading System offers trading of eight currency pairs. (PBOC)

**June 15.** The PBOC puts forth forward bond transactions on the interbank bond market. (PBOC)

**June 17.** Notice that would allow insurance companies to invest in overseas stock markets is issued. (PBOC)

**August 2.** The number of banks allowed to conduct forward transactions and interbank forward transactions is expanded, and the restrictions on maturity are lifted. (*AREAER* 2006, 299, "Exchange arrangement" change.)

**August 2.** Domestic institutions that are allowed to conduct current account transactions can retain foreign exchange equivalent to 50 percent (previously, 30 percent) or 80 percent (previously, 50 percent) of their foreign exchange earnings from current transactions in the previous year; domestic institutions or enterprises that had no current foreign exchange income in the previous year could retain up to the equivalent of \$200,000 (previously, \$100,000). (*AREAER* 2006, 300, "Exports and export proceeds" change.)

**August 2.** The PBOC starts renminbi swaps on the foreign exchange market. (PBOC)

**August 3.** Limits on foreign exchange purchases for private travel are increased: (1) If travel is for six months or less, the limit is increased to the equivalent of \$5,000 from \$3,000; (2) if travel is for a period exceeding six months, the limit is increased to \$8,000 from \$5,000. (*AREAER* 2006, 300, "Payments for invisible transactions and current transfers" change.)

**August 9.** The PBOC starts a credit asset and mortgage loan securitization pilot program, for which the China Construction Bank and China Development Bank are chosen as pilot institutions. (PBOC)

**August 15.** Interbank foreign exchange forward trading products are introduced by the China Foreign Exchange Trading System. The Industrial and Commercial Bank of China and China Construction Bank complete two forward deals of the U.S. dollar against the renminbi on the same day.

**August 16.** The State Administration of Foreign Exchange (SAFE) issues a notice that allows annual balance control to replace the case-by-case approval used when domestic banks designated for foreign exchange make guarantees for Chinese companies engaged in investment overseas. This system now

applies to all banks designated as qualified for domestic foreign exchange, and all qualified domestic institutions' foreign investment enterprises can now accept domestic guarantees. (PBOC)

**August 30.** The State Council approves a policy that allows commercial banks to invest in asset-backed securities. (PBOC)

**September 22.** The SAFE issues notice to extend the coverage of foreign exchange trading positions. (PBOC)

**October 9.** The Asian Development Bank and the International Finance Corporation are approved for the issuance of renminbi-denominated bonds valued at 1 billion yuan and 1.13 billion yuan, respectively, on the interbank bond market, marking the first time that foreign institutional investors participate in the Chinese bond market. (PBOC)

**November 1.** The PBOC expands its position squaring and clearing services to Hong Kong banks conducting renminbi business in order to meet renminbi business development needs. Furthermore, the PBOC also expands renminbi business for Hong Kong residents and raises cash exchange limits.

**December 5.** Renminbi-denominated cards may be used in France, Germany, Indonesia, Luxembourg, the Philippines, Spain, the United States and Vietnam. (*AREAER* 2006, 300, "Arrangements for payments and receipts" change.)

**December 8.** The PBOC approves China Construction Bank and China Development Bank's pilot issuance of asset-backed securities on the interbank market. (PBOC)

**December 13.** The PBOC issues a circular to streamline administrative procedures, expand the investor base and increase market transparency in the corporate bond market. (PBOC)

**December 15.** Renminbi-denominated cards may be used in Belgium and Japan. (*AREAER* 2006, 300, "Arrangements for payments and receipts" change.)

**December 18.** The number of banks permitted to be market makers is increased from 13 to 21. (*AREAER*, 272, "Exchange arrangement" change.)

**December 28.** Thirteen banks are introduced to be market makers in foreign exchange. (*AREAER* 2006, 300, "Exchange arrangement" change.)

## Changes during 2006

**January 4.** Over-the-counter transactions and market makers are put forth on the interbank foreign exchange market. (PBOC)

**January 24.** The PBOC announces pilot renminbi interest rate swaps on the interbank market. (PBOC)

**March 10.** The China Foreign Exchange Trading System and the Chicago Mercantile Exchange (CME) sign an agreement that provides China's financial sector with access to the electronic trading of CME's interest rate and foreign exchange products. (PBOC)

**April 15.** On approval, qualified fund management firms and other securities management companies now may, within a certain limit, combine foreign exchange funds owned by domestic institutions and individuals and use the funds overseas for portfolio investments, including for stocks. (*AREAER* 2007, 273, "Provisions specific to institutional investors" change.)

**April 18.** The PBOC allows commercial banks to invest in financial products abroad on behalf of domestic clients. (PBOC)

**May 1.** Residents are now allowed to purchase foreign exchange up to \$20,000 a year for current account transactions. (*AREAER* 2007, 272, "Payment for invisible transactions and current transfers" change.)

**July.** The PBOC issues a circular that puts forth brokerage business on the interbank bond and lending markets. (PBOC)

**September 1.** The Interim Implementing Regulations on Qualified Foreign Institutional Investors (QFII) Securities Investments in China is abolished, and the administration of QFII Securities Investments in China starts. (*AREAER* 2007, 273, “Provisions specific to institutions investors” change.)

**October 20.** Any foreign exchange transaction that is eligible for spot settlement under the regulations becomes eligible for forward settlement. (*AREAER* 2007, 272, “Exchange arrangement” change.)

**December 11.** China provides full national treatment for foreign banks. Under its World Trade Organization agreement, foreign banks, after being incorporated locally, are permitted to engage in the same range of financial services as Chinese banks, including taking retail renminbi deposits, and they are regulated and supervised in the same way as domestic banks. Foreign bank branches that have the China Banking and Regulatory Commission’s approval to conduct renminbi business may accept fixed-term deposits from Chinese citizens living in China in the amount of no less than 1 million renminbi per transaction. (*AREAER* 2007, 272, “Provision specific to commercial banks and other credit institutions” change.)

**December 29.** The China Foreign Exchange Trading System founds its own clearinghouse in order to better control clearing risks and improve market liquidity. (PBOC)

## Changes during 2007

**January 4.** The Shanghai Interbank Offered Rate (SHIBOR) is officially launched. (PBOC)

**January 14.** The PBOC allows domestic financial institutions to issue renminbi financial bonds in Hong Kong, subject to approval.

**January 15.** The number of market-maker banks is increased from 21 to 22. (*AREAER* 2007, 273, “Exchange arrangement” change.)

**February 1.** The limit on foreign exchange purchases by residents for current transactions is increased to \$50,000 a year from \$20,000. Resident individuals’ foreign exchange purchases up to this limit are processed with personal identification; and, after bank declarations, foreign exchange purchases in excess of this limit may be processed after bank verification of actual-need documents stipulated by the SAFE. (*AREAER* 2008, 321, “Payment for invisible transactions and current transfers” change.)

**March 20.** A notice that allows corporate annuity funds access to the interbank bond market is issued.

**April 9.** The China Foreign Exchange Trading System puts forth a new trading platform that synthesizes renminbi spot, forward, and options transactions against other currencies plus pair transactions among foreign currencies. (PBOC)

**June 7.** The Shanghai Gold Exchange obtains the PBOC’s approval to admit operational units of foreign banks as its members. (PBOC)

**June 26.** Renminbi bond issuance starts in Hong Kong. (PBOC)

**July 5.** The Qualified Domestic Institutional Investor (QDII) program starts.

**August 12.** Domestic institutions are now allowed to retain foreign exchange receipts from current account transactions in their foreign exchange current accounts according to their operational needs. The previous limits on the retention of foreign exchange receipts are eliminated. (*AREAER* 2008, 321, “Exports and export proceeds” change.)

**August 17.** Renminbi swaps against the U.S. dollar, euro, yen, Hong Kong dollar, and pound sterling are introduced in the interbank foreign exchange market. (PBOC)

**August 20.** The SAFE puts forth a pilot program that allows domestic residents to invest in securities overseas under controllable risks. (PBOC)

**September 3.** The National Association of Financial Market Institutional Investors—which includes members of the interbank market, foreign exchange market, and gold market—is formed. (PBOC)

**September 29.** The PBOC introduces forward rate agreements. (PBOC)

## Changes during 2008

**January 18.** The PBOC fully puts forth interest rate swaps. (PBOC)

**July 25.** The China Domestic Foreign Currency Payment System is started.

**August 5.** The foreign exchange income of domestic institutions and individuals is now allowed to be deposited abroad, under the terms and conditions specified by the Foreign Exchange Administration Department; however, these regulations have not yet been issued. (*AREAEER* 2009, 539, “Exports and export proceeds” change.)

**August 20.** The SAFE approves a pilot program to allow for individual domestic and foreign currency exchange business in Beijing and Shanghai, subject to approval. (PBOC)

**August.** The ceiling on the initial investment amount for each new institutional investor is raised to \$1 billion from \$800 million. (Lardy and Douglass 2011, 11)

**December.** The China Banking and Regulatory Commission now allows commercial banks to provide loans to firms for cross-border mergers-and-acquisitions purposes. (Lardy and Douglass 2011, 10)

## Changes during 2009

**January 7.** The PBOC eliminates restrictions that previously stipulated that a bond must exceed 500 million yuan in value to be traded on the interbank bond market. (PBOC)

**March 16.** The PBOC and HKMA start a cross-border multicurrency payment arrangement.

**March 17.** The SAFE announces the “Notice on the Decision on Short-Term External Debt Quotas for Financial Institutions in 2009,” which raises the short-term debt quotas of financial institutions. (PBOC)

**March 18.** The PBOC now allows fund management companies to open bond accounts on the interbank bond market under the category of a specific asset management portfolio. (PBOC)

**April 8.** The State Council announces a pilot program that allows exporters and importers in five cities—Shanghai, Guangzhou, Shenzhen, Zhuhai, and Dongguan—to settle cross-border trade deals in renminbi. (PBOC)

**May 14 and June 24.** The PBOC approves the Bank of East Asia’s and the Hong Kong and Shanghai Banking Corporation (China)’s issuance of 4 billion yuan and 3 billion yuan, respectively, in renminbi-denominated bonds in Hong Kong. (PBOC)

**May.** The Ministry of Commerce announced new rules regarding project approval that seek to shorten the time to gain approval, raise value thresholds, and boost discretionary power of the ministry’s local branches. (Lardy and Douglass 2011, 10)

**July.** Renminbi cross-border trade settlement starts in pilot cities. (PBOC)

**September 28.** The Ministry of Finance of China announces the issuance of the first sovereign renminbi-denominated bond in Hong Kong. (HKMA)

**November 28.** The Interbank Market Clearing House Co., Ltd., is formally established in Shanghai. (PBOC)

**December 14.** The PBOC broadens the range of transactions for which it provides renminbi position squaring and clearing for banks in Macao. (PBOC)

## Changes during 2010

**March 24.** The PBOC and the National Bank of the Republic of Belarus sign a bilateral local currency settlement agreement. This represents the first such agreement for general trade transactions that China has signed with a nonneighboring country. (PBOC)

**June 22.** The PBOC, along with other ministries, jointly announces the “Notice on Expansion of the Pilot Renminbi Settlement of Cross-Border Trade Program.” This measure broadens the geographic coverage of the renminbi-settlement pilot program. Cross-border-settlement business is also expanded beyond trade items to other balance of payment items. Current account transactions between 20 provinces and cities on the mainland and the rest of the world may now be settled in renminbi. Previously, transactions had to be settled in convertible currencies. (PBOC)

**July 7.** Hopewell Highway Infrastructural Ltd announces the issuance of renminbi-denominated bonds in Hong Kong, marking the first corporate dim sum bond issuance.

**July 13.** The Bank of China (Hong Kong) is authorized to serve as the clearing bank for renminbi banknotes in Taiwan. (PBOC)

**July 19.** Financial institutions in the Hong Kong SAR—including banks, securities brokerages, and insurance companies—are now allowed to open renminbi accounts. In addition, individuals and corporations can now undertake payments and transfers of renminbi between these banks and inter-bank settlement in renminbi. To facilitate the use of the renminbi in trade transactions, foreign banks engaged in such settlements were allowed to open renminbi correspondent accounts with Chinese banks as of July 2009 (*AREAER* 2011, 631, “Nonresident accounts” change.)

**August 19.** McDonald’s announces the issuance of renminbi bonds worth 200 million yuan, marking the first issuance of renminbi bonds by a multinational corporation. (*Financial Times*)

**August.** The first offshore renminbi mutual fund is started. (Standard and Chartered Bank)

**October 1.** Nonresident nonbank institutions accepting payments for exports to China in renminbi are now allowed to deposit the proceeds from such transactions in correspondent accounts with Chinese mainland banks. Limited trade financing is also possible through the correspondent accounts (*AREAER* 2011, 632, “Nonresident accounts” change.)

**October 1.** Pilot projects for the depositing of export proceeds abroad are launched in four areas: Beijing, Guangdong (including Shenzhen), Shandong (including Qingdao), and Jiangsu. Eligible domestic enterprises in pilot project areas may apply to local SAFE branches to deposit export proceeds abroad and, on approval, participate in the pilot projects. In accordance with the relevant regulations, the opening and closing of external accounts and funds receipts and payments must be processed and the relevant information reported to the SAFE. (*AREAER* 2011, 632, “Exports and export proceeds” change.)

**October.** A currency swap line between HKMA and PBOC is activated after the 8 billion renminbi quota for the Bank of China is exhausted.

**November 22.** The PBOC authorizes the China Foreign Exchange Trading System to set up direct Russian ruble trading with the renminbi on the interbank foreign exchange market. (PBOC)

**November 24.** Caterpillar announces the issuance of 1 billion yuan worth of renminbi-denominated bonds. (*Financial Times*)

**November.** Issuances of renminbi-denominated sovereign bonds are conducted through the Central Moneymarkets Unit. (HKMA)

**December 8.** The number of Chinese exporters allowed to participate in renminbi settlement is increased from 365 to 67,359. (PBOC)

**December 15.** The Russian Moscow Interbank Currency Exchange starts renminbi–ruble trading. (PBOC)

**December.** The Bank of China (Hong Kong) Offshore RMB Bond Index, the first Hong Kong renminbi bond index, is launched.

## Changes during 2011

**January 1.** The SAFE classifies foreign exchange market makers into three types to increase liquidity in China's foreign exchange market and boost its development: spot trading market makers, forwards and swap trading market makers, and comprehensive market makers. Twenty-six banks have been approved as spot market makers, and 18 have been approved as forward swap market makers. Currently there are no comprehensive market makers. (*AREAEER* 2011, 632, "Exchange arrangement" change.)

**January 6.** Resident enterprises in 20 provinces and cities on the mainland are now allowed to use renminbi for outward foreign direct investment in countries that accept such settlement. Previously, such payments had to be settled in convertible currencies. Banks in Hong Kong can provide renminbi funds to facilitate these transactions. (*AREAEER* 2011, 632, "Arrangements for payments and receipts" change, HKMA.)

**January.** The Bank of China is approved to set up renminbi-denominated deposit accounts in New York City.

**February 14.** The PBOC allows RMB-FOREX options trading on the interbank foreign exchange market. (PBOC)

**February.** The Qualified Limited Foreign Partner (QLFP) pilot program starts in Shanghai.

**June 23.** The PBOC signs a new bilateral local currency settlement agreement with the Central Bank of the Russian Federation. (PBOC)

**August 23.** Cross-border trade settlement in renminbi is extended to the entire nation. (PBOC)

**September 14.** HSBC announces that it has become the first foreign bank to offer renminbi services and products in Taiwan.

**Third quarter.** Renminbi-denominated corporate bond issuance exceeds that of euro-denominated sales for the first time (*Financial Times*, September 29, 2011).

**October 14.** The PBOC announces rules that permit banks to provide settlement services to overseas entities that have made direct investments denominated in renminbi.

**October 16.** The Chinese Gold & Silver Exchange launches the world's first renminbi-denominated gold contract in Hong Kong. (CNBC, October 16)

**October 17.** The Ministry of Commerce issues an announcement that allows foreign direct investment in renminbi from outbound investors.

**November 10.** The PBOC signs an agreement with the Austrian Central Bank to allow the latter to invest in the interbank bond market in China. (PBOC)

**November.** JP Morgan Asset Management is allowed to create a \$1 billion renminbi-denominated fund under the Qualified Limited Partners Program, making it the largest foreign manager of a renminbi-denominated fund so far.

**December 16.** Renminbi offshore is allowed to be used for purchasing equities in mainland China (*Financial Times*, December 18, 2011).

**December 25.** China and Japan agree to promote local currency cross-border transactions, direct foreign exchange, bond market development, and other programs.

## APPENDIX C

**Bilateral Local Currency Central Bank Swap Agreements with China since 2008**

<b>Bank</b>	<b>Date</b>	<b>Amount (billion yuan)</b>	<b>U.S. Dollar Equivalent (billion)</b>
Bank of Korea	12 Dec. 2008	180	26.3
	26 Oct. 2011	360	56.5
Hong Kong Monetary Authority	20 Jan. 2009	200	29.2
	22 Nov. 2011	400	62.9
Bank Negara Malaysia	8 Feb. 2009	80	11.7
National Bank of the Republic of Belarus	11 March 2009	20	2.9
Bank of Indonesia	23 March 2009	100	14.6
Central Bank of Argentina	2 April 2009	70	10.2
Central Bank of Iceland	9 June 2010	3.5	0.5
Monetary Authority of Singapore	23 July 2010	150	22.1
New Zealand Reserve Bank	18 April 2011	25	3.8
Central Bank of the Republic of Uzbekistan	19 April 2011	0.7	0.11
Central Bank of Mongolia	19 April 2011	5	0.8
National Bank of Kazakhstan	13 June 2011	7	1.1
Bank of Thailand	22 Dec. 2011	70	11.1
State Bank of Pakistan	23 Dec. 2011	10	1.6

**Note:** The bilateral agreement with South Korea was extended to 360 billion yuan on October 26, 2011, from the previous agreement. The bilateral agreement with Hong Kong on November 22, 2011, replaces the previous agreement of January 20, 2009. The bilateral agreements listed above cover the years after 2008. A number of bilateral agreements signed before 2008, mostly under the Chang Mai Initiative, are not included. Many of those agreements are not in the local currency.

**Source:** People's Bank of China.

## APPENDIX D

**Additions of Renminbi to Central Bank Reserves across the World**

**September 5, 2011.** The Central Bank of Nigeria's governor, Limido Sanusi, remarks that one-tenth of the nation's reserves of \$33 billion would eventually be diversified with the renminbi. He also mentions the next day that the renminbi would replace some current euro holdings. Furthermore, he says that Nigeria is allowed to purchase bonds denominated in renminbi in Hong Kong and Shanghai. (Reuters)

The Central Bank of Nigeria (2011) issues a statement on the same day that it "has finalized arrangements to diversify its external reserves holdings by including the Chinese Renminbi (RMB) to the existing currency mix of United States dollars (USD), the euro (EUR) and the British pound sterling (GBP)."

**September 19, 2011.** The *Financial Times* reports that the Central Bank of Malaysia has purchased RMB bonds for its reserve portfolio.

**September 2011.** The Central Bank of Chile adds yuan to its internal portfolio. It composes 0.3 percent of total internally managed investment portfolio.

**December 25, 2011.** China and Japan enter a pact to promote direct yuan-yen trades and settlement of transactions directly in each other's currencies. Japan indicates that it will buy Chinese bonds as part of its reserve portfolio (according to the *Financial Times*, one official was quoted as saying that this was intended as an expression of economic cooperation rather than a serious attempt to further diversify Japan's reserve holdings).

Other central banks that are reportedly considering adding renminbi-denominated reserves:

South Korea (*Financial Times*, May 4, 2011)

Mongolia (*China Daily*, September 7, 2011)

South Africa (*EconoMonitor RGE*, September 22, 2011)

Venezuela (CNN, September 29, 2011).

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## NOTES

1 A burgeoning literature looking at specific aspects of China's exchange rate management and capital account liberalization includes Frankel (2005, 2011), Eichengreen (2011b), Lardy and Douglass (2011), and Yam (2011).

2 See, e.g., Chen, Peng, and Shu (2009) and Subramanian (2011). Dobson and Masson (2009) and Kroeber (2011) offer a more skeptical view. Angeloni et al. (2011) discuss probabilities of alternative scenarios and argue that the renminbi may gain more prominence if the euro does not mount a serious challenge to the dominance of the U.S. dollar.

3 Other commonly used measures of de jure openness have been created by Schindler (2009) and Miniane (2004). The Schindler data set is only available up to 2005 and shows little variation over time for China. The Miniane data set does not include China.

4 This index takes values from  $-1.84$  (closed) to  $+2.48$  (open). The index for Germany is used instead of that of the euro area because no separate index is available for the latter.

5 See Prasad, Rumbaugh, and Wang (2005) for references and a discussion of this issue in the context of China.

6 See Prasad (2009) for a more detailed discussion of these issues.

7 See Tavlas (1991); Chinn and Frankel (2007); Forbes (2009); and Obstfeld (2011a). For a historical perspective on the role of financial markets for the rise of the U.S. dollar, see Eichengreen (2011a).

8 In the absence of clear documentation, the turnover data for China and Japan in Tables 9 and 10 assume that the original source presents rolling annual turnover data on a quarterly basis. If the turnover data were in fact quarterly measures, then the annual bond turnover for these economies would be higher. For example, the turnover of China's government and corporate bonds in 2010 would be \$7.2 billion and \$2.9 billion, respectively. Similarly, the turnover ratio (calculated using the value of outstanding bonds as of December 2010) would be 3.0 and 4.6, respectively. For Japan, the corresponding government and corporate bond turnover would be \$46 trillion and \$0.3 trillion, and their ratios would be 4.34 and 0.28. The 2011 *China Financial Stability Report* states that the turnover of the nation's interbank bond market was 64 trillion yuan (\$9.6 trillion) in 2010 (PBOC 2011).

9 The Netherlands has the highest rank in terms of interconnectedness; it is a small but very open economy with extensive trade linkages. The systemic trade importance ranks of some other countries are as follows: Germany (2), Korea (7), Japan (9), India (14), Russia (19), and Brazil (20).

10 In addition to these spot rates, other renminbi-related exchange rates are the dollar-settled nondeliverable forwards rate (NDF) and the trade settlement exchange rate. The NDF market predates the CNH market, and it precludes participation by mainland China residents. However, the NDF is linked to the onshore CNY exchange rate in the sense that its value is derived from expected future CNY spot rates. The trade-settlement exchange rate is the one that prevails for cross-border trade transactions, for which the CNH rate does not apply.

**11** See, e.g., “Renminbi Threat to Dollar Could be Stalling,” *Financial Times*, November 23, 2011.

**12** The Chiang Mai Initiative refers to the initiative of ASEAN+3 economies to set up bilateral central bank swap lines among their members to deal with country-specific liquidity crunches.

**13** The swap lines with Korea and Japan were established in 2002 and are two-way—that is, either party can provide liquidity. The swap with the Philippines was established in 2003 and, though denominated in local currency, it is a one-way swap such that China would provide renminbi liquidity in return for Philippine currency should the Philippines need to draw upon the credit line (see Henning 2009; Ito 2011).

**14** “Nigeria Approves Inclusion of Chinese Renminbi in External Reserves,” Central Bank of Nigeria Press Release, September 5, 2011.

**15** “Enhanced Cooperation for Financial Markets Development between China and Japan,” People’s Bank of China, December 25, 2011.

**16** Interestingly, China held a significant portion of short-term U.S. Treasuries in 2009. This, however, decreased quickly in the subsequent year.

**17** This is based on a stock of about 204 billion SDRs converted to U.S. dollars at the November 23, 2011, exchange rate of 0.643 SDRs per \$1.

**18** See “China FX Head Proposes Adding BRICS Currencies to SDR,” Reuters, May 5, 2011.

**19** “IMF Executive Board Completes the 2010 Review of SDR Valuation,” IMF Public Information Notice 10/149.

**20** “IMF Executive Board Discusses Criteria for Broadening the SDR Currency Basket,” IMF Public Information Notice 11/137. For more details on the underlying analysis, see “Criteria for Broadening the SDR Currency Basket,” International Monetary Fund, September 2011.



## COMMENTARY

**The Renminbi's Role in the Global Monetary System**

Shang-Jin Wei

**Why May the World Want to Welcome the Internationalization of the Chinese Currency?****Anxiety, Excitement, or Indifference?**

China appears to be taking various actions to increase the international role of its currency, the renminbi, through its greater use as a settlement currency in China's exports and imports, and bilateral swap lines with a few central banks in the world that make the renminbi available to them. Some have started to talk about the eventual displacement of the U.S. dollar by the renminbi as the preeminent international reserve currency; others noted (perhaps with an audible sigh of relief) that many of the prerequisites for the renminbi to be a reserve currency are not fulfilled, and therefore the talk of the renminbi as a major international currency is way too premature.

The list of prerequisites is said to include (a) a deep and liquid domestic financial market, including vibrant government and corporate bond markets, (b) capital account convertibility, (c) a flexible nominal exchange rate regime, (d) a stable domestic macroeconomic situation including low inflation and a government debt level within a sustainable threshold. Except for the last one, China is lacking on the other three. There is no strong expectation that China will deliver all of the three any time in the near future.

While these points are discussed as prerequisites for internationalization of the renminbi, it is important to ask ourselves what the goals are and what the means are. For China, internationalization of the renminbi should not be the goal, but improving living standards of its citizens on a sustainable basis should be. Indeed, internationalization has never been articulated as an important national strategic goal. China's twelfth five-year plan, which is supposed to guide the government policies over 2012–16, and is thick with comprehensive targets in various sectors and areas, has only a few somewhat vague sentences on internationalization of the renminbi ("more use of the renminbi in cross-border transactions"). Relative to numerous other goals, this item lacks quantitative targets or a clear timetable. To put it simply, internationalization of the

renminbi has yet to be regarded as a priority item of even medium-level importance on the nation's long list of priorities. This is perhaps appropriate from China's standpoint.

In this commentary, I ask a few related questions. First, would a greater international use of the renminbi bring benefits to the world economy? Second, are there things worth doing by international organizations and governments other than that of China that can help promote the greater international use of the renminbi? Third, in which areas are we likely to see a surge of China's out-bound capital flows?

## **Benefits and Costs to the World Economy**

When we talk about the implications of the greater internationalization of the renminbi for the world economy, it is useful to distinguish countries whose currencies are major reserve currencies (chiefly the United States, euro-zone member states, Japan, the United Kingdom, and Switzerland) and other countries. For countries whose currencies are not reserve currencies, the effects are mostly beneficial. At this juncture, these countries are between a rock and a hard place in terms of their foreign exchange management. Most of their foreign exchange reserves (about 63 percent as of 2010) are placed in U.S. dollars (or U.S. government securities and agency securities). Not only is the nominal yield in the dollar terms low, the risk of a massive capital loss in the form of dollar depreciation is tangible. In fact, the U.S. government and industrial establishment are actively seeking a weak dollar policy. Sure, the U.S. government has a consistent strong dollar rhetoric; but that consists mostly of an "open-mouth" operation rather than being backed by the Federal Reserve's Open Market operations. More diplomatically, the policy goal could be expressed as having a strong dollar at home but a more competitive dollar abroad. Many prominent economists in international macroeconomics both predict and prescribe a gradually weakening U.S. dollar as a necessary ingredient for the U.S. economic adjustment in the next decade or more.

After the dollar, most countries tend to store their foreign exchange reserves in a combination of the euro, yen, British pound, and Swiss franc government securities (for a collective share of about 25 percent as of 2010). Most of these economies have not been doing great since 2008. This is especially clear in Europe, where a sovereign debt crisis is brewing, and Japan, where a robust recovery from two lost decades has been put on hold by a combination of nuclear power disasters and the spillover from the weak European and U.S. economies.

If the renminbi were to attain a higher international profile, the non-reserve currency countries would have extra flexibility in managing their foreign exchange reserves, potentially reducing the capital loss from being restricted to choose among the existing cast of currencies.

Now I turn to the club of countries whose currencies are already major reserve currencies. Having one's currency as a reserve currency brings a lot of benefits, including prestige, seigniorage revenue, lower borrowing costs for their governments, corporations, and households, and a much lower if not zero probability of a debt crisis. Against this background, it is easy to think that added competition from a new kid on the block would dilute some of these benefits. If you hear that you may be displaced by a newcomer, you can be excused for not feeling like helping to expedite the process.

However, there are benefits even for reserve currency countries from a greater international use of the renminbi. First, many of the measures China would have to take to enhance the international role of the renminbi carry collateral benefits for these countries. The leading existing reserve currency country, the United States, wants China's current account surplus to shrink and the renminbi to be revalued. For example, according to the theories of Caballero, Farhi, and Gourinchas (2008) and Ju and Wei (2010), a more developed domestic financial market would reduce China's exports of its domestic savings abroad. So the United States might wish to encourage more domestic financial development in China. Second, the governments of major reserve currencies want to see more flexibility in China's nominal exchange rate regime. One of China's concerns in the exchange rate reform is the prospect of a massive capital loss in its foreign exchange reserve holdings. If greater renminbi internationalization translates into a rising share of its foreign assets being denominated in renminbi, China will be less hesitant in the exchange rate reforms, other things equal.

While greater capital account convertibility per se may have an ambiguous effect on China's net capital outflows, it could create incentives for China to expedite the schedule on nominal exchange rate reforms, since China will be more keenly aware of the impossible trinity after the renminbi becomes more convertible. If one believes a more flexible nominal exchange rate would reduce China's current account surplus, one should also be inclined to give more consideration to the effects of exchange rate flexibility on the internationalization of the renminbi. Personally I do not regard this as an effective way to address current account imbalances, and my paper with Menzie Chinn (Chinn and Wei, forthcoming) suggests that this is not an empirically valid point. If one assigns

a big enough weight to the importance of the renminbi flexibility, one ought to be willing to exert some effort to help with moving the action.

## **What Can Other Countries and International Organizations Do?**

To the extent that measures have been deployed to promote renminbi internationalization, they are largely actions by the Chinese authorities in the areas of trade invoicing, swap agreements with selected central banks, attempts to deepen domestic financial markets, and reviews of capital control regimes with a view to introduce selective liberalization. Do other governments and international organizations have a role to play?

Over the last few years, we already see the birth and modest growth of panda bonds (the issue of renminbi-denominated bonds by a few multinational corporations such as KFC and the Asian Development Bank, to Chinese residents) and of the dim sum bonds (the issuance of renminbi-denominated bonds in Hong Kong by Chinese entities to non-Chinese resident entities). Both have room to grow. But why not introduce more renminbi-denominated products, which I call kung-fu bonds, renminbi-denominated bonds issued by any credit-worthy entity to other entities?

Some might ask how this can be done if China does not completely liberalize capital controls. The answer is easy. The key is to separate currency of settlement from currency of denomination. The bond can be denominated in renminbi, so its future payoff is protected from potential depreciation of the dollar or the euro against the renminbi, but the settlement can be done in the dollar, the euro, or any other hard currency at the exchange rate prevailing at the date of maturity.

Now consider two applications of the kung-fu bond idea. One topic in international financial architecture is whether or not the Chinese renminbi should be included in the International Monetary Fund's basket of special drawing rights (or SDRs for short). The SDR is an artificial reserve currency created by the IMF. Its value currently is determined by a basket of four currencies: the dollar, the euro, the yen, and the Swiss franc. SDRs currently account for only 10 percent of worldwide reserves, falling far short of the vision of its creators. The Chinese central bank governor mused over the possibility of adding the renminbi to the SDR basket. The key benefit for the world economy from the renminbi's inclusion is the potential for a more rapid rise in the use of SDRs as a reserve currency. The IMF has always said that it is better for member countries to look to the IMF for collective insurance against global shocks than for individual countries to try to build their own self-sufficient war chests. The

SDR currently consists of a bunch of “losers,” not in a derogatory sense, but in the sense that these currencies are expected to lose value vis-à-vis the renminbi over the medium term. Indeed, it is no secret that many governments of the SDR-constituent currencies would like to see a faster renminbi appreciation against their own currencies.

So far, the IMF has ruled out the inclusion of the renminbi in the SDR basket on the ground that the Chinese renminbi is still not convertible. From the previous discussion, it is clear that the exclusion is based more on (arguably misguided) political considerations than technical feasibility. Again, the value of the SDR can very well be pegged to a basket of the five currencies including the renminbi, but the settlement can be made in the U.S. dollar (or any other hard currency.) As long as one is willing to consider this separation of denomination and settlement, capital account convertibility is not needed for a currency's inclusion in the SDR basket.

With the European sovereign debt crisis hanging on a cliff, the world wishes China could be more forthcoming in lending a bigger portion of its foreign exchange reserves to help rescue the euro-zone economies. From China's point of view, it would be imprudent to invest aggressively directly in European debt because the prospect of a capital loss is simply not consistent with the internationally common principle of safety and prudence governing a country's official foreign reserves management. Neither is it wise for China's sovereign wealth fund, the China Investment Corporation (CIC) to aggressively enter this territory. There is in fact a way out (or in). If China can buy a special IMF bond, denominated in the value of an enlarged SDR basket that includes the renminbi, then China would be more willing to lend its vast savings to the purpose of rescuing the European economies. The ensuing credit risk is mitigated by the IMF's more diverse portfolio of lending programs, and the ensuing exchange rate risk is mitigated by having the renminbi as part of the denomination unit.

Let us dial up the audacity level of the out-of-box thinking by one more notch. Perhaps the United States and the European governments (and certainly companies from these countries) could consider letting a portion of their future borrowing be denominated in the renminbi. The benefits to China are obvious—there would be less risk of capital loss triggered by a dollar or euro depreciation. What about the benefits to the United States, Europe, or other countries that choose to do so? First, if this helps convince the Chinese to buy more of their debt, it would help to hold down their cost of borrowing. Second, as China becomes less worried about the capital loss on its foreign exchange holdings from greater renminbi flexibility, China would be more willing to let

the nominal exchange rate float. To the extent this is important to Western governments (and plenty of politicians proclaim it is very important to them), this should be considered worth facilitating.

Some might doubt whether the United States would ever tolerate the humiliation of denominating its government debt in a foreign currency. If the United States does, it certainly won't be the first country to do so. Most countries denominate their debt in a foreign currency when they need to borrow from the international capital market. Moreover, history shows that the United States is very pragmatic. History, by the way, also reveals that the United States has already denominated some of its government debt in a foreign currency (namely, the deutsche mark in the 1970s). In any case, one has to weigh benefits and costs of doing such a thing rather than dismissing it out of emotion.

### **The Future of the Renminbi and Chinese Capital in the World Economy**

Fundamentally, whether the renminbi will continue to grow in its international profile, and whether capital coming out of China will attract increasing attention are first and foremost determined by two key questions. Can China maintain its growth momentum over the next decade and more? And, can China continue to pile up foreign asset holdings?

On the first question, the optimists think that China will overtake the United States in terms of the absolute size of its economy before the end of this decade, while the pessimists think that the Chinese economy is on the verge of a collapse. My personal view is that the Chinese growth rate will be lower in the next decade than in the last decade, partly because the past success has raised its labor cost sufficiently that it has to switch its growth model from relying mostly on replications and duplications to putting increasing weight on innovation and upgrading. Both textbook models of economic growth and existing experience from other countries suggest that it is entirely normal for the growth rate to slow down after a country enters the middle-income group. However, existing international experience and the textbook growth models provide only an incomplete guide for thinking about the growth prospect of the Chinese economy. The Chinese political institutions and bureaucratic incentive structure have been partly deployed to create an economic environment that is arguably more favorable to capital owners and firm growth than its many democratic counterparts at the comparable stage of development (Du and Wei, 2011). More importantly, an increased competition for (relative) wealth status, motivated by a desire to improve one's (or one's children's) relative status in the marriage market, and triggered by a rise in the sex ratio imbalance, has motivated

more people to want to be entrepreneurs. It has also motivated more people to willingly tolerate longer and harder work. Both of these motivations give powerful additional stimulus to economic growth that is not commonly shared by other countries. I have estimated that this factor accounts for about 20 percent of China's recent growth rates (Wei and Zhang 2011a, b). This implies that China will grow a bit stronger and longer than other countries have experienced or than standard theoretical models would have predicted.

On the second question, Chinese foreign asset accumulation will slow but will not die out, let alone reverse, any time soon. Some of the factors that led to the current pace of foreign asset accumulation are temporary. The accession to the World Trade Organization and the phased-in reforms associated with the accession were implemented over 2002–06 but ran out of steam by 2008 (Ju, Shi, and Wei 2011). This produced a temporary boost to China's current account surplus (perhaps by 2 to 3 percent of GDP a year) over 2002–08, but the effect is dying out. Other factors that had also triggered a run-up of the current account surplus are more persistent. Many factors that caused a rise in China's household and corporate savings in the last eight years are in this category. This includes an inadequate social safety net and financial underdevelopment. But an intensified competition in the marriage market, triggered by a rise in the sex ratio in the premarital age cohort since 2002, is also a quantitatively important factor (Du and Wei 2010).

Even if China's total foreign asset accumulation were to be kept at the same pace, there is no reason that its foreign exchange reserves have to grow at the same pace. When China pushes selective relaxation of the controls on capital outflows, maybe because it wishes to facilitate more international use of the renminbi, the world should expect to see a massive rise in China's outbound foreign direct investment and outbound portfolio investment. After all, even though the government finance of many Western countries is on shaky ground, the next Apple, next Google, and the like, are still more likely to emerge in the United States and to a lesser degree in Europe and Japan. Therefore, it is more sensible for China to see a transformation of the composition of its foreign asset holdings towards more productive and innovative assets and less government debt. However, the exact geographic distribution of China's outbound foreign direct investment or portfolio investments will be affected by political as well as economic factors in the potential destination markets.

The increasing internationalization of the renminbi will happen with or without the help of Western governments. It is perhaps better for them if they choose to facilitate and perhaps shape the path of the renminbi internationalization.

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## GENERAL DISCUSSION

# The Renminbi's Role in the Global Monetary System

Chair: Sarah Bloom Raskin

**Ms. Raskin:** Questions?

**Mr. Goodfriend:** I find this discussion very interesting in light of a point that's come up that I hadn't thought about before. One of the advantages of the United States having a reserve currency is that it earns a liquidity services yield on Treasury bills and notes, which allows the U.S. to borrow at a lower cost than otherwise. China, being on the opposite side of the transaction, is using the United States as a bank. However, the Chinese can earn liquidity services yields themselves by offering line of credit services from the People's Bank of China (PBOC) to neighboring countries in East Asia. You mentioned that this was beginning to occur through what you call the swaps program. To me the swaps program is nothing but a line of credit program that China is offering to East Asian countries—that in a way competes with the alternative to self-insurance by holding U.S. Treasury securities as reserves. Consequently, countries hold less U.S. Treasury securities, and, if they have good financial relations with the PBOC, they get a line of credit, which is an alternative means of receiving liquidity services. This is a smart move for the Chinese who are trying to get into the business of getting the returns from providing liquidity services to neighborhood trading partners and central banks for whom, if the conditionality was suitable, being able to draw on a line of credit with the PBOC is a good substitute for holding low-yielding U.S. Treasury securities. I'd like you to comment on whether the Chinese see this as a direct way to compete with U.S. liquidity services provision.

**Mr. Prasad:** That was stated more elegantly than I could have. I should add to what you just pointed out, there is this sense of central banks actually explicitly holding Chinese renminbi in their reserve portfolios. The Bank Negara Malaysia hasn't officially announced this, but apparently they have been accumulating Chinese assets. Chile also has some renminbi assets. There's an interesting question here, whether this makes sense from the point of view of what you hold reserves for. You hold reserves to deal with pressures on your currency and to provide consumption smoothing services. But most importantly, a large

stock of reserves, to use Hank Paulson's analogy, shows that you have a really large bazooka in your pocket so that markets won't attack you. So, if part of this bazooka is tinged with red, does that affect the credibility that markets have in your bazooka? In other words, if you have renminbi reserves, but the International Monetary Fund doesn't count them as reserves, does the market still, so to speak, buy it? The answer seems to be, increasingly, yes, because ultimately the relationships that many of these economies have are very intense trade and financial relationships with China. It makes perfect sense for them to hold reserves in renminbi, even though it's not a convertible currency, because they can pay for imports from China. So in a sense, I think the Chinese are not actively encouraging other central banks to go out and hold renminbi, but I think it's part of the process by which the renminbi gains much more acceptance within the Asian region.

**Mr. Goodfriend:** I'm interested also in whether China is going to use its swap line more loosely as a liquidity services line of credit, which I find fascinating. Ordinarily swap lines are used for emergency credit, but it is possible to conceive of this as allowing more routine access to liquidity services for trading partners. That is, if you do business with me, I'll give you trade credit.

**Ms. Raskin:** So are bilateral agreements set up between the central banks? And are they drawn upon?

**Mr. Prasad:** They are drawn upon, to some extent. The notion with which the bilateral swap started was basically that they would act as credit lines in the event of a crisis. The idea was that you would have access to renminbi, which you could then convert into dollars. But now there is a demand for renminbi. So these are local currency swap lines that the Chinese central bank is providing. These can be used for trade settlement—and to some extent they are being used for that—but the primary purpose, as expressed in the Chiang Mai Initiative, which was intended partly to develop local currency bond markets, was to insure the region as a whole. So the insurance motive is a more important one right now than the trade settlement credit motive. But I suspect this will pick up as we go along.

**Ms. Raskin:** Thank you. Justin.

**Mr. Lin:** Well, I have a question for Eswar regarding the consensus of using the renminbi as a global reserve currency and that a necessary condition for that is capital account liberalization and using that as a way to push for further financial reform. However, the major reserve currency countries, including the

U.S., Japan, the U.K., and the euro zone, regulate financial markets as a pool, yet their macro policy management has been worse than China in the past 30 years. Considering this, how can you say this could be a desirable way to push for reform in China? The Chinese people, instead of thinking that you're proposing some desirable reform, might think you are really introducing a Trojan horse into the Chinese economic system.

**Mr. Prasad:** That's a very legitimate, interesting question. I didn't in any way mean to imply that being a reserve currency country results in you doing good things or being good. But given where China is right now, to accomplish this objective, if there is consensus around it, and to minimize the risks during the transition process, greater exchange rate flexibility and capital account openness would help. One question is whether this is overall a worthy objective for China. Again, I think that this is happening, as the capital account is becoming a lot more open. Of course, the big concern for China is ongoing reserve accumulation; though that came to a halt in the third quarter of 2011, but it's likely to resume, as Shang-Jin suggested. If reserve accumulation continues, you essentially tie yourself more and more to the United States. Building public opinion in favor of the renminbi becoming an important currency in its own right and thereby reducing dependence on the United States is one objective. And the liberalization of the capital account essentially will reduce the dependence on reserve currency assets. Shang-Jin made an important point as well, that capital account liberalization will allow for more effective outflows through the private sector rather than by the government. It all hangs together. So no, being a reserve currency will not guarantee that China will do the right thing. But for China to get where it wants to be, these things would certainly be part of the overall package.

**Ms. Raskin:** Okay, Mark.

**Mr. Spiegel:** I wanted to comment on Shang-Jin's idea, which was very interesting, about looking for other entities to issue renminbi-denominated debt as a vehicle for encouraging capital account liberalization in China. There's a bit of a chicken-and-egg problem, in the sense that prior to having those markets liberalized, there's going to be currency risk exposure associated with issuing that type of debt. You would be hard-pressed to find entities that would be willing to undertake that kind of activity, if they couldn't hedge the currency risk.

**Mr. Wei:** One of the major comparative advantages of the U.S. is the financial services sector. They know how to create hedging policies. There's the example of including renminbi in the special drawing rights basket, even having some

government bonds and even corporate bonds denominated in renminbi. This doesn't present a big problem. There's certainly demand for this, as shown by the examples of both dim sum bonds—renminbi-denominated bonds issued in Hong Kong—and panda bonds—renminbi-denominated bonds issued by non-Chinese entities in China. They are much more limited by regulatory restrictions. Without restrictions, they could potentially grow much faster.

**Mr. Prasad:** I love the kung fu bonds. I can't wait for other things like that. Tae kwon do bonds and so forth.

**Ms. Raskin:** Final question.

**Mr. McKinnon:** Both presentations were very good, but neither presenter mentioned China-bashing, that is, the great pressure the United States is putting on China to appreciate the value of the renminbi. It does appreciate slowly; the exchange rate is not rigid. So besides having zero interest rates in the U.S., you have the expectation the renminbi will be higher in the future. Therefore, there's a flood of hot money into China. And the People's Bank of China doesn't want to see a sharp appreciation of the renminbi, so it intervenes massively to resist this. It creates base money and loses monetary control, so it gets more inflation than it would otherwise like. So a precondition for liberalizing the renminbi and getting rid of capital controls in China is that we need to get rid of China-bashing. Otherwise, more hot money will flood into China.

A second related issue is that China cannot float its exchange rate. It can allow more flexibility and control appreciation a bit, but it can't float. This is because it's an immature creditor, so it has a huge savings surplus which shows up as a trade surplus. But it's not possible for private banks, insurance companies, or pension funds in China to finance that trade surplus. If the People's Bank of China withdrew from the market and tried to float, it would require private banks or insurance companies to build up their dollar assets, and they wouldn't do it—it's too risky. It's too big of a currency mismatch. So floating would mean that the value of the renminbi would just spiral upward indefinitely, and I think the People's Bank of China realizes that, which is why it maintains a gradual peg and keeps control over the currency.

**Mr. Prasad:** Let me answer that question with an observation. I've been very careful in my writings about referring to exchange rate flexibility rather than appreciation. Many people view these two as the same thing, but it's not obvious to me. Given the productivity differences between China and the United States and other trading partners, the renminbi is likely to appreciate over the long term. But over horizons we care about—the next year or two to three

years—the dynamics from the capital account will be far more important. So what should happen to the renminbi if the exchange rate becomes more flexible and provides more monetary policy independence—which is what I would like to see—is far from obvious. I mentioned the amount of deposits in the banking system that are earning highly negative real rates of return. If 10% of those deposits decide to leave the country for diversification purposes, to get a more decent rate of return, that could swamp other dynamics in the short run. And who knows what would happen to the currency. In fact right now, for technical and other reasons the nondeliverables forwards market in Hong Kong is actually predicting that the renminbi will depreciate over the next year rather than appreciate. So I think focusing on the level of the currency—which a lot of people in the U.S. tend to do—is not the right approach. Instead we need to think about what China needs to do. Circling back to the discussion we had this morning about the U.S. doing the right thing for itself, I think what China should do to benefit itself and the rest of the world is have a better financial system and a more balanced growth path. A flexible exchange rate could help in both respects. It's not going to be the *primary* determinant, but I think it can help. And that is the objective we're really after, rather than a particular level of the exchange rate.

**Mr. Wei:** What you call China-bashing, Ron, I think is more linked to a combination of China's current account surplus and the inability of authorities in the U.S. and Europe to manage their domestic economies effectively through other instruments. My fear is that more Chinese exchange rate flexibility—which I agree with Eswar would be very good for China and would improve inflation control—is unlikely to fundamentally reduce China's current account surplus. That is not to say the real exchange rate doesn't matter for the current account. I think a more flexible exchange rate would be good for China. But, there's very little evidence that changes in the nominal exchange rate will fundamentally alter the real exchange rate on a sustainable basis. For that reason, it's very unlikely that greater nominal exchange rate flexibility will fundamentally alter the Chinese current account picture or solve the China-bashing problem.

**Ms. Raskin:** Well, thank you. That concludes our third session. And we look forward to more discussions over lunch.



LUNCHEON ADDRESS  
**China and the Global Economy**

Justin Yifu Lin

## **1. Introduction**

It is a great pleasure to be here with you today to discuss the role of Asia in the post-crisis global economy—that is, to the extent that the global economy is truly “post-crisis.” My focus will be on my home country—China is obviously the biggest story out of Asia in terms of economic growth in recent decades, and the growth in China has been a driving force for the recovery from the global crisis since 2009. As a Chinese economist and specialist on economic development, I have had the good fortune to witness and participate in the policy debate over this remarkable period since returning to China with a PhD in economics in 1987.

I will organize my remarks around the following four themes: (i) China’s achievements since the initiation of economic reforms in 1979; (ii) prospects for China’s growth in the coming decades; (iii) challenges for China’s future growth; and (iv) the role of China in the multipolar growth world.

## **2. China’s Achievements since the Reform and Opening in 1979**

China started its reform and opening in 1979 and achieved an annual growth rate of 9 percent between 1979 and 1990. At the end of that period and even up to early 2000s, many scholars still believed that China could not continue that growth rate much longer due to the lack of fundamental reforms.<sup>1</sup> However, China’s annual growth rate during the period 1990–2010 increased to 10.4 percent. On the global economic scene, China’s growth since the reform and opening started has been unprecedented. This was a dramatic contrast with the depressing performance of other transitional economies in Eastern Europe and the former Soviet Union.

As a result of the extraordinary performance, there has been a dramatic change in China’s status in the global economy. When China embarked on its economic reform program in 1979, the world’s most populous country barely registered on the global economic scale, commanding a mere 1.8 percent of

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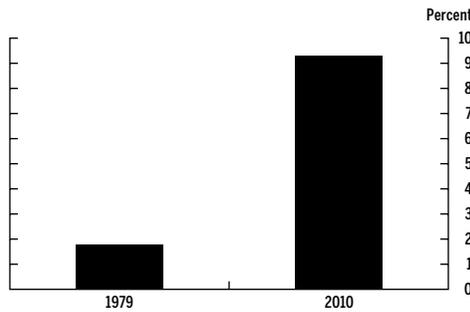
**Author’s note:** *I am grateful for David Rosenblatt’s help in preparing the paper.*

global gross domestic product (GDP) (measured in current U.S. dollars). Today, it is the world's second-largest economy and produces 9.3 percent of global GDP (Figure 1).

China's exports grew by 16 percent per year from 1979 to 2009. At the start of that period, China's exports represented a mere 0.8 percent of global exports of goods and nonfactor services. Now China is the largest exporter of goods in the world, with 9.6 percent of the global share and an 8.4 percent share of goods and nonfactor services (Figure 2).

In 1980, China was still a low-income country; in fact, its income per capita (measured in purchasing power parity or PPP) was only 30 percent of the level of the average sub-Saharan African country.<sup>2</sup> Today, its income per capita of

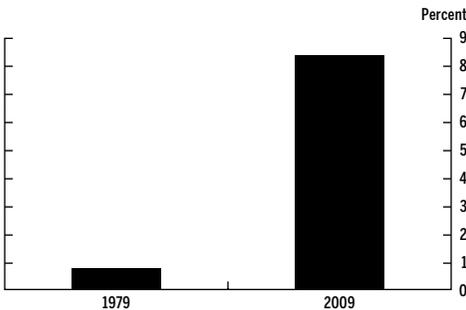
**FIGURE 1**  
**China's Share of World GDP**  
(share measured in current USD)



Source: World Development Indicators.

**FIGURE 2**  
**China's Place in the World as an Exporter**

**A** China's Share of World Exports of Goods and Nonfactor Services (share measured in current USD)



**B** Merchandise Exports, 2009 (in trillions of USD)

China	1.20
Germany	1.13
United States	1.06
Japan	0.58

Source: World Development Indicators.

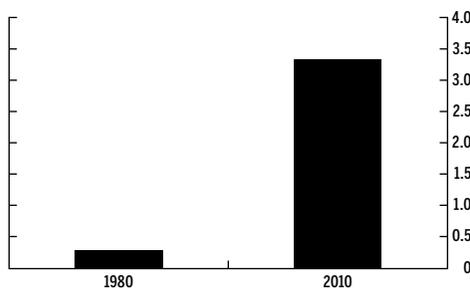
\$7,500 (in terms of PPP; \$4,400 in current dollars) is over three times the level of sub-Saharan Africa, and China is well-established as a middle-income country (Figure 3).

Behind this growth, there has been a dramatic structural transformation—in particular, rapid urbanization and industrialization. At the start of economic reforms in the 1980s, China was primarily an agrarian economy. Even in 1990, 73.6 percent of its population still lived in rural areas, and primary products composed 27.1 percent of GDP. These shares declined to 27.1 percent for the rural population and 11.3 percent for primary products composition of GDP in 2009. A similar change occurred in the composition of China's exports. In 1984, primary products and chemicals composed an important share of merchandise exports (about 55 percent). Now, almost all of China's exports are manufactures (Figure 4).

Accompanying the change in the composition of China's exports is the accumulation of foreign reserves. In 1990, China's foreign reserves were \$11.1 billion USD, barely enough to cover 2.5 months of imports, and its reserves today exceed \$3 trillion USD—the largest in the world.

Globally, China's economic performance was outstanding during the East Asian financial crisis (1998) and the current global crisis (2008) (Figure 5). China withstood the shocks and maintained dynamic growth in both crises. China's decision to maintain the renminbi's stability helped other East Asian economies avoid a competitive devaluation, which contributed tremendously to the quick recovery of the crisis-affected countries. China's dynamic growth in the current global crisis has been a driving force for the global recovery.

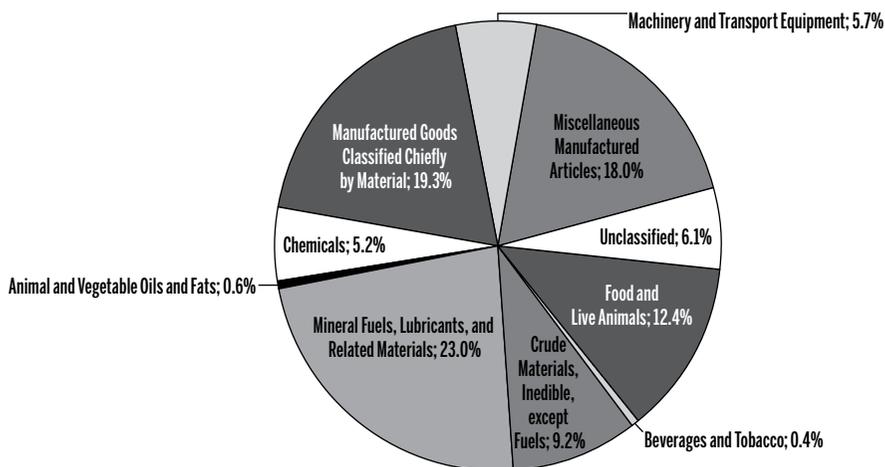
FIGURE 3  
**Ratio of China's GDP per Capita  
 Relative to Sub-Saharan Africa**  
 (ratio measured in current  
 PPP-adjusted dollars)



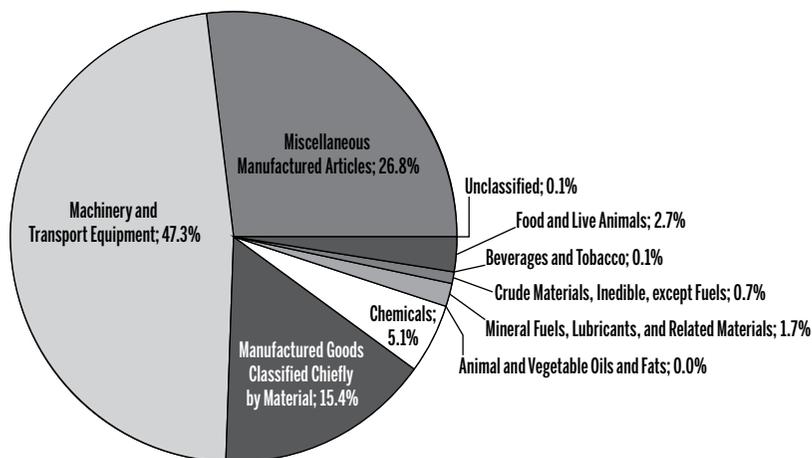
Source: World Development Indicators.

FIGURE 4  
**The Structural Transformation of China's Exports<sup>a</sup>**

**A 1984 Structure of Chinese Exports**



**B 2009 Structure of Chinese Exports**



<sup>a</sup> Data are not available prior to 1984 for this classification.

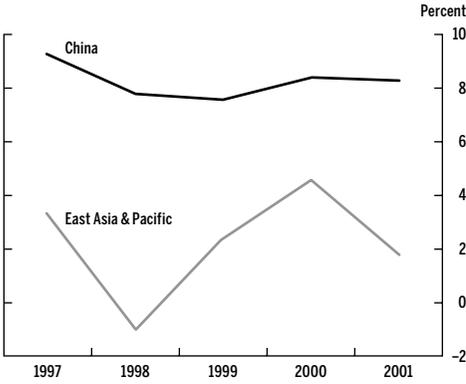
Source: WITS database.

The reasons for China experiencing such remarkable growth over the past 30 years were

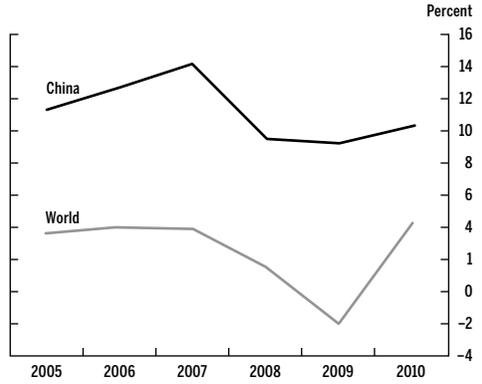
- 1 China adopted a dual-track approach and was able to achieve stability and dynamic transformation simultaneously.

FIGURE 5  
**China Glides Past Regional and Global Financial Crises**

**A GDP Growth during the Asian Crisis**



**B GDP Growth during the Global Crisis**



Source: World Development Indicators.

2 China was a latecomer, developed according to its comparative advantage, and tapped into the potential advantage of backwardness.<sup>3</sup>

Many authors, myself included, have written extensively about the Chinese government's pragmatic approach to reforms. The result was to achieve "transition without tears." This was no accident: It was based on the government's recognition that big-bang reforms could be self-defeating. It was necessary to let private enterprises prosper wherever feasible, but to continue to support important state-owned enterprises while reforming them gradually.

The second point is the latecomer advantage, as I wrote in my article "China's Miracle Demystified":<sup>4</sup>

A developing country such as China, which started its modernization drive in 1949, potentially has the advantage of backwardness in its pursuit of technological innovation and structural transformation (Gerschenkron 1962). In advanced high-income countries technological innovation and industrial upgrading require costly and risky investments in research and development, because their vanguard technologies and industries are located on the global frontier. Moreover, the institutional innovation required to accommodate the potential of new technology and industry often proceeds in a costly trial-and-error, path-dependent, evolutionary process (Fei and Ranis 1997). By contrast, a latecomer country aspiring to be at the global technological and industrial frontiers can borrow technology, industry, and institutions

from the advanced countries at low risk and costs. So if a developing country knows how to tap into the advantage of backwardness in technology, industry, and social and economic institutions, it can grow at an annual rate several times that of high-income countries for decades before closing its income gap with those countries.

### **3. Prospects for China's Growth in the Coming 20 Years**

Looking forward, China can still rely on the advantage of backwardness, and it has the potential to maintain dynamic growth for another 20 years or more because of the following reasons:

- 1 In 2008, China's per capita income was 21 percent of U.S. per capita income measured in PPP.<sup>5</sup> The income gap between China and the United States indicates that there is still a large technological gap between China and industrialized countries. China can continue to enjoy the advantage of backwardness before closing up the gap.
- 2 Maddison's (2010) estimation shows that China's current relative status to the United States is similar to that of Japan's in 1951, Korea's in 1977, and Taiwan's in 1975. The annual growth rate of GDP grew 9.2 percent in Japan between 1951 and 1971, 7.6 percent in Korea between 1977 and 1997, and 8.3 percent in Taiwan between 1975 and 1995. China's development strategy after the reform in 1979 is similar to that of Japan, Korea, and Taiwan. China has the potential to achieve another 20 years of 8 percent growth. By that time, China's per capita income measured in PPP may reach about 50 percent of U.S. per capita income. (Note that Japan's per capita measured in PPP was 65.6 percent of that of the United States in 1971, Korea's was 50.2 percent in 1997, and Taiwan's was 54.2 percent in 1995.) Measured by PPP, China's economic size may then be twice as large as that of the United States; and measured by market exchange rates, China may be at least the same size as the United States.

That said, now China is becoming an innovator in its own right. As a middle-income country, in many sectors that China has comparative advantage, other higher-income countries have graduated, or are close to graduating, from those sectors—for example, household electronics and the high-speed train. If China wants to maintain leadership in those sectors, it will need to develop the technology/product innovation when it reaches the frontier. China can then become a global technological/industrial leader in those sectors. There are also some new sectors, such as green technology, which are important for China's sustainable growth. China has the potential to be a leader due to its large domestic market.

## 4. Challenges of China's Growth in the Twelfth Five-Year Plan

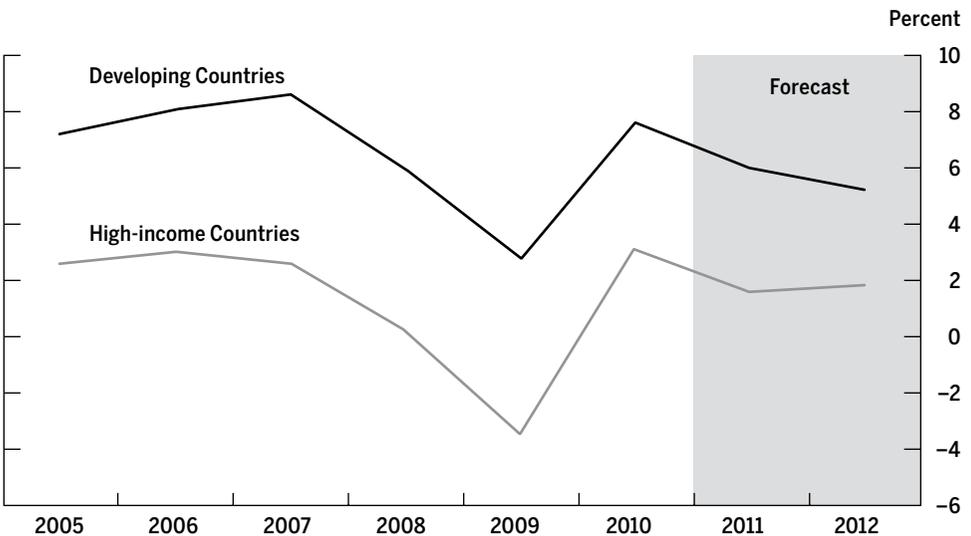
### The Global Crisis and the “New Normal”

Over the last three years, the global economy has witnessed its most tumultuous times since the Great Depression. The impressive coordinated policy response of the G-20 nations has helped the world avoid the worst possible scenario. Economic activity started to recover around the world in 2009. Global GDP performance improved from a contraction of 2 percent in 2009 to a growth of 4.2 percent in 2010, and a projected growth of 2.7 percent in 2011.<sup>6</sup>

However, we are observing a two-speed recovery. On the one hand, high-income countries' growth rates in 2010 and 2011 are estimated 3.1 percent and only 1.6 percent, respectively—far below the historical average following other crises. On the other hand, developing countries have been growing at 7.6 percent in 2010 and are likely to be at 6.0 percent in 2011, much faster than advanced countries and returning to their pre-crisis rates (Figure 6). Developing countries, especially China and India, but others too, have increasingly become engines of the world economy growth.

However, there are tremendous risks underneath this global outlook. First and most importantly, the high-income countries are still beset with high

FIGURE 6  
The Two-Speed Economic Recovery  
GDP Growth



Sources: WDI and World Bank Development Prospects Group Forecasts.

unemployment rates and large excess capacities in housing and manufacturing sectors, which repress private consumption and investment and dampen growth. The combination of low returns and high risks on financial investment in these countries, caused by low growth and high unemployment rates, has been referred to as the “new normal” (Clarida 2010).

Second, the sovereign debts in a number of European countries and the government debts in some states in the United States may require restructuring, and they present a threat to the stability of global financial markets.

Third, the large short-term capital inflows to a number of middle-income countries creates appreciation pressures, and may damage their external competitiveness and stymie their growth prospects. The capital influx may also lead to the emergence of unsustainable bubbles in their equity and real estate markets.

Fourth, the resurgence in food, commodity, and fuel prices has hurt the poor and threatened social stability, as demonstrated by events in North Africa.

These risks to a sustained recovery are directly or indirectly related to the simultaneous existence of large excess capacity in the high-income countries. In spite of the recovery, industrial production in these countries is estimated to be more than 10 percent below its peak in 2008 (World Bank 2011, p. 36). The high unemployment rate is a reflection of their high underutilization of capacity. The need to increase social spending and provide stimulus to counter these conditions at the same time that public revenue is under stress presents a dilemma. Fiscal deterioration is a looming concern and has led to state and sovereign debt problems in the United States and several European countries. The adoption of low-interest rates in high-income countries as a countercyclical measure at the same time that investment opportunities are constrained by the underutilization of capacity encourages investors to seek high yields, resulting in large short-term capital outflows to emerging markets and contributing to the spikes of food, fuel, and commodity prices.

### **The Challenge of Triple Imbalances**

Given the inevitable slowdown in exports to high-income countries in the coming years and the need to reduce trade surplus, it is prudent and pragmatic to consider ways to rebalance the Chinese economy towards domestic demand. Much is said about stimulating consumption, but the process should be balanced between consumption and continuing strong growth in investment. The latter is critical for industrial upgrading and sustainable increases of per capita income, as well as developing green economy sectors and investing in environmental protection. This shift towards domestic demand represents the first rebalancing.

A second form of rebalancing is a structural transformation to reduce income disparities. In spite of the general improvement of living standards, China has shifted from a relatively egalitarian society at the beginning of reforms in 1979 to a country with alarming income inequality. The Gini index reached 41.5 in 2005, approaching the level of Latin American countries (World Bank 2011, p. 94). The widening disparity may threaten social stability and hinder economic growth.

There is a third form of rebalancing that is overlooked by macroeconomists. China's extraordinary growth has come with almost inevitable environmental costs. China needs to rebalance short-term growth and long-term environmental sustainability. This poses a challenge for the future in terms of shifting the structure of production towards cleaner technologies.

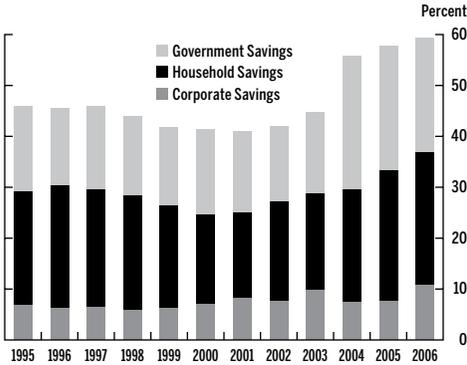
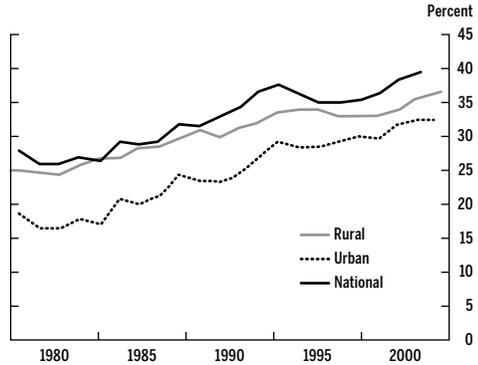
The question then becomes: How can China engineer this triple rebalancing?

### **Rebalancing toward Domestic Demand and Reducing Income Disparities**

The first two rebalancing themes are closely related in the case of China, since in the end improving the distribution of income is the key to rebalancing towards domestic demand (see Lin, Dinh, and Im 2010). Specifically, I am referring to the distribution of income between aggregate households on aggregate and the corporate sector (essentially the functional distribution of income) and the distribution of income across households (or the size distribution of income). We know from the national accounts and from industry data that a large share of Chinese national income accrues to large corporations, and we also know that an increasing share of income accrues to rich people. Both groups have higher propensities to save than the middle-income and low-income households. Figure 7 displays the increasing share of corporate savings as a share of GDP and the rising Gini coefficient that summarizes the increasing concentration of household income. This pattern of income distribution increases investment and the accumulation of productive capacity while repressing domestic consumption, leading to a large current account surplus. Shifting more income towards workers can rebalance income between rich and poor and between the corporate sector and households. This redistribution would also reduce external imbalances.

After the economic reforms in 1979, China's economic development changed from a capital-intensive industry-oriented strategy, which went against China's comparative advantage, to a strategy that follows China's comparative advantage. In theory, as noted in my Marshall Lectures, following comparative advantage to develop industries should lead to improvements in the distribution of income. More specifically, I have noted, when an economy's development is in its early stage—with relatively abundant labor and scarce capital—enterprises

FIGURE 7

**Distribution of Income in China****A Corporate, Government, and Household Savings to GDP, 1995–2006****B Income Inequality in China (Gini Index)**

**Source:** Panel A: China Statistical Yearbook, 1998–2009; panel B: Reprinted from *Journal of Development Economics* 82(1), Ravallion and Chen “China’s (Uneven) Progress Against Poverty,” pp. 1–42. © 2007, with permission from Elsevier.

will initially enter labor-intensive industries and adopt more labor-intensive technologies. This will create as many employment opportunities as possible and transfer labor from traditional sectors to modern manufacturing and service sectors. Accompanied with the upgrading in the endowment structure, labor abundance will be replaced gradually with labor scarcity and capital scarcity will gradually become capital abundance. Accordingly, the cost of labor will increase and the cost of capital will decrease. Because capital income is the major source of income for the rich, while labor is the major source of income for the poor, such changes in relative prices will make it possible to achieve economic growth and equity simultaneously (Lin 2009, p. 47).

In practice, however, the concentration of income in the corporate sector and among rich people is a consequence of the dual-track reform process, which retains certain distortions as a way to provide continuous support to nonviable firms in the priority industries. Those distortions favor large corporations and rich people. Major remaining distortions include the concentration of financial services in the four large state-owned banks, the almost zero royalty on natural resources, and the monopoly of major service industries, including telecommunications, power, and banking.

Those distortions contribute to the stability in China’s transition process. They also contribute to the rising income disparity and other imbalances in the economy. This is because only big companies and rich people have access to credit services provided by the big banks, and the interest rates are artificially

repressed. As a result, big companies and rich people are receiving subsidies from the depositors who have no access to bank credit services and are relatively poor. The concentration of profits and wealth in large companies and the widening of income disparities are unavoidable. Low royalty levies on natural resources and monopoly in the service sector have similar effects.

Therefore, it is imperative for China to address structural imbalances, by removing the remaining distortions in the finance, natural resources, and service sectors so as to complete the transition to a well-functioning market economy. The necessary reforms include (1) removing financial repression and allowing the development of small local financing institutions including local banks to increase financial services, especially access to credit, to household farms as well as small- and medium-size enterprises in manufacturing and service sectors; (2) reforming the pension system, removing the old retired worker's pension burden from the state-owned mining companies and levying appropriate royalty taxes on natural resources; and (3) encouraging entry and competition in telecommunications, power, and financial sectors.

In recent debates about the rebalancing toward domestic demand in China, much is made of the need for social safety nets to stimulate domestic demand. I would argue that a social safety net is needed for social harmony rather than for increasing the ratio of consumption in China. This is because, while households may increase the propensity for consumption with improved social safety nets, the government needs to increase savings in order to accumulate the provision funds for covering pension and other social program costs. As a result, the total aggregate savings of private households and the government may not change much.<sup>7</sup> The reforms in social safety nets are desirable mainly for protecting the vulnerable and for providing transitory support to relieve temporary shocks to jobs and health and to maintain social harmony. The reforms can be based on lessons from international experience from both developed and developing countries. Note that there have been mixed results from pension privatization reforms, despite the need for a fiscally sustainable old-age security system. The question of full funding can be addressed separately from the question of who manages the savings, and a multipolar design is generally recommended.<sup>8</sup> In other social programs, the lessons from the experience of conditional cash transfers are quite positive, and this is something that China could explore.<sup>9</sup>

### **The Environment: Rebalancing Short-Term Growth and Long-Term Sustainability**

Pollution and global warming are real challenges for long-term sustainability. China is a continental economy, and as a result, environmental externalities from economic activity are internalized within China's borders. This implies

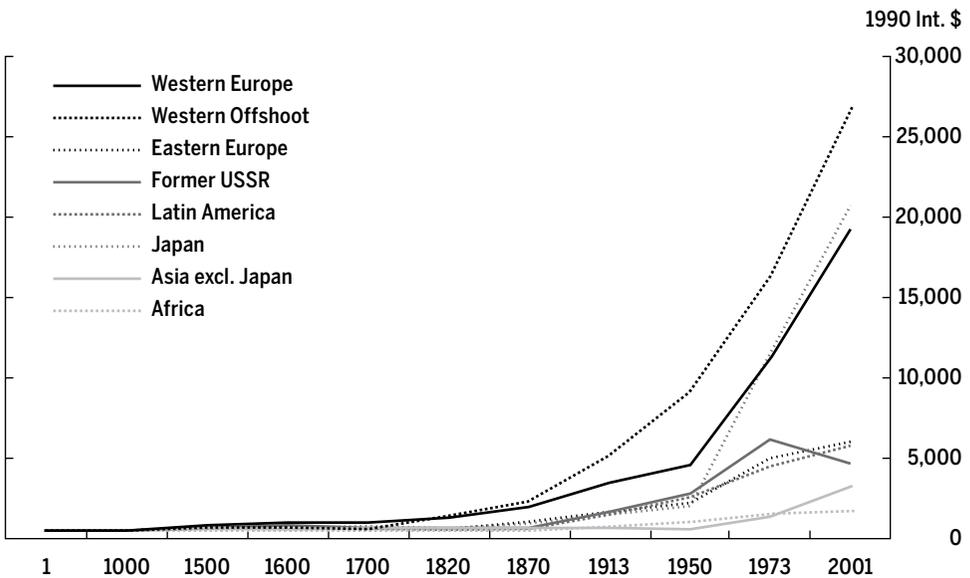
that there are direct impacts of pollution on the health of the population. Another challenge is that China is still in the high-carbon phase of development. These challenges for sustainable growth create the opportunity for China to become a technological leader in green growth. Theory and experience has shown that innovation in this area can have important positive spillover effects for technological upgrading more broadly in the economy as well.

I should note that the reforms I have discussed are the main items in the Twelfth Five-Year Plan which covers 2011–15.

### 5. China and the Multipolar Growth World

It is important to place this moment in history in a broader historical context. After the Industrial Revolution, the world was polarized. Growth in industrialized countries accelerated. Later in the 20th century, a few developing economies in East Asia were able to accelerate growth, and they caught up with the industrialized countries. Most other developing countries failed to have sustained and accelerated growth. As a result, there is a great divergence between the developed and developing countries, as Figure 8 shows.

FIGURE 8  
History of Economic Growth



Note: In 1990 International Geary-Khamis dollars.

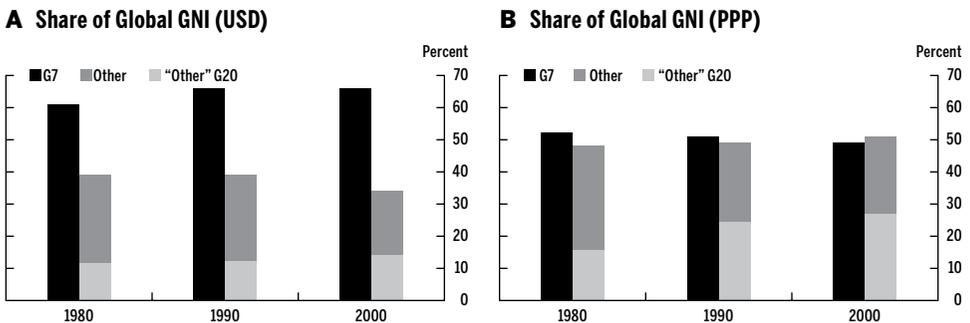
Source: Based on Maddison dataset.

Given this history, the global economy was dominated by the G-7 economies consistently throughout the latter half of the 20th century. At market exchange rates, the G-7 represented about two-thirds of the global economy. Even accounting for purchasing power parity, half of global income was concentrated in the G-7, as displayed in Figure 9.

With the rapid growth in the past 20 years, China has become a major driving force for the emergence of a multipolar growth world. As shown in Figure 10, in the 1980s and the 1990s, except for China, the other top five contributors to the growth of global GDP were all members of the G-7 industrialized countries, and China's contributions were respectively 13.4 percent and 26.7 percent of the contributions of the United States in those two decades. However, in the decade beginning in 2000, China became the top contributor to the growth of global GDP. Among the G-7 countries only the United States and Japan remained in the top-five list, and China's contribution exceeded that of the United States by 4 percentage points. A multipolar growth world emerged in the 21st century, with many of the new growth poles in emerging market economies.

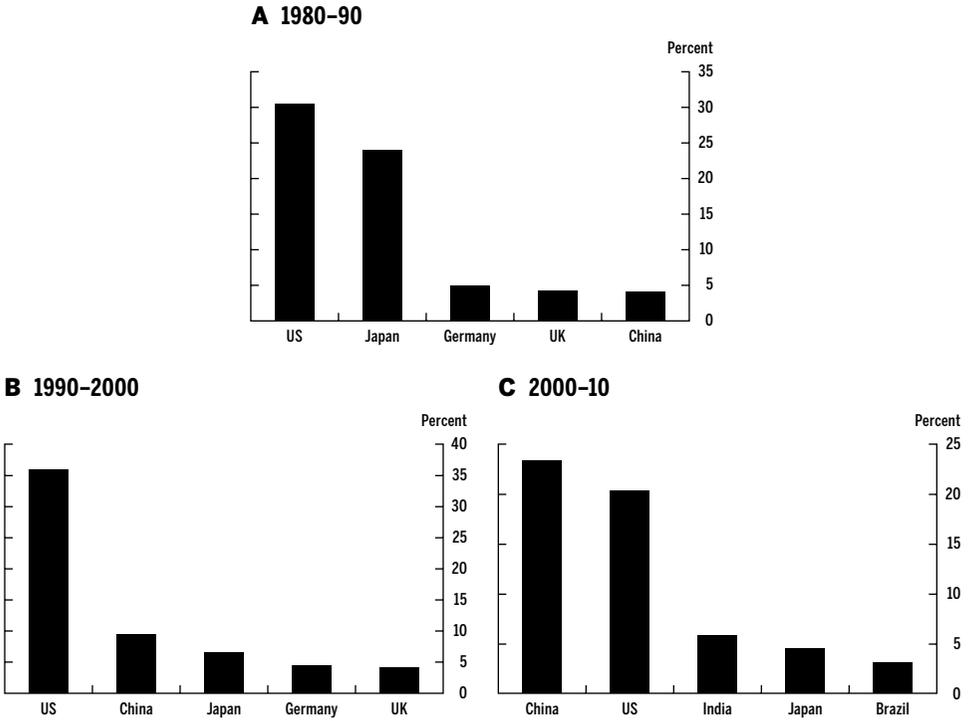
Leading up to the global crisis, a burst of convergence occurred, as developing countries grew substantially faster than the high-income countries. As we can see in Figure 11, this superior growth was widespread in developing countries across regions. This tendency is likely to continue as growth prospects in developing countries remain favorable and prospects for high-income countries remain subdued. This is not to say that the latter will not affect the former, but there is sufficient momentum in developing countries' own demand—combined with increasing south-to-south economic linkages—that should sustain a gap in growth rates between the developing and the high-income countries.

FIGURE 9  
Global Shares of Gross National Income



Source: Author's calculations based on World Development Indicators.

**FIGURE 10**  
**Top Five Contributors to Growth By Decade**



Source: Author's calculations based on data from the WDI.

Fortunately this convergence has also been fairly broad-based across regions of the developing world.

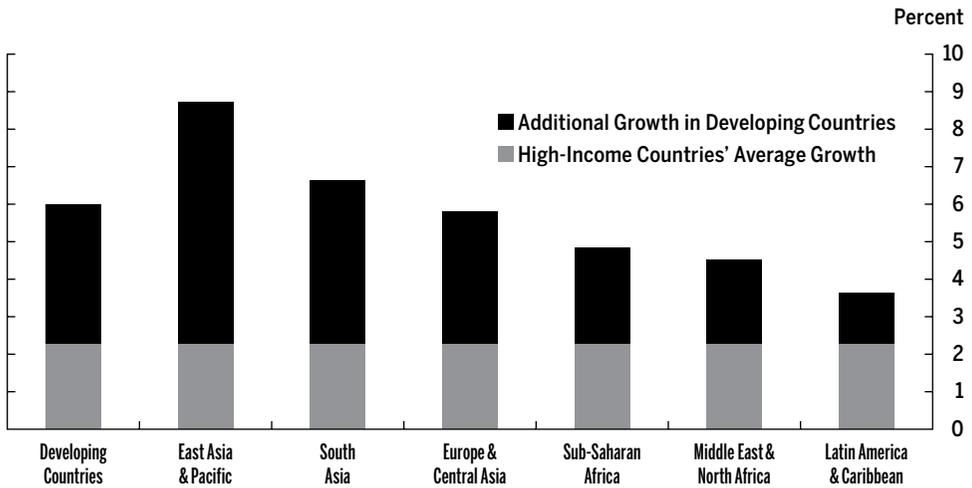
As a result of this superior growth in the developing world, we have witnessed a shift toward a more multipolar growth world. Figure 12 shows this shift in economic weight from the G-7 economies to the developing economies—both the larger members of the G-20 and other countries beyond the G-20.

As discussed in Section 3, China has the potential of maintaining an 8 percent annual growth rate for another two decades. If China can maintain this growth rate in the coming years, it may contribute to the multipolar growth world in many other ways in addition to GDP growth and trade.

There will be benefits shared and opportunities created by China's growth—for both high-income and developing countries. For high-income countries, China's growth will expand the markets for capital goods and intermediate goods exports.

Many developing countries are still major producers of agricultural and natural resource commodities. Chinese consumption and production growth

FIGURE 11  
**Growth Acceleration in Developing Countries**  
 (average for 2000–08)



Source: World Development Indicators.

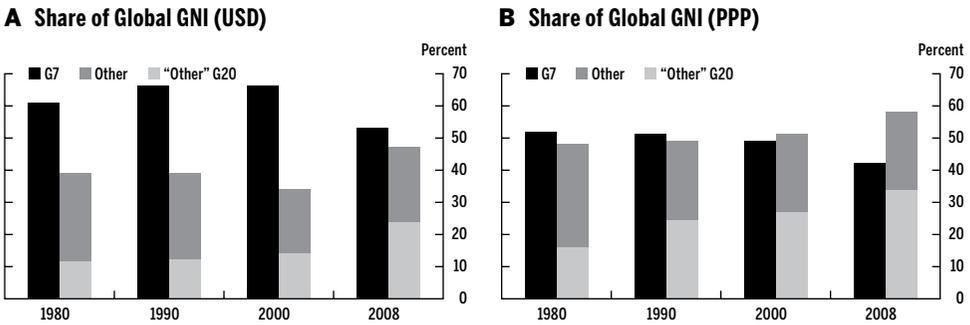
will continue to support adequate prices for commodities and thus help these exporters.

In addition, the Chinese government and Chinese firms will also provide funds for natural resource and infrastructure investment in emerging markets and low-income countries. This is already happening, and it is likely to continue into the future. In particular, there is a growing role for Chinese finance in the African region—the developing region with the most constrained access to finance (Wang 2009).

The continued structural transformation of the Chinese economy will create other opportunities. As China undergoes industrial upgrading to more sophisticated product markets, it will leave the market space for other developing countries to enter the more labor-intensive industries. Chinese enterprises are expected to relocate their existing production to other lower-wage countries as they upgrade to higher value-added industries, like Japan and East Asian economies did a few decades ago. The difference is that, because of its size, China may become a “leading dragon” for other developing countries instead of a “lead goose” in the traditional flying geese pattern of the international diffusion of industrial development.<sup>10</sup>

China also has an important and expanding role in the new global economic architecture. As the economic landscape changes to a multipolar growth world, the international architecture will reorganize, as evidenced by the shift from

FIGURE 12  
**Rebalancing of the Global Economic Landscape**



Sources: Author's calculations based on World Development Indicators.

the old G-7 to the broader G-20. China has become a key member in regional and international forums, such as APEC and the G-20. Over time, there is also the possibility of the gradual emergence of the Chinese renminbi as a global reserve currency. This is something that would require many fundamental reforms in the Chinese economy; however, it is almost inevitable given the growing relative strength of China in the multipolar world.

Whether we are on the verge of an Asian century or not, one thing is clear: There has already been a dramatic shift in the geographic center of the global economy. China is very much at the center of this transformation, and its role as a leading dragon can be beneficial for growth prospects for the overall economy. The world is desperately in need of engines of growth right now, and fortunately—with continued strong and pragmatic economic policymaking—China can provide that impetus for economic growth.

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## NOTES

- 1 Chang (2001) was one representation of such views.
- 2 PPP data do not go back to 1979 in the World Development Indicator database.
- 3 For further discussion of these two points, see Lin (2012).
- 4 Lin (forthcoming).
- 5 The national data used in this and next paragraphs are taken from Maddison (2010).
- 6 Historical data from World Development Indicators. The forecast for 2011 is from a preliminary World Bank projection.
- 7 An example of this phenomenon is Singapore, which has one of the best social safety nets in the world, but its savings as a percentage of GDP have been as high as 40 percent.
- 8 See Holzmann and Hinz (2005).
- 9 Conditional cash transfers form one of the most carefully analyzed public policy programs in developing countries, with numerous impact evaluations completed. For a survey, see Fiszbein and Schady (2009).
- 10 For the flying geese pattern of industrial diffusion, see Akamatsu (1962).



## GENERAL DISCUSSION

# China and the Global Economy

**Mr. Prasad:** You spoke really eloquently about why it is realistic to expect China to continue to grow at a high rate, and you also spoke about the challenges China faces that are recognized by the authorities and are part of the five-year plan. But what if those challenges are not met? Do you just see a slight slowing of growth or do you see a collapse of growth? What do you see as other big risks to China's growth?

**Mr. Lin:** Let me say that my prediction of 8 percent growth for China may be too conservative. China can tap into two sources of growth. One is the advantage of backwardness. The other is ongoing structural reform. If you put them together, the growth rate can be higher than 8 percent per year. I can be accused of being too optimistic about the future, but in reality I was too conservative in the past. In the book I published in 1994, I was one of the first to predict that China could continue to grow at an 8 percent rate for 30 years. I was accused then of being too optimistic because it has never been observed historically that a country could maintain an 8 percent growth rate for 30 years. In fact, in the past 32 years the average annual growth rate was 9.9 percent, primarily because of productivity gains from technology and structural reform.

**Mr. Gourinchas:** I enjoyed the picture you provided us with. It's very uplifting, especially in the current environment. At the same time, I want to come back to what Eswar was mentioning. When you think about the growth prospects for China in the next 20 years, the analogy you drew is to Japan, Taiwan, and Korea. As you mentioned, they were all following non-textbook growth strategies, relying on the external sector. The one big difference with China is its size, as you emphasized. To what extent do you think that strategy of relying on the external sector can be sustained? You mentioned some of the structural reforms. But if they're going to follow that strategy, which was outlined in the twelfth five-year plan, then we're off the path that was blazed by Japan, Taiwan, and Korea. Does that lead you to assess downward your estimates?

**Mr. Lin:** That's a good question. The East Asian economies took into account their comparative advantages when pursuing strategies to develop their economies. If a country follows its comparative advantage, it doesn't necessarily mean that it will have a larger trade surplus. It exports more and imports

more as well. In fact, the East Asian economies had some trade surplus, but not a large one, before 2000, even including China. The large trade surplus that emerged after 2000 was a new phenomenon, but it was not really related to the development strategies. There's also the transitional issue that a rapid-growing economy may have a trade surplus. Rapid growth will not necessarily turn into currency appreciation. I have some analysis in my book. I invite you to read it, and then we can debate.

**Mr. Kim:** My first question is related to the exchange rate. You mentioned that the high corporate saving rate and income inequality add to the saving rate, and this leads to external imbalances. Thus, the high saving rate in your domestic economy may mean that China will need to depend on external demand to achieve a certain amount of growth, which could result in an undervalued renminbi. But I wonder if the causality might run the other way around: Income inequality is caused by undervalued currency because you are exporting a lot and this tradable sector is generating a lot of income. As a result, income inequality follows the development strategy based on depreciated or undervalued currency.

Second, if China grows another two decades at 8 percent a year, it's probably the longest spell of over 8 percent for almost five decades, and you say this is a miracle. But I wonder if China is able to do this because of its population. Korea, Japan, and Taiwan initially grew very rapidly, but eventually they faced a lot of wage pressures in the labor market because they didn't have enough workers. China, because of its large population, can continue this kind of high growth for five or six decades.

**Mr. Lin:** Regarding causality, the large trade surplus in China did not appear until 2003. For many years before 2003, the trade balance was negative or balanced. And income disparity became larger and larger, but that didn't start in 2003. It started in 1986, following agricultural reform. This shows that this large trade surplus was not because of the income disparity in China.

Second, after 2003 China was not the only country whose trade surplus increased. Almost every country increased, including those countries competing with China in the export market—except for the U.S. [laughter]. And how could that be? Supposedly, undervaluation was the main reason China's trade surplus grew so large. Other countries competing with China should have had reduced trade surpluses. But in fact, they also increased. So I think the conventional explanation only looks at one side, one element. It's like the story of the blind man and the elephant. For the conventional explanation, it touches part of

the reality, but not the whole picture. And in the appendix of my book, I have a whole picture about the elephant [laughter].

**Mr. Dekle:** How can China start raising its consumption?

**Mr. Lin:** In fact, the growth rate of consumption in China is not low, it's very high, although it's less than the growth rate of investment. I can give you my personal story. I was the first one in my generation to get a PhD in social sciences and return to China in 1987. At that time, not many people returned. So the Chinese government had a very attractive policy to encourage people like me to return. That is, I could bring back a car without paying custom duty [laughter]. And the custom duty at that time was 215 percent. Certainly, I'm a rational person, trained in Chicago, so I brought a car back to China. It took almost 10 months for me to get a license, so then in April 1988, I could drive my car on the street. When I went to get my license, the transportation authority told me that my car was the second privately owned car in the whole city of Beijing. Can you imagine how many privately owned cars there are in Beijing now? More than three million. So actually, consumption in China also increased very rapidly.



## DINNER ADDRESS

# Sustaining China's Economic Growth after the Global Financial Crisis<sup>1</sup>

Nicholas Lardy

China has sustained a global beating pace of economic growth before, during, and since the global financial and economic crisis. Yet, both China's President Hu Jintao and its Premier Wen Jiabao, before and since the crisis, have said that China's economic growth is unsteady, imbalanced, uncoordinated, and unsustainable. I will offer an integrated explanation of why China's leaders regard its growth as imbalanced and the policies that must be adopted if China is to sustain its growth in the future.

China's economy is imbalanced by several criteria but the most obvious manifestation is the outsized share of GDP that is devoted to investment and the concomitantly low share accounted for by consumption, particularly private consumption expenditures. In my view the key source of this imbalance is financial repression, as reflected in a negative real return on household savings. Since 2004 the inflation-adjusted return on a one-year deposit in Chinese banks has averaged  $-0.5$  percent. This is a sharp discontinuity with the late 1990s and the first part of the previous decade, when the real return on the same deposit averaged  $3.0$  percent.

The sustained negative real return on financial savings over the past eight years has had a double-barreled negative effect on private consumption expenditures. The first reason is that, even though the stock of household savings has grown rapidly, household interest income as a share of GDP has declined between these two periods. Thus, for any given saving rate, consumption has been depressed because the expansion of household income has been below what it would have been if the real interest rate on savings had not turned negative. The second reason that negative real deposit rates have depressed household consumption is that negative real rates appear to have contributed to a sharp increase in the rate of household saving from disposable income. In the years 1997–2003, households saved an impressively high 29 percent of their after-tax income. But since 2004, the average saving rate has averaged 36 percent of disposable income.<sup>2</sup> In short, it appears that Chinese households are target savers,

and when the return on their savings declines they compensate by setting aside an even larger share of their after-tax income. This is perhaps not surprising in an economy where the pension and health-care systems are relatively underdeveloped and where many households lack access to any retirement or health insurance schemes and thus essentially are self-insuring.

The negative real return on savings deposits has had a second important consequence, in addition to increasing the rate of saving from disposable income. It has had a profound effect on the form that household savings have taken. Negative real deposit rates, combined with other features of the Chinese financial system, have made residential property a preferred asset class and contributed to a sustained rise in residential property investment as a share of China's gross domestic product. Two other features of the system have contributed to the desirability of residential property as an asset class. First, China's capital account is largely closed, meaning that Chinese households cannot invest in foreign currency denominated stocks, bonds, or other financial assets. They are restricted to investing in domestic assets. Second, the Chinese domestic stock market is marked by insider trading, front running, and other abuses. Moreover, the market has traded down by more than one-third since its peak in the fall of 2007. Thus, the average Chinese household does not regard domestic equities as a viable long-term investment class.

The combination of these factors has led households to allocate a larger and larger share of their savings to residential property. Prior to 2004, when rates on savings deposits exceeded the pace of residential property price appreciation, investment in residential property in urban China averaged 3.4 percent of GDP. Beginning in 2004, as real deposit rates turned negative and property price appreciation accelerated, investment in residential property surged continuously to an average of 6.8 percent in 2004–10, double the share in the earlier period. Household investment in residential real estate has continued to surge since 2010 and looks set to exceed 10 percent of GDP in 2011, setting an all-time record high. Contrary to the popular explanation, increasing urbanization does not seem to explain this jump. In the first period the average annual increase in the urban population was 25 million, while in the second period the increase fell to only 19 million.

The rising importance of investment as a motivation for property purchases is suggested by the measures that the government has taken since December 2009 to limit purchases of residential property units by individuals who do not intend to live in the properties. In December 2009 the government doubled to 40 percent the down payment required to qualify for a mortgage on a property that was not the owner's primary residence. In April 2010, the government

raised this ratio to 50 percent, introduced higher interest rates for mortgages on properties that were not the owner's primary residence, and in many cities prohibited households from purchasing more than two properties, regardless of how they are financed.

Investment in residential property in China is substantially higher than in other emerging market economies. In Taiwan in the 1970s and 1980s, a period in which Taiwan's economy grew and urbanized rapidly, investment in residential housing averaged a little over 3 percent of GDP and peaked in 1980 at about 4 percent. In India, investment in residential property rose from about 3 percent of GDP in 2000 to a little over 5 percent in 2008. In contrast the share of GDP devoted to residential real estate investment in China now is twice the record levels in Taiwan and India.

The increase in residential real estate in China since 2004 accounts for about half of the increase in the overall rate of investment in China's economy. In the seven years prior to 2004, capital formation averaged 37 percent of GDP; since 2003, it has averaged 44 percent of GDP and hit an all-time record high of 49 percent of GDP in 2011. China's transformation from an economy with an elevated share of resources going to investment to an economy with a super-elevated share of investment in GDP is largely the result of excess investment in residential real estate.

There are several reasons to believe that the residential investment boom of the past seven to eight years is not sustainable. First, household debt as a share of disposable income doubled between 2008 and 2010, an extraordinary increase. If households decide that they have become overextended, investment in residential property will moderate. Second, over the past decade the share of urban household wealth in the form of real property doubled to 40 percent. It seems unlikely that this share will double again since households will wish to maintain some diversity in the forms in which they hold their wealth. Relatedly, improved governance of the Shanghai Stock Exchange might change the widespread perception that equities are not a viable long-term investment class, leading to an increase in the now relatively depressed share of household wealth held in the form of stocks. Third, banks at some point may decide that their exposure to residential property is sufficiently large that they will choose to curtail property lending. The share of bank loans outstanding to property, either in the form of mortgages to individuals or loans to property development companies has almost doubled to 20 percent since 2004 and these loans relative to bank capital have increased from 150 percent to over 200 percent. Finally, high-ranking Chinese government officials are talking openly about achieving capital account convertibility within the next five years. That would raise

the possibility that households could invest in foreign financial assets that have more attractive returns than domestic financial assets, again eroding the preferred asset class status that residential property has enjoyed in China since the mid-2000s.

For an explanation of why China adopted the low interest rate policy that has put it on what appears to be an unsustainable growth path, we need to shift our focus from the internal to the external. Again, it is useful to divide the last 15 years into two periods. From the mid-1990s until about 2002 China's currency appreciated in real effective terms by almost 5 percent per year;<sup>3</sup> China's external position, as reflected in its current account balance, averaged a relatively moderate +2 percent; central bank intervention in the foreign currency market was an amount equivalent to about 3 percent of GDP, so modest that there was little need for sterilization operations to offset the resulting increase in the domestic money supply.

After February 2002, the renminbi depreciated along with the U.S. dollar for several years until the government depegged in July 2005. But the subsequent pace of appreciation was barely sufficient to offset this depreciation so that in the years 2002–09 on average the pace of appreciation was only half a percent per year, one-tenth the pace of appreciation from the mid-1990s through February 2002. As a result, the current account surplus exploded, reaching a peak of more than 10 percent of GDP in 2007 and averaging almost 7 percent of GDP in 2004–10. The central bank, charged with limiting the extent of renminbi appreciation, intervened in the foreign exchange market equivalent to the tune of 10 percent of GDP annually on average in 2004–10, in the process building up the world's largest-ever hoard of foreign exchange reserves, \$3.2 trillion. To keep inflation under control, the central bank had to engage in massive sterilization operations, first selling off its entire holdings of government debt and then issuing massive quantities of central bank bills, with bills outstanding by year-end 2010 standing at roughly 4 trillion renminbi, or 10 percent of GDP. The central bank also raised the required reserve ratio to 21.5 percent by the first quarter of 2011 (compared to the 6 percent ratio that prevailed in the early 2000s), forcing the banks to place an additional 12.5 trillion renminbi on deposit at the central bank, thus limiting banks' ability to lend. To hold down the cost of these sterilization operations, the central bank paid extremely low interest on required reserves and only slightly more favorable rates on central bank bills. Thus, sterilization operations constituted a massive tax on banks. But the central bank made it up to them by setting a very low-level ceiling that banks could pay on customer deposits and a fixed floor on lending rates. Thus, in effect, the

cost of the central bank's massive sterilization operation was shifted onto the household sector.

In conclusion, I believe that the single most important policy instrument available to the Chinese government to stimulate domestic consumption and thus alleviate the imbalances in its economy is to resume the process of interest rate liberalization that was halted in 2004. This does not mean immediately eliminating all remaining central bank control of lending and deposit rates but resuming the process of allowing successively larger bands around the rates that the bank sets. In particular, the asymmetric liberalization that occurred through 2004, in which the benchmark interest rates set by the central bank on loans are floors while benchmark rates set on deposits are ceilings, should be modified with the goal, long officially embraced by the government, of moving toward market-oriented determination of interest rates. This would have a doubled-barreled positive effect on consumption, by raising household income and simultaneously reducing the average household saving rate, and would also reduce the share of investment in GDP. The latter would be because lending rates in general would go up and because the preferred asset class status of residential property would gradually end, specifically reducing investment in residential housing to more sustainable levels.

The imperative for domestic financial market liberalization along the lines just outlined has never been stronger. Given the weakness of economic recovery in China's major external markets and the already overdeveloped investment in residential property in China, only more robust private consumption expenditure has the potential to preserve China's high rate of economic growth.

## NOTES

1 These remarks are drawn from a book of the same title published by the Peterson Institute in January 2012.

2 Data for the second period are for 2004 through 2008. The saving rate is calculated from China's flow of funds data, the most recent year for which data have been published is 2008. Evidence suggests the saving rate has continued to rise after 2008, so the average saving rate in the second period is almost certainly somewhat understated.

3 The renminbi was pegged to the dollar during these years. But on a real trade-weighted basis, the dollar was appreciating steadily until February 2002, thus the renminbi also appreciated on a real trade-weighted basis.



## GENERAL DISCUSSION

# Sustaining China's Economic Growth after the Global Financial Crisis

**Mr. Goodfriend:** I'd like to ask you to follow up on something you said. It's well-known that China has an advantage in development, relative to India or other countries, because it has a more centralized government and can internalize problems in the country and undo interest group paralysis to make things work. Your discussion suggests that advantage, which China has exploited for the last 30 years, again relative to India, appears to be a problem at the moment. I'd like you to go into this a little bit: Why is it that a country that's set up to internalize problems at the very top is facing a problem now in overcoming interest group politics as you described?

**Mr. Lardy:** That's a very good question. Certainly, many people argue that one of the difficulties the government has in implementing policies is the inability to get local governments to comply with their directives. I don't think that really applies in this case because the interest rate is set at the central level. Local governments cannot have their own interest rate policy. So once this decision is made at the central level, it will have a dramatic effect throughout China. If you allow interest rate liberalization, this huge nexus of interests would remain in favor of current policy. Obviously that includes property developers and construction companies. The rich list published by Hurun shows that about 90 of the top 100 richest people in China have made their money in property, and they're a very powerful interest group. Local governments like the money that they can earn from leasing land that goes with property development. But once the central government undoes this distortion, all that will peel away. People cannot be forced to buy more property than they want, and once demand subsides, the property developers will have to adjust fairly rapidly. So the question is, What's the holdup at the central level on interest rate liberalization?

I've already indicated that one of the challenges is that the Ministry of Finance has a very strong vested interest in propping up the profitability of the banks. If you look at just the raw numbers on their rate of return on assets, it is world class, but that's not hard when you have a guaranteed interest

rate spread. Now, why is the Ministry of Finance in favor of this? You have to look at the history, for example, of the creation of their sovereign wealth fund, which they started by giving \$200 billion worth of foreign currency assets to the China Investment Corporation (CIC) in 2007. Ted Truman has worked a great deal on this subject. So to raise the money to do this, the Ministry of Finance had to issue 1.55 trillion in renminbi-denominated bonds, and when the assets were transferred to the CIC, they also transferred the liability. So, the CIC has to pay the interest and amortize this rather large bond issuance. This is done by having Central Huijin, which is the domestic arm of the CIC that invests primarily in domestic commercial Chinese banks, use dividend payments from the banks to service the debt. The standard complaint, which is completely valid and which I have made many times and continue to make, is that most state-owned companies pay out very low dividends, but the commercial banks are a complete exception. In recent years, some banks are paying out 70 to 80 percent of their after-tax profits in dividends, which goes directly to the CIC. Zhou Xiaochuan, the Chairman of the Bank of China, which is their third largest bank, said if interest rate liberalization was instituted then bank earning spreads would fall by half and the ability of banks to pay huge dividends would be eroded. So the Ministry of Finance is terrified that if Central Huijin doesn't service the CIC's debt the burden will fall back on the Ministry of Finance, which will have to pay it from tax revenues, something they're very loathe to do. Thus, they're campaigning as hard as they can against any interest rate liberalization.

Then there is the central bank, which promoted the early stages of market-oriented interest rate liberalization in China in the late 1990s. China was then on the path toward a market-determined interest rate structure, but in 2003 and 2004, the currency became increasingly undervalued and the central bank had to recapitalize all of the banks and issue a lot of bonds. At that time, a decision was made to ensure the profits of commercial banks. That's the most important obstacle at the central level.

I think that the burden of CIC should be handled by taking the hit and paying the interest on the CIC's bonds from fiscal revenues. There are a lot of advantages to moving toward interest rate liberalization beyond the ones I've already described. If you have floors on lending rates and ceilings on deposit rates, it's not a very good environment for developing a truly commercial banking system, which is one of their most important long-term goals of development.

**Mr. Wei:** Two comments. One, when you juxtapose a picture of the current account surplus and a picture of a foreign exchange reserve accumulation, a

common interpretation is that the foreign exchange reserve picture shows evidence of massive intervention to induce exchange rate undervaluation. According to common wisdom, that would lead to a current account surplus, though that's not the only way to interpret the data. The alternative is the central bank may have a dual mandate of maintaining inflation by the use of monetary policy and undervaluing the exchange rate through capital controls on currency usage for imports. Suppose this undervalued exchange rate causes high savings and a current account surplus, which requires mandatory surrender of foreign exchange earnings by firms and households. This would also give you the appearance of accumulation of foreign exchange reserves. So, that is a matter of logic.

Second, I understand you want to argue that the negative real interest rate on bank deposits, combined with the implicit assumption that the income effect dominates the substitution effect, will give you less wealth and therefore less consumption. However, I'm confused because a few seconds later you said that more and more household wealth in China now takes the form of residential housing, an asset whose price has been appreciating at an unusually fast rate. Given that by 2010 housing assets were as large as bank deposits, if not more so, wouldn't that effect go in the opposite direction? That is, if the lower wealth coming from lower interest rates on bank deposits induces people to consume less, wouldn't higher wealth and expectations of appreciating housing value induce people to consume more?

**Mr. Lardy:** Thank you, Shang-Jin, for two very good comments. On the first point, I agree with you in theory that the mandate of low inflation plus enforcing capital controls could lead to a buildup of foreign exchange reserves of the same type as we've seen. I have two reservations about that interpretation. First of all, most of the requirements for surrender have completely disappeared in the last five years. Firms that earn foreign exchange can keep very large balances in their foreign currency denominated bank accounts. Since the surrender requirement is gone, the central bank hopes that firms would retain foreign exchange rather than selling it on the market so that it wouldn't have to intervene in the market so much. But firms, with an expectation of appreciation, have voluntarily sold most of their foreign exchange earnings on the market rather than holding onto them. Export earnings are substantially ahead of imports. The demand for foreign exchange to finance imports has led to the buildup of foreign exchange reserves. So the surrender requirements are basically no longer in effect. I think this is laid out in Eswar Prasad's paper about the extent to which capital controls have eased somewhat over time. The other thing to

look at, of course, is what's the source of China's overall balance of payments surplus? Until 2011, the overwhelming source of the foreign exchange surplus was the current account rather than the capital account, which reinforces the argument.

I agree with you on the second point. In theory, if house price appreciation persists for a long time and influences expectations, then you would expect a very positive wealth effect and people might reduce their saving rate. I don't know any studies that deal with the formation of price expectations and whether that's now enough ingrained that we should expect to see the saving rate come down. I don't think there's much evidence that it has come down yet, but it is an empirical question that's worth investigating because I agree, it should be pushing the other direction. But remember, in the diagram, even though the share of household assets in property has roughly doubled, the share of household assets in bank deposits is still fairly high at more than 40 percent. It's now roughly equal to housing, so you still have a big exposure to bank deposits based on the data at the end of 2010.—Eyeballing it, it looks to be somewhere between 40 and 43 percent.

**Ms. Forbes:** Two comments. First, for the organizers, thank you for giving us two very different views on China. I thought this was a nice contrast from the luncheon speaker. But a suggestion: Next time why don't you put the more negative one at lunch and then we can end on a positive note? [laughter]

Second comment for Nick. Thanks for a very nice presentation. I'm going to give you a chance to redeem yourself and say something positive. A basic question: If the situation in Europe deteriorates substantially, say the euro breaks up, how will that affect China, and do you see any major changes in China's policy mix?

**Mr. Lardy:** That's a very good question, a challenging one, and one to which I'll give a not totally satisfactory answer. My basic view is that China is in a very different position today than it was when the global economy was heading south, particularly in the fourth quarter of 2008. If you think of my diagram on household leverage, it was 30 percent of disposable income, very low. Now it's 50 percent; it may be a little bit higher by the time we get to the end of 2011. So the ability of the household sector to engage in a big further ramp-up of borrowing to finance housing investment to stimulate GDP growth is obviously more constrained. The same is true on the government side. Going into the crisis, central government debt was about 20 percent of GDP and local government debt was basically almost nonexistent. Now, central government debt hasn't changed very much, but local government debt is 20 percent of GDP. The

government debt-to-GDP ratio is roughly doubled what it was in 2008. It seems to me that the government's degrees of freedom today are substantially less than they were three years ago. A big European slowdown that's persistent over many quarters will have a very substantial effect on GDP growth. Also, it looks like it's hitting about the time that we may be heading into a significant change in the property market. Property sales now are falling month over month by close to 20 percent, and prices are coming down for the first time ever. This happened in 2000 and in 2008, when they had a correction in property and they took off a lot of restrictions that were designed to discourage speculative investment in housing. They got this big housing boom in 2009 and 2010, but then investment in housing was about 6 or 7 percent of GDP. Did they want to try to do that again when they were already north of 10 percent of GDP in residential housing? I don't know. It seems like a very risky strategy. So, I think they face substantial challenges over the next several quarters as they try to deal both with this emerging indigenous correction in terms of declining housing investment and a potential further decline in external demand because of a slowdown or worse in Europe.



# Asian Regional Policy Coordination

Edwin M. Truman

## 1. Introduction

We are living in what many observers have called the Asian century!<sup>1</sup> This phrase has been used over the past quarter of a century to describe a fact, a conditional forecast, or an aspiration. More than 60 percent of the global population lives in Asia, and that share is not expected to decline. So one could easily agree with the projection from the Asian Development Bank (ADB 2011) that Asia's share of global GDP will return to 60 percent, which matches the percentage the region is estimated to have contributed in the year 1700. All that is necessary is for GDP per capita in Asia to converge toward the mean for the world as a whole, which would be an impressive but not remarkable achievement.

To its credit, the ADB report does not assume that this convergence is pre-ordained. The report argues that five of the seven principal economic engines of the prospective Asian century—China, India, Indonesia, Thailand, and Malaysia—must avoid the middle-income trap and achieve productivity-driven growth. The other two countries that have already achieved advanced-country status—Japan and Korea—must sustain their growth models.<sup>2</sup>

The ADB report outlines a number of actions that individual countries in the region must take at the national level to make the Asian century a reality. It stresses the additional importance of (1) regional cooperation and integration in the form of continuing open regionalism that it attributes to East Asia's success to this point, and (2) Asia's meeting new challenges, responsibilities, and obligations globally.<sup>3</sup> These latter two elements are the focus of this paper. The paper addresses two central questions for Asia and the world: (1) What is the purpose of Asian regional policy coordination going forward? (2) Will Asian regional policy coordination substitute or complement global policy coordination? At this time, Asian policy authorities, critics, and observers do not share a well-defined consensus on these questions. One admittedly somewhat oversimplified interpretation of the ongoing European debt crisis in the aftermath of the global economic and financial crisis of 2007–09 is that even more than 60 years after the

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**Author's note:** *This paper has benefited from conversations with Joseph Gagnon and the dedicated assistance of Sarah Bagnall.*

start of the European integration project the participating countries and their citizens also have an incomplete vision of their endeavor. It is small wonder that a shared vision has not emerged in Asia.

To provide answers to the two central questions posed about policy coordination in Asia, I first examine the potential coverage and content of such policy coordination. I next consider what is meant by “Asia” in this context and how Asia fits in with global policy coordination processes. Against this background, I examine three related aspects of Asian regional policy coordination: macroeconomic policies, reserve management, and crisis management.

My conclusion is that while the countries in the Asian region have not completely exploited the scope for regional policy coordination in a number of specific areas, more ambitious efforts focused on close integration are not likely to bear fruit, in particular, if they are conceived and promoted under the banner of Asian exceptionalism—that is, the view that Asia can and should be insulated if not disconnected from global policy coordination processes and their requirements. These conclusions are based on two broad considerations: First, Asian economies differ, and will continue to differ, sufficiently in size and stage of development such that it is difficult to conceive of a successful voluntary blending of their interests. Second, the central lesson of the global financial crisis and its current European coda is that global economic and financial integration has advanced sufficiently that countries can run but they cannot hide individually or in subglobal groups of countries.

## **2. Policy Coordination: Coverage and Content<sup>4</sup>**

Countries coordinate their policies on a wide range of activities. The common denominator in the vast majority of those efforts is an attempt to achieve objectives or outcomes that maximize positive spillovers or externalities and minimize negative spillovers or externalities. Thus, governments whose *raison d'être* is to promote the common good within their borders seek to do the same in their interactions with the countries outside their borders. In principle, one cannot exclude the possibility that countries may seek to maximize benefits to their own citizens and minimize or reduce benefits to the citizens of other countries, but this type of intergovernmental interaction is more accurately described as policy coercion than policy coordination. At the other extreme, policy coordination is not about the policies of a benevolent, altruistic hegemon.

For purposes of this paper, the coverage of policy coordination is restricted to dealing with economic and financial issues and outcomes. This restriction does not greatly narrow the list of potential topics since many policy issues have an economic or financial dimension. Climate change is a prominent contemporary

example. In this paper, however, I primarily focus on macroeconomic issues, which narrows the agenda for Asian regional policy coordination somewhat further.

The content of policy coordination can also vary across a broad spectrum.

At one extreme, policy coordination may involve no more than periodic exchanges of views on issues of common interest or concern, for example, the global economic and financial outlook. These exchanges of views, in turn, may inform the policy choices of participating policymakers, but they are left individually and independently to draw out what they find useful from the process.

Further along the spectrum, policy coordination may involve reviews of the economic and financial policies of participating countries. This type of policy coordination activity is often called “surveillance.” It can, in turn, take a number of different forms: (1) a mere show-and-tell presentation of policies and prospects, (2) a commentary from other countries or an impartial facilitator on those policies and the outcomes they are likely to produce, (3) a more rigorous application of common standards and collective judgments to the policies and prospects of individual countries, or (4) ultimately, the potential for sanctions. In general, the first two forms are more common than the third or fourth.

A third point along the spectrum of policy coordination involves agreement upon joint or parallel policy actions through which countries cooperate to achieve a common agreed objective. Generally, this type of policy coordination is either focused on a specific issue (for example, money laundering) or it is an ad hoc effort to deal with a particular situation, such as a financial crisis.

A final point along the spectrum of policy coordination involves the continuous adjustment of policies in order to achieve a common objective or objectives, such as full employment and price stability. This type of policy coordination may involve guidelines or rules, frequent reviews, enforcement devices, and prior commitments that sacrifice a considerable degree of sovereign latitude in the interests of achieving better outcomes for all countries on average over time.

A realistic appraisal of Asian regional policy coordination is that it has passed the first point on the spectrum; it has embarked to some degree on a mild form of the second (surveillance) point; there is a modest record and some further scope for activities that would qualify under the third point, such as the Chiang Mai Initiative and its several enhancements; and the final point remains a distant objective advocated by some visionaries.

The requirements of effective international coordination of economic policies at any point along the spectrum, save a modest process of exchanging views, are demanding. They involve five key elements: identification, a shared diagnosis, agreed policy actions, scope for midcourse policy corrections, and

learning lessons to prepare better for the future. Thus, the requirements start from the status quo, extend to crisis management, and conclude with steps to improve crisis prevention going forward.

These five elements can be illustrated by considering the unfolding of the recent, and many would say ongoing, global economic and financial crisis.

While a shared diagnosis of a problem and its causes is critical to the success of economic policy coordination, an essential prior condition is the identification of the problem or, possibly, problems. Without the identification of a problem, there is no need for diagnosis, shared or not. Problem identification is especially difficult in the economic sphere, where economic and financial outcomes are inherently imprecise because of incomplete information. Any number of factors could be cited as the cause of a problem, and there is often disagreement on when these factors are determined to have come into play.

What was the date of the start of the global financial crisis? When should it have been identified? For some policymakers around the world, the date was September 15, 2008, when Lehman Brothers filed for bankruptcy following a frantic but unsuccessful weekend of activity in the United States to try to spare Lehman that fate. Clearly, however, identification of the problem in mid-September was too late; the crisis had already reached a crescendo. Does that also mean that on July 3, 2008, when the European Central Bank (ECB) raised the minimum bid rate on its refinancing operations from 4 to 4.25 percent, it was unmindful of the financial crisis that was breaking over the U.S. and European financial systems? Bear Stearns had been rescued more than three months earlier (March 16), which some experts cite as the starting point of the crisis. Eight months before the Bear Stearns rescue, however, on August 9, 2007, the ECB responded to the financial market turmoil surrounding BNP Paribas freezing deposits in three of its investment funds by injecting large amounts of liquidity into the market at the then-prevailing interest rate of 4 percent. It would appear that the problem predated that action, even if the problem was only vaguely identified by then.

We might say that the problem might have been identified by August 2007 at the latest, but Bear Stearns felt impelled to rescue one of its hedge funds on June 23 of that year. On February 27 and March 5 and 13 of 2007, the volatility index on the S&P 500 spiked, but markets appeared to shrug off those events. Throughout 2007, policymakers apparently were unaware of—or at least inclined to underestimate—the underlying problems in the U.S. housing and housing finance markets despite the fact that the U.S. residential construction peaked in the fourth quarter of 2005. Maybe the underlying problem or problems should have been addressed before the end of 2005.

In fact, the problems that led to the global financial crisis and Great Recession were not identified early enough by the broad spectrum of policymakers around the world to position them to prevent or significantly mitigate the effects of the crisis before it was upon them.<sup>5</sup> Policymakers were thrown into crisis management mode before they had identified the problem or agreed on a diagnosis.<sup>6</sup>

In Asia and many other areas of the world outside of the United States and Europe, it is common to date the start of the global financial crisis with the events of September 2008. Indeed, many observers, not only in Asia, but also elsewhere, spoke of the decoupling of emerging market and developing economies from the problems that began to affect the United States in 2007. Some spoke of economic recoupling in which emerging market and developing economies would pull the United States out of an economic slowdown—a slowdown that had already become a recession by the end of 2007, though the National Bureau of Economic Research (NBER) had not yet pronounced on the subject. Even in Europe, there was a view during the first three quarters of 2008 that the principal effects of whatever was going on would be limited to the United States. Why else would the ECB have raised its policy interest rate in July 2008?

Once the global financial crisis was identified, even for those who recognized its reality in early 2007, the diagnosis of its causes proved to be challenging. The candidate causes were legion: the U.S. housing market's uncontrolled boom and similar booms elsewhere; the complex, opaque, and inadequate structure of housing finance in the United States; the lax and incomplete supervision of financial institutions in the United States and elsewhere; the evolution of engineering in financial markets; the capture of regulators and politicians by financial institutions that were too big to fail; the incentives or lack thereof for participants in financial markets; the overly easy monetary policies of the United States and some other major countries such as Japan and arguably the euro area; the fiscal deficits of the United States and other countries; growing global current account imbalances; inappropriate exchange rate policies; the global savings glut; the dearth of investment demand in the right places; etc.

By November 14–15, 2008, when the G-20 leaders met in Washington as the crisis reached its peak virulence, policymakers collectively agreed that the global financial system was under intense stress and the deepening downturn in advanced countries was paving the way for recession throughout the world economy, posing an immediate threat of a global depression and signaling the need to act to restore global growth and financial stability. The G-20 leaders' identification of the problem mentioned only “serious challenges to the world

economy and financial markets.” The depth of their collective diagnosis did not extend much beyond that rather bland statement, which was accompanied by a long list of presumptive causes.<sup>7</sup>

The reasons for the lack of precision in diagnosis and the associated lack of consensus on the appropriate framework for arriving at such a diagnosis can be found in differences in economic philosophies among (as well as within) governments, views about how economies work best or better, explicit or implicit models of national and global economies, explicit or implicit coefficients in those models even when they are broadly similar, and the preferences or priorities of policymakers and political and government leaders. In many cases, the priorities of policymakers differed because the crisis, though potentially severe, affected individual countries differentially. For most emerging market and developing countries other than those in Central and Eastern Europe, the crisis was not a serious issue until after the Lehman bankruptcy. The attention of policymakers in most emerging market countries, as well as the ECB at least in part, was focused on rising inflation, and many would argue appropriately so. The global economy had overheated, but that diagnosis also had been missed.

In economics and finance, as well as medicine, the shared diagnosis of a problem and its causes is only the second step after a problem has been identified. The third step is treatment in the form of agreed policy actions, which is where the initial consensus may break down. Because many policy actions have side effects on other countries resulting from economic and financial spillovers, in a global economic and financial crisis, it is desirable that actions be coordinated. Otherwise, some countries may find themselves unprotected, for example, from sudden withdrawals of access to market liquidity. Other countries may enjoy positive spillovers, for example, increased exports helped by the fiscal stimulus programs in importing countries, without incurring any costs measured in terms of buildups of government debt. They are free riders.

Also there are inevitable differences in strategy among different countries. Should the authorities in affected countries try to repair the financial system first so it can support economic recovery—for example, by recapitalizing, liquidating, consolidating, or nationalizing weak financial institutions? Or should the macroeconomy be fixed first to allow ailing financial institutions to grow out of their problems?<sup>8</sup> Are the strategies employed to address immediate problems—for example, blanket deposit guarantees—likely to create moral hazard problems down the road by making depositors complacent about always being repaid? Will financial rescues and stimulus programs lead to unsustainable public-sector deficits? To what extent should the global economy and financial system rely on market forces to provide equilibrating mechanisms rather

than apply rules, guidelines, and policy actions to restrain, curtail, or otherwise police market forces? What is the right balance between treating symptoms in the short run—for example via monetary and fiscal stimulus programs and rescues of financial markets and institutions—and bringing about fundamental structural changes—for example, by raising capital and liquidity standards and addressing medium-term fiscal solvency?

The global financial crisis and Great Recession revealed the tension between short-term fixes (repair of economies and rescues of financial institutions) and longer-term structural reforms (repair of public-sector balance sheets and comprehensive financial regulatory reform). Therefore, it is not surprising that, as soon as the worst of the crisis was over by the end of the second quarter of 2009, the attention of many policymakers turned to exit strategies. For some countries, it was imperative to address the residue of the crisis response, and for others it was premature to consider any exit strategy when the recovery of their economies remained precarious. As a result, the scope for a coordinated approach to adjust earlier agreed policy actions tended to dissipate as national authorities retreated into consideration of the specific needs and circumstances of their own countries and to distance themselves from engagement in coordinated policy actions directed at a common goal.

By the fall of 2010, the scope for midcourse policy corrections—the fourth element of policy coordination—was limited. The United States remained mired in a low-growth recovery. Consequently the Federal Reserve adopted a monetary policy that involved a second round of large-scale asset purchases popularly known as quantitative easing two or QE2, following its first program of asset purchases starting in November 2008 and extending through March 2010. At the same time, some other economies apparently had returned quickly to health, and their policymakers faced a need to restrain demand but also to deflect at least some of the influence of their doing so on their exchange rates. After the increase in risk aversion to assets issued by emerging market countries waned, many of these countries were inundated with unwanted capital inflows. This sparked a fresh round of debate about the role of controls on capital movements in an increasingly financially globalized economy, and about the nature and extent of any spillover effects of monetary policies in the source countries that gave rise to such flows, as well as about the effects of one country's controls on capital flows to other countries that did not impose controls.

A year later, at the end of 2011, disagreements about QE2 have been replaced by larger concerns, and the scope for further policy corrections may be even more limited than a year previously. The global economy appears to be headed for a substantial slowdown that may be significant for some countries or

regions. The prospective global slowdown has been associated with an incomplete recovery of the U.S. economy and financial system and with the effects of the chapter of the global financial crisis that is known as the European sovereign debt crisis. The political and economic scope for additional coordinated policy actions is limited.

Although most observers would agree that the global economic crisis of the first decade of the 21st century has not yet convincingly ended, this has not stopped policymakers from beginning to draw the lessons of the crisis for reform of the global financial system and for the framework for national economic policies and international surveillance of economic policies, in the context of the G-20's aspirations for strong, sustainable, and balanced growth. Additionally, in the wake of the crisis, policymakers have felt compelled to reexamine the international monetary system and the role that possible flaws in that system—as it had evolved since the breakdown of the Bretton Woods exchange rate regime in the early 1970s—may have played in the global financial crisis and Great Recession. These efforts—which may be premature because the crisis is not over and there is a lack of the perspective necessary to draw complete lessons—are an important part of the policy coordination process. Crisis prevention, like financial supervision and regulation, will never be perfect. However, that fact does not excuse policymakers and observers from drawing lessons from crises in order to reduce the incidence and virulence of crises in the future.

Turning from the elements of international policy coordination to the content of the process, successful international economic policy coordination is about achieving Pareto-improving outcomes that do not require an overt sacrifice of national sovereignty or substantially reduced national control over domestic economic policy tools. International economic policy coordination is about the promotion of economic growth and financial stability as common objectives, whether conducted regionally or globally. It is not about charity or altruism. The search for acceptable outcomes is primarily the result of dialogue and persuasion rather than the overt exercise of economic or political power and influence. This capsule characterization of the economic policy coordination process should be qualified, however, in several respects.

First, international economic policy coordination is a repeated, continuous game. Therefore, the participants have some incentive to be forward looking and to adopt approaches that may be awkward for them politically in the short run, but from which they expect to derive benefits in the future. One example is the adoption of common rules, frameworks, or guidelines that constrain national sovereignty to some degree but promise greater certainty and stability

in the future. Another example is participation in a collective effort to support another country, for example, through an International Monetary Fund (IMF) economic program or coordinated intervention in foreign exchange markets. The immediate benefits to a participating country may be marginal or even slightly negative, in the sense that domestic political opinion is skeptical, but over the longer term, the cooperating country is more likely to be assisted if and when it finds itself in similar circumstances.

Second, it follows that the participants in the international policy coordination process have some leeway in making commitments. For example, they can agree to a structure or course of action that is not demonstrably in their country's interest as long as it is not clearly against their country's interest. In addition, they can fudge their commitments through the use of language that is not specific or points to actions in the distant future.

Third, the economic and financial significance of the countries participating in the international economic policy coordination process matters to the nature of agreements on actions. But no country has complete freedom to dictate terms or solutions. Thus, the United States, the most important player in the policy coordination process over the past 40 years, even as U.S. influence has diminished in influence over the past 10 years and in particular relative to the immediate post-World War II period, has had disproportionate influence over international economic policies. To the extent that the United States has had its way with initiatives over the past 40 years, its success has flowed more from persuasion than from its economic and political power. This is an important, if not universally accepted, qualification that has operational implications for the countries of Asia as their leaders consider their individual and collective roles in policy coordination over the balance of what they hope will be the Asian century.

Fourth, institutions, both formal and informal, matter. The formal institutions of international economic policy coordination over the past 40 years are those established by international treaty or agreement such as the IMF, Bank for International Settlements (BIS), Organisation for Economic Co-operation and Development (OECD), World Trade Organization (WTO or its predecessor, the General Agreement on Tariffs and Trade (GATT)), World Bank, and regional development banks.

The informal institutions of international economic policy coordination include the various Gs: Group of 10 (G-10) major industrial countries formed in 1962 around the establishment of the General Arrangements to Borrow by the IMF from these countries, which now number 11 and have included Japan from the start; the Group of Five (G-5) formed in 1974, which is a subset of the G-10 that excludes Canada, Belgium, Italy, the Netherlands, Sweden, and

Switzerland; the Group of Seven (G-7), which includes Canada and Italy;<sup>9</sup> and the Group of Twenty (G-20) formed in 1999 at the level of finance ministers and central bank governors in the aftermath of the Asian financial crises, which includes the G-7 countries plus representatives of 12 other countries (Australia plus 11 emerging market countries) and the European Union (EU). In addition to Japan, the G-20 includes four other Asian countries (China, India, Indonesia, and Korea) as well as arguably a fifth (Australia). Informal groups of more specific relevance to Asia include the 10-country Association of Southeast Asian Nations (ASEAN), the ASEAN+3 (China, Korea, and Japan) associated with the Chiang Mai Initiative (CMI), the East Asia Summit or ASEAN+6 (adding Australia, India, and New Zealand and including Russia and the United States in the 2010 and 2011 meetings), and the Asia Pacific Economic Cooperation (APEC) forum.<sup>10</sup>

Bodies like the Basel Committee on Banking Supervision (BCBS) and the Financial Stability Board (FSB) are quasi-formal.<sup>11</sup> They exist by informal agreement of the participants. The participants determine the membership of the groups. National authorities formally implement decisions reached by the participants in bodies such as the FSB and can and do exercise discretion in doing so, though significant deviations from an international agreement could lead to consequences for the jurisdiction in question and for its financial institutions.

Formal institutions matter to international economic policy coordination because they are the principal means through which many informal decisions may be implemented, for example, with respect to reform of the international monetary system, the augmentation of the resources of those institutions, or conducting studies of various international economic and financial issues. Informal institutions matter because they often are the relevant forums for decisions about ad hoc policy actions as well as about institutional changes. They also matter because they are a primary locus of continuing dialogue among officials. Moreover, those informal dialogues contribute to exchanges of information that arguably improve economic policy formulation at the national level.

Two broad implications should be drawn for Asian regional policy coordination from this review of international economic policy coordination in general.

First, the achievement of consequential results from policy coordination is demanding. Doing so requires more than a political declaration of intent. It requires close analysis, hard work, and a willingness to sacrifice a degree of national sovereignty to achieve common objectives. Those requirements are not easily stimulated by political documents. Even political agreements embodied in treaties, as in the cases of the European construction and the IMF, are not

self-implementing. Political declarations can lead national authorities to adopt an exaggerated view of what is possible via policy coordination in terms of disciplining the policies of other participants and of the availability of assistance at times of crises. In addition, their citizens may not understand the extent of national sacrifice needed to achieve a declared common objective. Asian authorities should take care not to promise or expect too much from the processes of policy coordination in which they participate.

Second, Asian countries participate in various global institutions of policy coordination, formal and informal. The extent of that participation has increased dramatically since the late 1990s in recognition, some would say belated, of the increasing relevance for the global economy of the economic and financial policies in Asia, and vice versa.<sup>12</sup> It follows that any discussion of Asian regional policy coordination cannot and should not ignore the global dimension either substantively or institutionally. This observation naturally leads to a consideration of what is meant by Asia in the context of Asian regional policy coordination.

### **3. Policy Coordination: What Is Asia?**

In any discussion of international policy coordination, it is appropriate to ask which countries' policies are being coordinated, as well as what the objectives are and how they are being addressed. This section discusses these "which country" issues as they apply to Asia. What is Asia for purposes of Asian regional policy coordination?

The broadest definition of Asia is the 48 regional members of the Asian Development Bank.<sup>13</sup> The ADB uses the classification "developing Asia" to include 44 of its members. This classification excludes Australia, Japan, and New Zealand and often includes Brunei Darussalam as the 45th country in the group. At the same time, the IMF classifies 30 economies as developing Asia. In addition to Australia, Japan, and New Zealand, the IMF excludes from this category four newly industrialized Asian economies (Hong Kong, Korea, Singapore, and Taiwan), two nonmembers of the IMF (Cook Islands and Nauru), and eight former republics of the Soviet Union largely in Central Asia, and Mongolia all of which are included in the ADB classification.<sup>14</sup> In addition, the World Bank divides developing Asia into the eight countries in South Asia and the 24 countries of the East Asia and Pacific. The latter group excludes Singapore and includes Korea.

Thus, Asia can be defined in many different ways and potentially includes a large number of countries. On the other hand, thirteen economies in the IMF category of developing Asia and the four newly industrialized Asian economies

account for 98 percent of total estimated 2011 GDP of the 34-economy group measured on the basis of purchasing power parity (PPP).<sup>15</sup> Those 13 large economies by themselves are not part of an established forum in which their policies can be coordinated. Six of them are members of the ASEAN group, but the ASEAN also includes Brunei Darussalam, Cambodia, Laos, and Myanmar. Eight of them are in the ASEAN+3 group centered on the Chiang Mai Initiative, but that group includes Japan, a traditional advanced country. The ASEAN+6 group of 16 countries brings in India, but also Australia and New Zealand. Moreover, of the 13 large economies in developing Asia broadly defined, we have not positioned Hong Kong and Taiwan, which might be thought of as part of greater China, or Bangladesh or Pakistan. The ADB (2008) identifies a group of 16 economies as “integrating Asia.” That group is the ASEAN+6 minus Australia and New Zealand and plus Hong Kong and Taiwan. Finally there is the 11-member Executives’ Meeting of East Asia Pacific (EMEAP) group of central banks, which includes five ASEAN central banks and five of the central banks of the “plus six” (minus India) plus the Hong Kong Monetary Authority.

Asian economies are not only numerous and diverse in economic size, but also diverse in their stages of economic development. The central analytical concept that is the basis for extrapolating the emergence of an Asian century is economic convergence. In that convergence, the majority of Asians raise their standard of living on average to the levels comparable with the average for the world as a whole. Today, the average PPP-based GDP per capita in the IMF’s category of developing Asia is about \$5,500, compared with a global average of about \$11,500. However, in the broader Asian region, a number of economies are already classified by the IMF as advanced with GDPs per capita running from a high of almost five times the global average in Singapore to a low of 2.4 times in New Zealand. Even within the IMF’s category of developing Asia, GDPs per capita already exceed the global average in Brunei Darussalam and Malaysia. Malaysia’s GDP per capita is 2.8 times the average for developing Asia alone, while China’s is 1.5 times, but Indonesia’s is only 85 percent and India’s 67 percent of the average. Within the ASEAN group, the comparable figures are 24 percent for Myanmar and 42 percent for Cambodia. It is difficult to believe that common policies will serve countries with these diverse stages of development with equal effect, or that the larger and richer countries will be prepared to subsidize the economies of the smaller and poorer members of any regional group or subgroup.

It is useful to consider the relative size and economic development of the 17 members of the euro zone compared with the Asian region because Europe represents an advanced model of regional economic policy coordination. Within

the euro zone are four large economies with PPP-based GDPs of \$1.4 trillion (Spain) or more, with Germany the largest at \$3.1 trillion. But tiny Malta has a GDP of only \$11 billion, and the GDP of Cyprus is \$23 billion. However, the dispersion of stages of economic development is much narrower when indexed by PPP-based GDP per capita with a euro zone average of \$33,800. GDP per capita in wealthy Luxembourg is only 2.5 the average, with the Netherlands at a mere 1.3 times and Germany at 1.1. At the other extreme, Estonia is at 60 percent of the euro zone average; the Slovak Republic is 69 percent; and Greece is 81 percent. Ongoing developments in Europe, which has a cultural heritage more in common and less diversity in economic development than Asia, have vividly illustrated that at times of stress regional policy coordination can be very difficult, even when there is a substantial supporting (if incomplete) institutional structure to organize and implement such policy coordination in the context of a regional integration project that is now in its seventh decade.

Regional economic integration may involve many objectives. An ADB (2008, pp. 16–17) report identifies five high-priority areas for collective action: joint provision of public goods in health and other areas, management of spillover effects of economic activity and policies, coordination of regional projects, liberalization of trade and investment beyond the scope of global agreements, and promotion of improvements in economic policy coordination. The second and fifth areas are directly relevant to this paper. The report examines the opportunities for Asian regional cooperation under four headings: trade, investment, and the integration of economic activity; financial; macroeconomic policy; and social and environmental concerns. The first three headings are pertinent to the main focus of this paper: macroeconomic policy coordination.

In this context, the European Union again provides a useful benchmark for regional macroeconomic integration compared with the Asian region. To facilitate such a comparison, I draw upon the approach used by Joseph Gagnon (2011) in a recent analysis of the degree of economic integration of the countries in the euro area compared with the United States.<sup>16</sup> He finds that the degree of economic integration of the euro area is less than in the United States on two of three dimensions and that only a core group of the euro-area countries has become substantially more integrated since the birth of the euro in 1999. That core group on balance is still less integrated than the United States, treating the United States as 50 states and the District of Columbia or as a group of nine census divisions.<sup>17</sup>

The Gagnon approach is in the spirit of the analysis of Bayoumi and Eichengreen (1992). However, that earlier study also sought to distinguish between supply shocks and demand shocks. Such a distinction is important for answering

questions related to internal area responses to different types of shocks, their scale, and their symmetrical or asymmetrical nature. However, a simpler two-part approach can be used to investigate how consistently countries in a region cope with disturbances regardless of their typology, size, and origins. Gagnon adopted that approach, and we have replicated it in comparing the euro area and various groups of Asian countries in Tables 1, 2, and 3.

First, we look at the level and standard deviation of inflation, unemployment, and growth rates across three Asian regions compared with the euro zone.<sup>18</sup> Second, we report regressions of national rates of inflation, unemployment, and real growth on lags of those variables and the contemporary average of the variable for the group.<sup>19</sup> The coefficients on the lagged national variables indicate the persistence of idiosyncratic national disturbances, and the coefficients on the contemporary average variables indicate the coherence of national rates with those of the area as a whole. This is an indirect measure of linkage or integration within the group of countries—the degree to which they share common shocks.<sup>20</sup> We are interested in the comparisons with Europe, in differences across the three Asian groupings, and in changes in patterns over time.

For inflation, Table 1 shows that since 1999 the average inflation rate for the ASEAN group of countries, even omitting Vietnam, is substantially higher than the average for the euro area as a whole, which is the 10-country group in the Gagnon study. For the larger Asian groups, which are dominated by larger economies, the average inflation rates are lower than in the euro area. However, for all three groups of Asian countries the standard deviations of inflation are substantially higher than in the European group.<sup>21</sup>

The regression results reveal little persistence in Asian national inflation rates year to year, unlike two of the three euro-area groupings.<sup>22</sup> They also indicate that the degree of coherence or linkage in inflation rates is similar to, or slightly higher than, the euro area. Here one is looking for a coefficient that is close to 1.0 to indicate that inflation rates move together both closely and contemporaneously. Interestingly, there is essentially no difference among the three Asian groups, in contrast with the euro-area groups.

We also examined, as did Gagnon, whether there has been a change in these patterns compared with an earlier period.<sup>23</sup> Average inflation rates in the Asian groups have declined, but the standard deviations generally have not.<sup>24</sup> In the euro area, both measures have declined. Compared with the earlier period, national inflation performances in Asia are less persistent, but the degree of coherence across the regions appears to be broadly similar, except for the 11-country ASEAN+6 grouping, where the integration appears to have increased.

TABLE 1  
**Inflation Integration in Euro Area and Asia**

	Euro Area 1999–2010			Asia <sup>a</sup> 1999–2010		
	Core	10 Countries	13 Countries	ASEAN (5)	ASEAN+3 (8)	ASEAN+6 (11)
Average		1.8		5.6	1.2	1.7
Standard deviation for region <sup>b</sup>		0.5		2.1	1.5	1.5
Standard deviation across countries <sup>c</sup>		0.6		3.6	3.4	3.0
Standard deviation within region <sup>d</sup>		1.4		3.2	2.8	2.5
Inflation $t - 1$	-0.07 (0.10)	0.65* (0.09)	0.39* (0.08)	0.03 (0.04)	0.04 (0.04)	0.04 (0.03)
Inflation $t - 2$	-0.10 (0.10)	-0.04 (0.10)	0.00 (0.09)	-0.02 (0.04)	-0.01 (0.04)	-0.01 (0.04)
Region-wide inflation	0.71* (0.18)	0.60* (0.13)	0.81* (0.12)	0.86* (0.17)	0.86* (0.18)	0.80* (0.14)
Regression standard deviation	1.09	0.90	0.75	2.77	2.62	2.36
	Euro Area 1983–98 <sup>e</sup>			Asia 1985–96		
	Core	10 Countries	13 Countries	ASEAN (5)	ASEAN+3 (8)	ASEAN+6 (11)
Average		4.8		6.2	2.7	3.2
Standard deviation for region <sup>b</sup>		2.6		2.4	0.8	0.8
Standard deviation across countries <sup>c</sup>		2.7		3.1	3.3	3.0
Standard deviation within region <sup>d</sup>		3.5		3.2	3.1	3.3
Inflation $t - 1$	0.36* (0.09)	0.53* (0.08)	0.37* (0.06)	0.19* (0.04)	0.18* (0.06)	0.30* (0.06)
Inflation $t - 2$	-0.00 (0.09)	0.05 (0.08)	0.06 (0.06)	-0.05 (0.05)	-0.17* (0.06)	-0.11* (0.06)
Region-wide inflation	0.38* (0.12)	0.30* (0.10)	0.60* (0.08)	0.92* (0.12)	0.89** (0.37)	0.62*** (0.35)
Regression standard deviation	1.67	1.86	1.76	2.10	2.88	3.11

**Note:** Standard errors are in parentheses.

**a** ASEAN includes Indonesia, Malaysia, the Philippines, Singapore, and Thailand. ASEAN+3 adds China, Japan, and Korea. ASEAN+6 additionally includes Australia, India, and New Zealand. Vietnam is omitted from inflation regressions because it experienced hyperinflation over this period.

**b** Standard deviation of the observations on the area-wide weighted average.

**c** Standard deviation of countries' average inflation.

**d** Average of standard deviations for each country.

**e** Average and standard deviations are for the period 1981–98.

\* $p < 0.01$ , \*\* $p < 0.05$ , \*\*\* $p < 0.1$ . A p-value denotes the probability that the null hypothesis (that there is no correlation between the independent and dependent variable) is correct. P-values are inversely correlated with statistical significance.

Turning to the results for unemployment presented in Table 2, Asia has lower average unemployment rates and a lower standard deviation of the average for the three groups and within each group compared with the euro area. However, the standard deviations across countries are broadly similar to that

TABLE 2  
**Unemployment Integration in Euro Area and Asia**

	Euro Area 1999–2010			Asia <sup>a</sup> 1999–2010		
	Core	10 Countries	13 Countries	ASEAN (6)	ASEAN+3 (9)	ASEAN+6 (11)
Average		8.5		5.7	4.6	4.6
Standard deviation for region <sup>b</sup>		0.7		0.6	0.3	0.3
Standard deviation across countries <sup>c</sup>		2.4		2.9	2.4	2.9
Standard deviation within region <sup>d</sup>		1.8		1.1	1.0	1.1
Unemployment $t - 1$	1.01* (0.11)	1.29* (0.08)	1.25* (0.07)	0.92* (0.10)	0.86* (0.07)	0.86* (0.07)
Unemployment $t - 2$	-0.47* (0.10)	-0.62* (0.07)	-0.62* (0.07)	-0.24** (0.10)	-0.16** (0.07)	-0.18* (0.06)
Region-wide unemployment	0.25** (0.13)	0.19 (0.09)	0.19*** (0.11)	0.40* (0.15)	0.72* (0.19)	0.63* (0.16)
Regression standard deviation	0.55	0.93	0.85	0.62	0.54	0.54
	Euro Area 1983–98 <sup>e</sup>			Asia 1985–96		
	Core	10 Countries	13 Countries	ASEAN (6)	ASEAN+3 (9)	ASEAN+6 (11)
Average		9.2		4.3	2.7	3.1
Standard deviation for region <sup>b</sup>		1.3		0.6	0.3	0.3
Standard deviation across countries <sup>c</sup>		4.1		3.1	2.9	3.0
Standard deviation within region <sup>d</sup>		2.3		1.5	1.3	1.4
Unemployment $t - 1$	1.28* (0.07)	1.38* (0.07)	1.21* (0.06)	0.64* (0.14)	0.67* (0.11)	0.86* (0.09)
Unemployment $t - 2$	-0.61* (0.06)	-0.60* (0.06)	-0.54* (0.05)	0.08 (0.16)	0.07 (0.13)	-0.17*** (0.10)
Region-wide unemployment	0.15** (0.08)	0.07 (0.07)	0.27* (0.06)	0.13 (0.28)	-0.02 (0.27)	-0.44 (0.31)
Regression standard deviation	0.50	0.91	0.62	1.05	0.83	0.93

**Note:** Standard errors are in parentheses.

**a** ASEAN includes Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam. ASEAN+3 adds China, Japan, and Korea. ASEAN+6 additionally includes Australia and New Zealand. India has no unemployment data over these periods.

**b** Standard deviation of the observations on the area-wide weighted average.

**c** Standard deviation of countries' average unemployment.

**d** Average of standard deviations for each country.

**e** Average and standard deviations are for the period 1980–98.

\* $p < 0.01$ , \*\* $p < 0.05$ , \*\*\* $p < 0.1$ . A p-value denotes the probability that the null hypothesis (that there is no correlation between the independent and dependent variable) is correct. P-values are inversely correlated with statistical significance.

for the euro area. Again, the summary statistics for the ASEAN group, which might be thought to be more closely analogous to the euro area, show little difference from those for the two larger Asian groupings.

With respect to the regression results for unemployment, we find quite high persistence of national trends, comparable with what Gagnon found in the euro area. We also find a greater degree of coherence relative to the regional averages, but weakest with respect to the ASEAN group. The Asian results show stronger linkages than in the euro area, in particular the Asian groups that include the larger economies. Gagnon treats the coherence of unemployment rates as a measure of labor market integration in the euro area. For Asia, the regression results suggest the dominant influence of the larger economies. Compared with the earlier 1985–96 period, the persistence in the Asia results is about the same (some increase within ASEAN), and there appears to have been a noticeable increase in coherence in the later period.

Finally, with respect to real GDP in Table 3, an alternative measure to unemployment of integration on the real side of economies, the average growth rates, of course, are higher in Asia than in the euro area. The standard deviations are sizeable for all three Asian groups and similar to somewhat higher than in the euro area, with little difference across the three Asian groups. In the recent period, there is a similar low degree of persistence compared with the euro-area results. The coherence or linkage is a good deal less than in the euro area, in particular for the ASEAN group. This is the one dimension in which Gagnon finds that the euro area is close to the United States. Relative to the earlier period, persistence in growth rates in Asia has declined and coherence has increased, broadly similar to the unemployment results.

In summary, the various active Asian subregional groups of countries on these measures are about as economically integrated as is the euro area, more so with respect to unemployment, less so with respect to growth, and about the same with respect to inflation. The extent of such integration has increased somewhat in recent decades. The Asian groups that include the large economies exhibit greater unemployment and growth integration than the ASEAN group, which some think of as the Asian core. This suggests that Asia increasingly is dominated by its large economies and supply chain relationships.

What is the implication for Asian regional policy coordination of this review of what is Asia? The principal implication is that prospects for deep regional policy coordination need to be qualified for five reasons.

First, Asia comprises a large and very diverse set of countries in size and stage of development. Unlike in Europe, there is no one single, natural group of countries that can serve as a focus of regional policy coordination.<sup>25</sup> There are various overlapping Asian groups with their own diverse memberships in size and stage of development. These facts have implications for the nature of regional policy coordination in Asia. It must take account of this diversity and

TABLE 3  
**Growth Integration in Euro Area and Asia**

	Euro Area 1999–2010			Asia <sup>a</sup> 1999–2010		
	Core	10 Countries	13 Countries	ASEAN (6)	ASEAN+3 (9)	ASEAN+6 (12)
Average		1.5		5.1	4.3	4.5
Standard deviation for region <sup>b</sup>		2.0		1.8	1.8	1.7
Standard deviation across countries <sup>c</sup>		0.8		2.6	2.2	2.3
Standard deviation within region <sup>d</sup>		2.6		2.0	2.4	2.4
Growth $t - 1$	-0.07 (0.06)	0.01 (0.07)	0.01 (0.05)	0.05 (0.09)	-0.06 (0.07)	-0.03 (0.05)
Growth $t - 2$	0.03 (0.09)	0.19*** (0.10)	0.12 (0.08)	0.10 (0.10)	-0.09 (0.07)	-0.11** (0.05)
Region-wide growth	1.20* (0.07)	1.13* (0.07)	1.02* (0.05)	0.58* (0.12)	0.70* (0.11)	0.80* (0.10)
Regression standard deviation	0.95	1.32	1.01	1.76	2.06	1.97
	Euro Area 1983–98 <sup>e</sup>			Asia 1985–96		
	Core	10 Countries	13 Countries	ASEAN (6)	ASEAN+3 (9)	ASEAN+6 (12)
Average		2.1		6.8	4.8	4.7
Standard deviation for region <sup>b</sup>		1.2		2.2	1.6	1.4
Standard deviation across countries <sup>c</sup>		0.7		3.2	2.8	2.6
Standard deviation within region <sup>d</sup>		2.0		2.6	2.7	2.7
Growth $t - 1$	0.20** (0.08)	0.44* (0.07)	0.29* (0.05)	0.58* (0.10)	0.63* (0.08)	0.64* (0.08)
Growth $t - 2$	0.10 (0.08)	-0.05 (0.07)	-0.09* (0.05)	-0.33* (0.09)	-0.37* (0.08)	-0.31* (0.08)
Region-wide growth	0.83* (0.13)	0.80* (0.10)	0.86* (0.07)	0.14 (0.12)	-0.25* (0.14)	-0.20 (0.14)
Regression standard deviation	1.44	1.44	1.04	2.15	2.25	2.28

**Note:** Standard errors are in parentheses.

**a** ASEAN includes Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam. ASEAN+3 adds China, Japan, and Korea. ASEAN+6 additionally includes Australia, India, and New Zealand.

**b** Standard deviation of the observations on the area-wide weighted average.

**c** Standard deviation of countries' average growth.

**d** Average of standard deviations for each country.

**e** Average and standard deviations are for the period 1981–98.

\* $p < 0.01$ , \*\* $p < 0.05$ , \*\*\* $p < 0.1$ . A p-value denotes the probability that the null hypothesis (that there is no correlation between the independent and dependent variable) is correct. P-values are inversely correlated with statistical significance.

the various bodies with cross-cutting memberships. This may reduce the substantive depth of what can be accomplished but should increase the probability that it will be broad in scope.

Second, the wide range of stages of development among Asian countries necessarily will affect countries' policy priorities and how they view various policy trade-offs. This is particularly true with respect to the four largest countries: Japan, Korea, China, and India. Think about the differences among those four countries: two are advanced (Japan and Korea), one (China) is already the second largest economy in the world, but with a GDP per capita below the global average, and one (India) is large in economic size but with less than half the GDP per capita of the third country. The differences in economic development of France, Germany, Italy, and the United Kingdom are minor by comparison. And we have observed how difficult it is for those four European countries to reach consensus on regional or global economic and financial issues. The Asian countries have far more diverse national and global stakes in regional and global policy coordination.

Third, a number of the large Asian countries are major players in various formal and informal global groups involved with policy coordination. Along with the considerations already adduced, this fact points to the appropriateness of an open regionalism approach in contrast with an approach that seeks a narrow Asian advantage or to isolate or insulate Asia. However, as was the case with Europe in the 1950s and continues to be the case today, the fact that European countries and Asian countries are key players on the global stage will not prevent some within those regions from preferring regional solutions to the detriment of the global interest. This is why it has proved desirable as much as possible to lock Europe into multilateral approaches. The fact that those efforts in the past have not been entirely successful does not mean that the interests of other countries vis-à-vis Asia do not point in the same direction.

Fourth, some observers note the increasing share of Asian intraregional trade compared with the European Union or North America (ADB 2008, p. 40). But, as the ADB study points out, those trends are heavily influenced by the recent relatively rapid economic growth of the 16 economies in its core group of integrating Asian economies and the associated rapid growth in their total trade. Adjusting for the rise in Asia's share of global trade, the so-called intensity of Asian regional trade bottomed out only in 2005 after declining for 50 years. Regional integration involves more than trade, more than finance, and more than macroeconomic linkages. But by the same token a substantial degree of regional integration is a necessary condition for successful regional policy coordination. Without the integration, there would be no spillovers or externalities to motivate a search for common, cooperative solutions, but a high degree of integration is far from a sufficient condition for robust policy coordination results. Asia may be approximately as integrated economically as is the euro

area, but the euro area is less integrated than the United States. Moreover, we have seen recently that the high degree of European integration is not sufficient to prevent the emergence of threats to the European integration project that has been under way for more than six decades.

Finally, these qualifications about the realistic scale and scope of Asian regional policy coordination do not imply an empty set of prospective achievements. They do suggest that such activity is likely to fall short of the fourth point on the spectrum of policy coordination I sketched out earlier, and to be limited to ad hoc episodes and projects found around the third point on the spectrum and also fit comfortably within an overall global framework.

## **4. Coordination of Macroeconomic Policies**

Setting aside issues of the appropriate regional forum for Asian regional policy coordination and the different stages of development of the participants in the existing forums, in this section, I consider, first, within-region macroeconomic policy coordination in the current economic context and, second, some aspects of the coordination of macroeconomic policies vis-à-vis the rest of the world, extraregional policy coordination. It is useful to employ the five-element framework of policy coordination that was sketched out earlier: identification, shared diagnosis, agreed actions, scope for midcourse corrections, and learning lessons.

### **4.1. Intra-regional Policy Coordination**

Neither the stage of development of countries in the Asian region nor their current economic and financial circumstances are similar. Table 4 presents a summary of IMF forecasts of 2011 macroeconomic developments for 14 principal economies in the region with respect to growth, inflation, and current account balances. What problems can be identified that require a coordinated response?

With respect to the growth rate of real GDP, each of the economies, with the exception of Japan, appears to be experiencing healthy growth this year, as shown in the first column. However, the second column indicates that most of those growth rates are less than the average recorded during the boom years of 2002–07. Indonesia is a prominent exception, arguably along with India, Hong Kong, and Taiwan. This suggests that the countries of the Asian region have recovered from the Great Recession of 2008–09 but their expansions are tepid relative to the preceding period. Is this a problem? Perhaps the authorities in the region view this growth outlook as problematic.

On that assumption, two diagnoses are possible. First, for many countries in Asia the boom years of 2002–07 involved overly rapid growth and slower

TABLE 4  
**Macroeconomic Developments in Asia**  
 2011 Forecasts

Country	Real GDP Growth		Consumer Price Inflation		Current Account	
	2011	2011 less average for 2002–07	2011	2011 less average for 2002–07	US \$ billion	Percent of GDP
Indonesia	6.4	1.1	5.7	-3.3	16.1	0.2
Malaysia	5.2	-0.7	3.2	1.1	3.7	11.3
Philippines	4.7	-0.7	4.5	-0.3	1.5	1.7
Singapore	5.3	-1.9	3.7	2.8	58.0	19.8
Thailand	3.5	-2.1	4.0	1.2	28.0	4.8
Vietnam	5.8	-2.1	18.8	12.2	-5.7	-4.7
China	9.5	-1.8	5.5	3.4	17.0	5.2
Japan	-0.5	-2.3	-0.4	-0.2	360.5	2.5
Korea	3.9	-0.9	4.5	1.6	147.0	1.5
Australia	1.8	-1.8	3.5	0.8	-40.3	-2.2
India	7.8	-0.1	10.6	5.8	-32.8	-2.2
New Zealand	2.0	-1.4	4.4	1.9	-6.5	-3.9
Hong Kong	6.0	0.4	5.5	5.7	13.4	5.4
Taiwan	5.2	0.0	1.8	0.8	55.4	11.0

Source: WEO Database, September 2011.

growth might be welcomed. Second, although the Asian economies have recovered, that has not been the case in much of the advanced economic world, including Japan, Australia, and New Zealand shown in the table. It can be argued that the failure of many of the advanced countries to achieve takeoff speed in their recoveries has adversely affected the growth performance, and likely growth prospects, in developing Asia.

Downside risks to the global economy going forward reinforce the second diagnosis. The IMF (2011f) in its September *World Economic Outlook* marked down growth in emerging Asia in 2011 by 0.2 percentage points from its April forecast, and its 2012 forecast by a further 0.3 percentage points—growth in 2012 is projected to be a full 1.8 percentage points below that group's growth rate recorded in 2010. More important, in the IMF (2011e) outlook for the Asian and Pacific Region, the IMF staff present a global downturn scenario based on a shortfall of European Union growth of 3.5 percent and U.S. growth of 1 percent below the IMF's baseline forecast for the next two years.<sup>26</sup> In this scenario, growth in emerging Asia declines 1.5 to 2 percent below the baseline.

If the Asian regional authorities shared a diagnosis that something should be done about the prospect of slower and possibly substantially slower growth in the period ahead, what actions might be agreed? Here the situation becomes more complicated. As the middle two columns in Table 4 indicate, a number of

the Asian economies have projected inflation rates that are high, and in most cases high relative to their average experience in the 2002–07 period. Indonesia and the Philippines might be considered to be exceptions. But the IMF executive board cautioned the Indonesian authorities on October 7, 2011, that they may be too optimistic about that country's inflation prospects and advised that the Bank of Indonesia should be prepared to raise its benchmark interest rate from the prevailing 6.75 percent. Nevertheless, the Bank cut the rate to 6.50 percent on October 11.<sup>27</sup> This sequence of events not only underscores the scope for differences of view between Asian authorities and the IMF staff, management, and executive board, but also illustrates the fact that not all Asian economies face the same circumstances.

On the other hand, most of the emerging Asian economies have the fiscal space to respond to, if not anticipate, a slowdown in growth. In that respect, they have scope for correcting policy choices in the fiscal area should they now decide against taking individual or collective action in that area. This is true even though for most countries their estimated cyclically adjusted fiscal balances in 2011 are weaker than the average during the 2002–07 period (IMF 2011e, p. 16). India and Vietnam are exceptions with respect to their fiscal and government debt positions, their inflation rates, and their current account positions.

The case of Vietnam is illustrative of another aspect of Asian regional economic policy coordination. How effective have the regional authorities in ASEAN and the Chiang Mai Initiative been in conducting surveillance over macroeconomic developments in Vietnam?

The ASEAN+3 Macroeconomic Research Office (AMRO) is the organization formally responsible for such surveillance under the Chiang Mai Initiative Multilateralization. It was just established in 2011. However, the Asians meet in many regional forums in which they discuss their economic and financial circumstances and prospects. Well before the outbreak of the global financial crisis, it was evident that the Vietnam economy was overheating, macroeconomic policies were on a dangerous course, its exchange rate was seriously overvalued, and its current account deficit was widening. Policies remained largely unchanged. In fact, during the crisis, the Vietnamese authorities responded strongly with expansionary policies, digging a bigger hole for the country.

The available evidence is that countries in the region were silent in providing needed advice and warnings to Vietnam, despite being potentially on the hook to provide financial assistance to Vietnam if its international reserves came under severe pressure. (Vietnam's reserves have declined since the end of 2008.) On the other hand, the staff and management of the IMF, despite a financial relationship that was broken off in 2002, have been active in providing

policy advice through the IMF Article IV consultation process and the office of the IMF resident representative in Hanoi. As described in the conclusion of Vietnam's most recent Article IV consultation in June 2011 (IMF 2011c), the situation in Vietnam, including the country's current efforts to stabilize its economy and financial system, bears a striking resemblance to the situation in Greece, which is a country with the same GDP on a PPP-basis, except that Vietnam has the scope to change its nominal exchange rate, which Greece does not. Vietnam is hampered to some extent from allowing its exchange rate to depreciate by more serious inflation pressures than are facing Greece.

A final area of difference and tension with respect to Asian intraregional policy coordination involves external positions and exchange rate policies. As shown in Table 4, with the exception of Vietnam and India, each of the emerging Asian economies, including Korea, is projected to run a current account surplus in 2011, with five of the nine surpluses expected to exceed 5 percent of their respective GDPs. As is well-known, if all countries orient their policies in order to achieve current account surpluses, the result will be deflationary for the world economy. If a significant subset of countries, such as those in Asia, succeeds in doing so, the resulting global imbalances threaten global economic and financial stability and contribute to trade tensions.

Within emerging Asia, a strong case can be made that policies should be directed at reducing current account surpluses. Exchange rate appreciation can contribute to this process as well as to relieving upward pressures on the prices of traded goods. However, the constellation of exchange rate policies in Asia is not conducive to achieving this desirable result. China heavily manages the exchange rate between the renminbi and the U.S. dollar. The exchange rate policies of other emerging market economies in the region, with the exception of Hong Kong, range from somewhat to substantially more flexible.

One result has been that after June 2010, when China again began to ease the renminbi's peg with the dollar, and as the dollar weakened against most other currencies, the currencies of many of the more freely floating Asian currencies appreciated more against the dollar than did the renminbi, and therefore against the renminbi. In many cases, those other Asian currencies appreciated in real effective terms as the renminbi actually depreciated slightly (1.1 percent) in real effective terms from May 2010 through July 2011 on the broad measure compiled by the Bank for International Settlements. The movement of China's exchange rate during this 14-month period can be expected to have had zero effect on China's global current account position, while the current account positions of some of its neighbors have felt some pressures from the appreciation of their exchange rates, which may not be welcome.<sup>28</sup>

This pattern illustrates two basic problems with respect to policy coordination: First, China's exchange rate policy vis-à-vis the U.S. dollar conditions the exchange rate policies and exchange rate performance of its Asian neighbors, often adversely affecting their own external positions and exerting influences on their own domestic economies via spillovers from currency wars. Second, China's policy actually imparts greater volatility and instability to effective exchange rates in the region not only for China but also for its neighbors.

From this review, I conclude that the challenges to effective policy coordination within the Asian region, even among the emerging market group of countries (including Korea for these purposes), are substantial. Problems are not easily identified, diagnoses of problems are generally not shared, and the difficulties of reaching consensus on coordinated actions are many. In addition, as the discussions of the Vietnam case and the matter of China's exchange rate policy have illustrated, these countries have problems, it would seem, in speaking truth to neighbors as well as even greater problems in speaking truth to power.

In connection with the 2011 G-20 Leaders' Summit meeting in Cannes, France, the G-20 announced on November 4 their agreement on principles for cooperation between the IMF and regional financial arrangements (G-20 2011c). The principles had been endorsed previously by the G-20 finance ministers and central bank governors. Procedurally, it is a bit odd that these principles are identified with the G-20 rather than with the IMF and the relevant regional financial arrangements. On the other hand, they are nonbinding. They also fall short of the robust procedures that some have advocated.

Henning (2011), writing sympathetically with respect to both the IMF and the regional arrangements, has laid out eight constructive principles and guidelines in this area: specialization along comparative advantage, prohibition against competition in critical areas, transparency of the regional arrangements, multilateral review of the resulting regional facilities, the presumptive supremacy of IMF conditionality, policies toward bailing in the private sector, and the seniority of IMF claims.

Each of the eight headings identified by Henning resonates in the context of the ongoing European debt crisis as both important and unsettled. In particular, as is highlighted in Pisani-Ferry, Sapir, and Wolff (2011), shortcomings in IMF surveillance of the euro area (in part associated with European views that the IMF surveillance had no value added or relevance to their business and in part associated with a failure of IMF due diligence and analytical acuity) contributed to a shortfall in crisis prevention with respect to the European sovereign debt crisis.

The stated goal of the G-20 principles is laudable: “foster rigorous and even-handed surveillance and promotion of common goals of regional and global financial and monetary stability.” However, with respect to surveillance, the tone of the principles is defensive of the respective organizations and remaining at arm’s length rather than promoting integration. The need for cooperation on surveillance is recognized in the G-20 principles, but not operationalized. For example, “cooperation should respect the roles, independence and decisionmaking processes of each institution. . . . Cooperation should commence as early as possible and include open sharing of information and joint missions *where necessary*” (emphasis added). Effective surveillance is both an important aspect of crisis prevention and a necessary ingredient of efficient crisis management via policy conditions.<sup>29</sup>

The fundamental point is that it is unwise for Asia and unwise for the health of the global economy for Asian regional policy coordination to take place in a vacuum without reference to global needs, perspectives, and processes. The next subsection expands upon this theme.

## 4.2. Extraregional Policy Coordination

The citizens of Asia care about policy coordination within their region, but they also have an interest in the effects and effectiveness of the coordination of policies with countries outside their region and vice versa. Policy coordination by a region and for a region alone is not likely to produce optimal results. No global region can reasonably expect to be self-reliant. The earlier observations about the likely influence of recent and expected subpar growth in the advanced countries on the growth performance in emerging Asia illustrate that point. Spillovers through both real and financial channels are potentially two-way. Those spillovers may be identified as a problem requiring policy coordination. What is an example of a common problem in Asia?

Financial flows are influenced by conditions within the individual countries of the Asian region as well as conditions in the region as a whole. In the Asian financial crises of the late 1990s, both were relevant. In 2008–09 and again in the summer and fall of 2011, an increase in risk aversion and tightening of financial conditions outside of Asia affected net inflows of capital to the Asian region and exchange rates between Asian currencies and the dollar, as well as the Japanese yen and presumptively the Swiss franc. The IMF staff (IMF 2011e) suggest three channels for these effects: liquidation of foreign investor positions in Asian assets, repatriation of liquidity by European banks, and loss of market liquidity with respect to certain types of transactions. It is instructive that some of the evidence adduced concerning the first channel includes the fact that, as of

the end of 2010, foreign holdings of government debt issued by Indonesia were 55 percent of the total. In connection with the second channel, it was noted that Asian banks had cut back on their European exposure starting in 2010. In connection with the third channel, an indicator based on the U.S. dollar–local currency basis swap spread had widened significantly while remaining within the range that has prevailed since January 2008.

Real flows are influenced by macroeconomic policies, including exchange rate policies, and they contribute to current account positions and the net accumulation of net investment positions. These are of interest and concern to countries both in the Asian region and outside that region. In principle, countries can coordinate their policies vis-à-vis the rest of the world, but the challenges in doing so are at least as great as those with respect to achieving common intraregional objectives. How would the ASEAN countries go about establishing an objective for their collective current account position, to say nothing of the ASEAN+3 grouping of even more diverse countries?

The aim would be to arrive at a common Asian regional diagnosis of individual current account positions and a collective current account position, as well as to derive a coordinated set of policies based on that diagnosis. A hypothetical exercise of this type, and I say “hypothetical” because I know of no evidence that Asian policymakers have undertaken one, would reveal all the analytical and policy disagreements that are evident in the G-20 mutual assessment process which is intended to provide strong, sustainable, and balanced growth. Indeed, if the Asian region were to seek to coordinate their policies toward objectives in this area, they would quickly have to consider how their activities would fit with the G-20 and other similar efforts.

It is useful to step back and consider some of the analytical issues that would go into any coordinated effort at diagnosis and policy prescription in this area. The international accounts of an Asian economy involve real and financial flows within the region and external to the region. At the same time, on a net basis, real flows of goods, services, income, and transfers that make up current account balances and the net financial flows that make up the rest of the international accounts are designed to sum to zero even if available statistics do not always allow one to confirm that identity. They are two sides of the same coin. Financial flows, in turn, consist of those of the official sector, principally the accumulation or reduction of international reserves, and those originating in the private sector. One often hears two concerns expressed with respect to such flows involving emerging market and developing economies: First, analysts and officials bemoan that capital is flowing uphill, from the emerging market and developing countries to the advanced countries, from the figurative south to the

figurative north. This can be taken as an identified problem. Second, analysts and officials argue that there should be more in the way of south-to-south real and financial flows. This can be taken as the diagnosis and recommended policy action.

In the context of regional policy coordination and relations with countries and their policies outside the region, we can examine this problem and suggested policy solution. To what extent and in what respect is capital flowing from south to north? Table 5 presents some data on this question at the aggregate level of groups of emerging market and developing countries, and Table 6 does so for selected large emerging market countries with an emphasis on Asia.

First, Table 5 shows that, in the aggregate, emerging market and developing countries plus the newly industrialized Asian economies had a current account surplus in 2010. As long as a country or a group of countries has a current account surplus, it follows that they must be sending capital net to the rest of the world in some form. For these groups of countries combined, they were net exporters of capital to the tune of more than \$550 billion in 2010. The only three country groups in the table for which this was not the case were Central and Eastern Europe (which includes members of the European Union that are not part of the euro area, Turkey, and a few other non-EU countries), Latin America and the Caribbean, and sub-Saharan Africa. These three groups of “southern” countries were receiving net capital flows from the rest of the world.

However, this is only part of the story about net capital flows. As noted, the flows include official as well as private capital. If we separate out official flows in the form of changes in reserve holdings, the middle column in the table, we get

TABLE 5  
**Did the South Finance the North in 2010?**  
Country Groups (US\$ billion)

Country Group	Current account	Change in reserves	Net nonreserve capital inflow
Central and Eastern Europe	-80.5	37.1	117.6
Commonwealth of Independent States	75.3	53.2	-22.1
Developing Asia	313.2	591.2	278.0
Latin America and Caribbean	-56.9	103.5	160.4
Middle East and North Africa	183.5	102.8	-80.7
Sub-Saharan Africa	-12.2	3.0	15.2
Emerging and Developing Economies	422.3	890.8	468.5
Newly Industrialized Asian Economies	131.5	105.4	-26.1
Total	553.8	996.2	442.4

Sources: WEO Database, September 2011, and IMF *International Financial Statistics*.

TABLE 6  
**Did the South Finance the North in 2010?**  
 Selected Countries (US\$ billion)

Country	Current account	Change in reserves	Net nonreserve capital inflow
Bangladesh	2.4	0.9	-1.5
China	305.3	471.7	166.4
Hong Kong	13.9	9.2	-4.7
India	-42.8	1.9	44.7
Indonesia	5.6	30.3	24.7
Korea	28.2	27.2	-1.0
Malaysia <sup>a</sup>	27.4	9.51	-17.9
Pakistan	-3.9	2.3	6.2
Philippines	8.5	14.4	5.9
Singapore	49.5	42.3	-7.2
Taiwan <sup>b</sup>	39.9	33.5	-6.4
Thailand	14.8	31.2	16.4
Vietnam	-3.9	-1.8	2.1
Subtotal	444.7	602.4	157.7
Argentina	2.8	4.2	1.4
Brazil	-47.4	49.1	96.5
Mexico	-5.6	23.0	28.6
Russia	71.1	36.7	-34.4
Saudi Arabia	66.8	35.3	-31.5
South Africa	-10.1	38.0	48.1
Turkey	-48.4	12.8	61.2
Subtotal	29.2	199.1	169.9
Total	474.0	801.5	327.5

Sources: *WEO Database*, September 2011, and *IMF International Financial Statistics*.

<sup>a</sup> Data are derived from the "international liquidity" line in the IFS table for Malaysia.

<sup>b</sup> Data are derived from the line for Taiwan in the IFS "total reserves" table and include gold valued at SDR 35 per ounce.

a different picture. In 2010, in the aggregate, the international reserves of these seven groups of countries increased almost \$1 trillion. This was a net export of capital on official account mostly from south to north. At the same time, there was a net inflow of private capital, estimated as the difference between the total change in reserves and the combined current account, of almost \$450 billion. The private sector in the north was sending more capital to the south than the private sector in the south was sending north.

Three groups of countries are exceptions to the basic pattern. The group of Commonwealth of Independent States is dominated by the large net capital outflows from Russia on private account. The Middle East and North Africa

group have very large energy-related current account surpluses and much of those surpluses end up in public hands. We have information on the amount that goes into reserves, but we do not have data on the increased holdings of their sovereign wealth funds (SWFs). The increase in their SWFs in 2010 was almost certainly more than \$80 billion. Finally, the Newly Industrialized Asian Economies are arguably not part of the south for purposes of this discussion, and as part of the north might be expected to send private capital net to the rest of the world.

Thus, for the south in aggregate, there was a net export of capital to the north, but that net flow was more than accounted for by official flows that governments directly control. The net flows involving private-sector decisions and incentives were north to south. If governments reduced their collective reserve accumulation, there is the presumption that their currencies would appreciate, they would act to maintain activity and employment by supporting domestic demand, and their current account positions would move toward deficit in line with net private capital inflows from the north.

Table 6 provides a more granular view of these patterns, focusing on individual countries: thirteen large Asian developing, emerging market, and newly industrialized economies and the seven other emerging market countries that are members of the G-20.<sup>30</sup> The table presents the same overall picture: a large combined current account surplus of about \$475 billion, an even larger recorded change in reserves (a net capital outflow on official account) of about \$800 billion, resulting in a net private capital inflow of about \$325 billion to these 20 countries as a group from the rest of the world.

Seven of the countries had current account deficits. Thus, these countries were net recipients of capital from outside the country. In every case except Vietnam, those net capital inflows not only covered the current account deficit but also in effect financed an official capital outflow in the form of an increase in international reserves. The resulting total net private capital inflow was substantial in the cases of Brazil, South Africa, and Turkey.

For five of the thirteen countries with current account surpluses—China, Indonesia, the Philippines, Thailand, and Argentina—the increase in reserves was larger than their current account surplus. Consequently, these countries also received net private capital flows from abroad.

Each of the newly industrialized Asian economies also had a sizeable current account surplus. The additions to their international reserves were in each case slightly less than those current account surpluses. This in effect allowed for an additional small net private capital outflow from each to the rest of the world as befitting their status as advanced economies.

The remaining four countries are a mixed bag. They show net private capital outflows south to north. In the case of Bangladesh, the figures are small. In Malaysia, there appears to have been a large net private capital outflow for which I have no ready explanation. In Russia, it is well-known that private capital flight is an important phenomenon. Saudi Arabia is a country whose reserve increase probably should be augmented by other official net capital outflows.

I conclude from this analysis that, despite the large current account surpluses in many emerging market and developing countries (which is the true anomaly reflecting a flow of real resources out of these countries), it is not accurate to say that capital in those forms which respond to market incentives is flowing uphill on a large scale from south to north. It would appear that the diagnosis of the problem is incorrect. The argument is often made that the net capital flows from south to north reflect the underdeveloped financial markets in the south. Investors are attracted by the greater security, liquidity, and stability offered by financial markets in the north. The data presented in Tables 5 and 6 demonstrate that the relevant net capital flows are on official account, which are motivated by factors other than the financial development of the markets in which the assets are invested. Financial market development may affect private flows, but those net flows appear to be largely from north to south.<sup>31</sup>

What about the diagnosis and policy recommendation that there should be more south-to-south real and financial flows in particular within emerging and developing Asia? Here policies, and implicitly policy coordination, are potentially more relevant. In order to generate more net south-to-south flows, real or financial, policies in the countries in the region have to be adjusted to generate different macroeconomic outcomes. Business as usual will not bring about substantial change.

As long as Asian countries maintain settings for their macroeconomic policies—fiscal, monetary, structural, and exchange rate policies—that are consistent with the current account surpluses that we now observe, increased shipments of goods and services from country A to country B, which may be recycled to country C and ultimately back to country A, will augment gross trade flows but will have no net effect. Net increases in shipments of goods and services within Asia ultimately have to emerge from the Asian region as shipments to the rest of the world.

The same logic applies to official and private financial flows within the Asian region. If country A invests more of its reserves in country B, or its private sector increases its financial flows to country B, rather than sending the financing outside the region, the result will merely increase country B's foreign exchange reserves (which might pass them on to country C) or an offsetting private capital

outflow (perhaps to country C), but in the end the net flow of private or official capital has to leave the region. If a dollar were passed around the region adding to the aggregate international reserves of the countries in the region without a change in the region's aggregate current account position, recorded aggregate net private capital inflows would be reduced for the region as a whole. The official regional inflows would have effectively replaced the private inflows.

This broad result holds independent of the degree of development of the financial markets in the region as a result of the increased financial flows. It is a matter of arithmetic. Promotion of gross capital flows within the region in order to encourage financial market development is desirable. That is the principal aim of the BIS-EMEAP Asian Bond Market Funds, as well as the Asian Bond Market Initiative supported by the ADB.<sup>32</sup> But in the absence of an adjustment in the region's combined current account, the flow diverted from investment outside the region by one country must be replaced by a flow out of the region by another country. This follows unless the program leads to a reduction in gross capital flows from outside the region which would hardly be assured or presumably desirable. From a longer-term perspective, if increased gross intra-regional financial flows were associated with financial market deepening and this led to the recipient country becoming less concerned or defensive about capital inflows, and the country reduced its rate of reserve accumulation and, therefore, its current account balance, the intraregional inflow could be accommodated.<sup>33</sup> However, unless such a development leads to changes in macroeconomic policy settings that produce a decrease in net saving or an increase in net investment in the national income accounts of one or more countries in the region, there will be no resulting change in the aggregate figures for net private capital and official flows to or from the region as a consequence of the increased financial market integration and development.

Pongsaparn and Unterberdoerster (2011) argue and present some supporting empirical results that increased financial integration in Asia, including the liberalization and development of domestic financial markets, would contribute to global rebalancing by the region by strengthening domestic demand relative to gross output—a lower current account balance. The estimated coefficients are not highly significant, the processes of generating the effects are not specified in the reduced-form relationship, and the size of the effect is quite modest.<sup>34</sup> These results do support the case for greater Asian financial integration in order to reduce global imbalances, but the underlying mechanism involves the removal of policy barriers. This is fully consistent with my analysis that other policies have to be adjusted if increased financial integration is going to contribute to external adjustment.

In Cannes, the G-20 leaders issued a set of conclusions on the management of capital flows (G-20 2011b). The conclusions include a paragraph on the strengthening of financial sectors that notes both the pluses in terms of a country's absorptive capacity and stability and the minuses in terms of increasing a country's attractiveness as a, perhaps, temporary destination for capital flows. That paragraph is linked to the G-20 action plan to support the development and deepening of local currency bond markets (G-20 2011a). The rationale for the G-20 initiative is greatly overstated. The development of local currency bond markets can contribute to economic and financial stability and potentially affect the composition of international capital flows, but it is much more debatable whether or to what extent doing so will reduce reliance on foreign saving, attenuate external imbalances, or mitigate the need for large precautionary reserve holdings, as is claimed in the G-20 action plan.

This discussion illustrates an underlying lack of consensus in the Asian region on the framework for diagnosis of the identified problem and the design of policies to address it. As a general conclusion, in order to increase net private inflows from outside the Asian region into the region, policy adjustments are needed by the countries in the region that have the effect of reducing aggregate current account surpluses. The same prescription applies to increase the size of net *intra*regional real or financial flows. It also follows that to achieve the desired regional results it is necessary for the countries in the region to engage in *extra*regional policy coordination, aligning or adjusting their policies vis-à-vis the rest of the world as a whole as part of a global policy coordination process.

## 5. Coordination of Reserve Management Policies

The discussion in the previous section highlighted Asian policies of reserve accumulation. As of the end of 2010, the international reserves of Asian developing countries (IMF classification) were \$3.7 trillion, almost 40 percent of their combined GDP of \$9.5 trillion, measured in current U.S. dollars.

Asian countries have accumulated their vast holdings of international reserves for one of two reasons or a combination of both. The reserve accumulation may have been a prime objective of the macroeconomic policies (self-insurance) of Asian countries. Alternatively, Asian reserve accumulation may have been a by-product of mercantilism or the application of development models in which net exports drive real economic growth—domestic demand less than output. Whatever the motivation was, the international reserves of Asian developing countries, after increasing by \$592 billion in 2010, are projected (IMF 2011f) to increase by more than \$700 billion in 2011 and almost \$750 billion

in 2012. A controversial paper by the IMF staff (IMF 2011a) develops a risk-weighted metric of the adequacy of countries' international reserves. In an illustrative application, four of the fourteen countries with international reserves, as of the end of 2009 substantially above the comfort range suggested in the paper are Asian developing countries: China, Indonesia, the Philippines, and Thailand.<sup>35</sup> The paper notes that the international reserves of most emerging market countries have increased substantially since the end of 2009. The authorities of some countries may argue that international and domestic financial risks also have increased more than proportionately during this period. That is the nub of the challenge to international and regional policy coordination with respect to reserves and reserve management.

In the case of countries whose policies primarily are directed at current account surpluses as part of their growth strategies, excessive reserve accumulation is a by-product. In these cases, the policy coordination problem, diagnosis, and policies do not involve the coordination of reserve management policies; rather it involves the issues discussed in the previous section. When excessive reserve accumulation is identified with self-insurance, reserve management policies come into play as part of the diagnosis, but it is not clear that the resulting recommended policy actions have been effective.

With respect to regional policy coordination in Asia, bilateral and multilateral efforts have been directed at developing various institutions to share reserves, in effect to engage in collective reserve management and insurance operations. They started with the Chiang Mai Initiative. The CMI developed into the \$120 billion Chiang Mai Initiative Multilateralization, but the countries also retain an extensive Asian network of bilateral swap arrangements.

To the extent that Asian countries' policies on reserve accumulation are driven by self-insurance motives, one would expect that the various bilateral and multilateral arrangements to share access to reserves would have reduced the force of such motives. However, we have no evidence to support this view. Moreover, to the extent that reserve accumulation is driven by mercantilist motives, those motives are inconsistent with a cooperative regional or multilateral approach to macroeconomic policy coordination as discussed in the previous section.

What explains the apparent inconsistency in policies and their coordination with respect to the self-insurance motive? Several hypotheses are plausible. The receipt of support from the reserve pooling arrangements is not automatic. The pools are too small relative to potential needs. They are by definition regional in nature. As pointed out in the report of the working group chaired by Jean-Pierre Landau (BIS 2011), the resources of regional arrangements are likely

to be insufficient in the face of a common liquidity shock, whether of external origin as with the global financial and current euro-zone crisis or affecting the region as a whole like the Asian debt crises. The European experience with sovereign debt crisis tends to support the last interpretation.

Reserve pooling, whatever its shortcomings, has two principal advantages. Reserve pooling reduces the economic costs of accumulating reserves; countries pooling their reserves do not have to direct their policies toward running such large current account surpluses and in effect transfer real resources to accumulate, via official intervention in their foreign exchange markets, liabilities of other countries that yield low rates of financial return. Reserve pooling reduces the real resource cost of access to reserves. Reserve pooling also potentially economizes on the net financial costs of holding reserves. The earnings on those reserves may be lower than earnings on alternative foreign assets or the fiscal costs of sterilizing reserve increases.

It would be wrong to say that the authorities in the Asian region do not understand these arguments. It would appear to be correct to say that to date those arguments have not proved to be overwhelmingly effective in modifying policy behavior. There has been a correct diagnosis, but the policy actions have not followed the script. In this area, the Asian authorities have two alternative courses of policy coordination. First, as discussed earlier, they could adopt a purely regional approach, but the European experience suggests this approach ultimately provides insufficient financing. Second, they could promote the adoption of global reserve pooling mechanisms, for example, via increasing the relative role of special drawing rights (SDR) in the international monetary system.

With respect to the latter approach, Asian authorities have expressed considerable enthusiasm for regular SDR allocations, but they seem unwilling to embrace the type of *quid pro quo* that would make such an approach attractive to other countries. The necessary *quid pro quo* would be a firm, enforceable commitment to slow the pace of their reserve accumulation as I suggested in Truman (2010b). The central point in the context of Asian regional policy coordination, however, is that the pursuit of regional interests with respect to reducing the costs of reserve accumulation via reserve pooling involves policy coordination external to the region rather than exclusively internal to the region.

One related area where the regional authorities could coordinate their reserve management policies and at the same time have considerable impact outside their region is with respect to transparency. Greater transparency in this area would yield a dividend to global and regional financial stability by removing some of the uncertainty around the management of international

reserves. As of the middle of 2011, Asian economies (developing Asia, the newly industrialized Asian economies, and the traditional advanced economies in Asia—Australia, Japan, and New Zealand) held well over half of total international reserves with gold valued at SDR 35 per ounce: \$6.5 trillion out of the global total of \$10.6 trillion. Consequently, it is understandable that market participants and authorities in other countries are nervous about how Asian countries are deploying their reserves in terms of the currency composition of their holdings and the types of assets they hold in each currency.

A few Asian economies, including Australia, Hong Kong, New Zealand, and the Philippines, provide some information on the currency composition of their reserves as is suggested, but not required, by the international reserves and foreign currency liquidity template (Kester 2001), which is part of the IMF's special reserve diversification standard. However, the "reserves template," as it is often called, is badly in need not only of acquiring more voluntary participants but also of updating. Those Asian countries that do not now voluntarily provide the IMF with confidential reports on their reserves for release by the IMF on a consolidated basis in its Currency Composition of Official Foreign Exchange Reserves (COFER) should do so. At present, slightly more than 50 percent of foreign exchange reserve holdings are included in these data. That share has been steadily declining because of rapid growth in the reserve holdings of a number of Asian countries that do not participate, starting with China.

The Asian economies also could contribute to a reform effort in this area, for example in the context of the upcoming review of the data provision by members to the IMF, which was promised in response to the IMF's 2011 triennial surveillance review (IMF 2011d). Such an initiative would help to reduce some of the potential tensions associated with their reserve management practices. No doubt those policies are responsible, but other countries and the general public have no way of verifying that presumption.

I conclude from this discussion of Asian regional policy coordination with respect to reserve management policies that the problems are incompletely identified, the diagnoses are imperfect, and the policy actions are not fully adequate.

## **6. Coordination of Crisis Management Policies**

One reason why countries accumulate international reserves is for use in a possible crisis. Unfortunately, the evidence is that countries are more reluctant to use their reserves in a crisis than to accumulate them before the crisis, apparently for fear that a rapid drawdown of their reserves will signal that the country is in greater distress than the authorities think is the case.

Korea during the global financial crisis is a case in point. In 2008, Korea's reserves declined 24 percent over eight months, from \$264 billion in March to \$200 billion in November. But rather than rely more heavily on its international reserves, Korea sought to establish swap arrangements with its Asian neighbors as well as with the Federal Reserve System. After Korea gained access to the Federal Reserve swap network in October 2008, Korea's reserves began to rise, recovering to \$292 billion by the end of 2010. The Korean authorities were motivated, in part, it is widely believed, by a desire to avoid the stigma of going back to the IMF while there remained bitter political memories of Korea's involvement with the IMF during the Asian financial crises. Therefore, Korea did not take advantage of the flexible credit line mechanism when it was established by the IMF in March 2009. Interestingly, Korea also did not draw on the Chiang Mai Initiative, which then consisted of a set of bilateral swap arrangements, reportedly because it did not want to suffer the stigma of being the first country to use that mechanism.

Korean concerns about stigma and the IMF are extreme and troubling. Excessive concerns about stigma on the one hand and excessive concerns about moral hazard on the other have the potential to paralyze constructive international monetary cooperation with respect to the scale of international financial assistance available to a country in crisis. The problem of stigma has been misidentified. Nevertheless, Asian concerns about the mix of the amount of required adjustment and the amount of available financing during the Asian financial crises are a reality, and they have some merit.<sup>36</sup> There was an issue of the scale of financing. At the time, arguments about inadequate financing and policies that were too tough as a consequence were used by advocates of the creation of an Asian Monetary Fund (AMF). The AMF was not established, in part, because there was insufficient support for such an institution within Asia, and it could not have been put in place in the relevant timeframe to be helpful, which of course was weeks. The AMF also was not established because many authorities outside the region did not think that the world would be better off with a large free-standing institution that applied economic and financial standards of adjustment to countries in Asia that differed from those applied elsewhere in the world. I was one of those with that view. The diagnosis and recommendations for action did not match, and the AMF proposal was not supported by effective extraregional policy coordination actions.

Instead of the AMF, the CMI was established after the crisis. It has now spawned the CMIM. Those mechanisms incorporate at least in principle two key elements: the need for a supporting surveillance process and the fact that Asia, despite its apparent plethora of international reserves, cannot go it alone

financially. Links to international arrangements are essential. One can debate the nature of those links. Henning (2011) advocates a rather liberal approach. Goldstein (2011) cautions that the IMF must remain in the driver's seat, supplying the bulk of any financing so that it can insist upon applying a high and consistent standard of economic and financial reform should the Fund be called upon to assist a member country. McKay, Volz, and Wölfinger (2011) conclude that, from the standpoint of the stability of the international monetary system, a regional financial arrangement must not undercut IMF conditionality, which promotes rigorous economic management and guards against lax lending requirements, in the name of a competition in ideas that undermine the value to the system of the associated public goods. If that value is undercut, ultimately the value to the region will be cut as well.

Some observers still advocate the AMF approach for Asia, building on the CMIM and severing any links to the IMF.<sup>37</sup> Others, including myself, observe that the European sovereign debt crisis has confirmed that regions that attempt to go it alone in terms of financial support mechanisms, ongoing surveillance, and the design of conditional lending programs ultimately will reach a dead end and will need to be bailed out.

As noted earlier, the G-20 principles for cooperation between the IMF and regional financial arrangements (G-20 2011c) address the balance between regional and global approaches to providing financial assistance. They fail to go beyond the recognition that competition in laxity with respect to policy conditions on lending and facility shopping should be discouraged, which is one of the Henning (2011) principles.<sup>38</sup> Again, the need for cooperation is recognized but not operationalized.

It is increasingly appreciated that policy coordination in the management of financial crises must have a global dimension if it is to be effective. Regional policy coordination can play a role, however, in promoting global crisis management responses as well as the development of crisis management instruments. The advocacy by Korea and other countries in emerging and developing Asia for a more comprehensive global financial safety net has advanced that debate, even though not everyone is fully satisfied with the results that have been achieved to date. There remains a strong case for putting in place a mechanism for the IMF to offer financial assistance to countries caught up in a global financial crisis in which they are not prime perpetrators as long as their policies are otherwise strong, in other words responding to truly external shocks.<sup>39</sup> We have learned that it is not only the low-income countries that are susceptible to external shocks that can be seriously disruptive, but more advanced countries as well. In particular, if we do not want individual countries to continue to build

huge holdings of international reserves or to erect barriers to trade or financial flows, there is a need to develop common support mechanisms. In this area, the identification of a problem is not fully agreed upon, the diagnosis of the causes is not fully shared, and therefore action has been incomplete.

Going forward, one can hope that regional concerns and advocacy will help to push the multilateral institutions with their broader memberships to adopt approaches that they might not otherwise seriously consider. A particular area of interest and concern involves the stability of financial institutions and financial systems. During the global financial crisis, the provision by the Federal Reserve of financial support in U.S. dollars to foreign financial institutions through their home country central banks was particularly effective in stemming contagion. The amount outstanding reached almost \$600 billion at the end of 2008, but the cumulative amounts were much larger, taking into account repayments and new drawings.

I have advocated (Truman 2010a) an amendment of the IMF Articles of Agreement that would authorize the IMF temporarily to swap SDR with the central banks that issue the international currencies included in the SDR basket for their currencies. Those currencies would be lent by the IMF to other central banks specifically to support their financial institutions. This proposal has three advantages: the mechanism would (1) temporarily augment the IMF's financial resources and help to centralize this type of lending in the IMF; (2) permit the issuing central banks to use the SDR by subsequently swapping them to obtain foreign currencies if they need to offset unwelcome exchange rate depreciation pressures resulting from the liquidity support operations; (3) hopefully limit somewhat the precautionary demand for increases in international reserves, but as discussed earlier, that is more of a hope than an assured result.

It is not necessary to create such an elaborate mechanism. Another possibility would be an institutionalized global swap network along the lines of the ad hoc arrangements that were used during the global financial crisis and have been again put in place during the European sovereign debt crisis. Some central bankers resist this type of proposal. They argue that permanent arrangements contribute to moral hazard behavior on the part of governments and private-sector banks. To this argument, I would respond that the crisis alternative has been much worse, and the system has been forced to respond eventually in any case. There are advantages to reducing uncertainty *ex ante*.

A second argument that one hears from central bankers is that they do not want to be commanded to engage in lending to other central banks by the IMF, which is an institution largely dominated by finance ministries and, therefore, inherently more political. This argument also should be countered. First, there

is an advantage to a national central bank from having a multilateral organization, such as the IMF, declare that the global situation demands global cooperative solutions. This provides a degree of political cover from domestic critics of helping other countries. Second, a global swap network could be set up in which there were, in effect, three keys. One would be operated by the IMF, declaring a global need. The second would be operated by the central banks as a group, agreeing that there was such a need. The third would be operated by each individual central bank by deciding to respond to the actions of the IMF and the central banks as a group by agreeing to a specific swap operation. Would national central banks come under pressure to use their third key? Certainly, but those pressures would be there in any case. A structured approach would help to identify those countries that were more deserving from those that were less deserving.

It is again important to consider both the broader global safety net proposals and the narrower global swap net proposals in the context of Asian regional policy coordination. The Asian region is usually open to the global economy and increasingly also to the global financial system. That is a manifestation of Asia's increasing importance in the global economy and financial system. This integration requires policy coordination, but such coordination will be most effective if it operates at two levels: the regional level, in which common concerns may be articulated and proposals may be developed, and the interregional or multilateral level, in which broad support can be mobilized to address concerns affecting much of the world and to establish mechanisms serving the system as a whole.

## **7. Concluding Observations**

I have argued in this paper that the purpose of Asian regional economic policy coordination should be to promote economic growth and financial stability in the region. In pursuing that objective, Asian authorities should seek to complement, rather than substitute for, global policy coordination. These conclusions are supported by four broad themes.

First, differences in the economic size and the stage of economic development of countries within Asia will condition any policy coordination in Asia. That process will be particularly demanding whether directed at developments within the region itself or toward the rest of the world. It follows that Asian authorities should not overpromise what they can achieve via regional policy coordination.

Second, the examination in this paper of three areas of actual or potential Asian regional policy coordination—macroeconomic policies, reserve

management, and crisis management—reveals that the identification of the problem is often incomplete, the diagnosis often is not broadly shared, and the policy responses are inadequate. These challenges are not unique to policy coordination within Asia, but they point to the need to conduct these activities in a broader global context to increase the probability of success.

Third, the dominant lesson from the European experience in their current crisis is that regions should not try to divorce themselves from the rest of the world in terms of economic policy surveillance, external financial support, or policy coordination.

Fourth, Asia has a central role to play in global policy coordination. The major Asian economies are already active participants, which further conditions the extent and nature of such activities within the region. Nevertheless, Asian regional policy coordination can contribute both to global policy coordination and to the advancement of the Asian century if their regional approach to policy coordination is based on the principle of open regionalism rather than Asian separateness.

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## NOTES

1 Wikipedia traces the origins of this phrase to a 1985 hearing of the U.S. Senate Committee on Foreign Relations, as well as to a 1988 meeting between China’s leader, Deng Xiaoping, and India’s Prime Minister, Rajiv Gandhi.

2 In 2010, these seven countries accounted for 78 percent of Asia’s population and 87 percent of Asia’s GDP. The Asian century scenario projects that these shares will be roughly maintained through 2050, and that the GDP of these countries will then compose 45 percent of global GDP (ADB 2011, Executive Summary, p. 5).

3 Open regionalism is a term conventionally employed with respect to trade agreements such as the Asia Pacific Economic Cooperation Bogor Declaration of 1994, in which benefits to partners are automatically extended to nonpartners or the nonpartners are free to join (Bergsten 1997). In this paper, I use the term more broadly to encompass all forms of

economic and financial processes and agreements and to point to agreements that promote the global as well as regional benefits.

**4** The discussion in this section is based upon Truman (forthcoming).

**5** Of course there were the Cassandras that warned of impending crisis well before 2007, but in order to instigate a policy coordination process, such warnings have to be heard and accepted broadly enough for the policy authorities, at a minimum, to consider whether a problem has been identified.

**6** The Independent Evaluation Office of the International Monetary Fund issued a comprehensive report and supporting documents on how the IMF staff and management missed signals of crisis (IMF-IEO 2011).

**7** The opening paragraphs of the Declaration of the Washington Summit on Financial Markets and the World Economy on November 15, 2008 (G-20 2008) read:

We, the Leaders of the Group of Twenty, held an initial meeting in Washington on November 15, 2008, amid serious challenges to the world economy and financial markets. We are determined to enhance our cooperation and work together to restore global growth and achieve needed reforms in the world's financial systems. . . .

During a period of strong global growth, growing capital flows, and prolonged stability earlier this decade, market participants sought higher yields without an adequate appreciation of the risks and failed to exercise proper due diligence. At the same time, weak underwriting standards, unsound risk management practices, increasingly complex and opaque financial products, and consequent excessive leverage combined to create vulnerabilities in the system. Policy-makers, regulators and supervisors, in some advanced countries, did not adequately appreciate and address the risks building up in financial markets, keep pace with financial innovation, or take into account the systemic ramifications of domestic regulatory actions.

Major underlying factors to the current situation were, among others, inconsistent and insufficiently coordinated macroeconomic policies, inadequate structural reforms, which led to unsustainable global macroeconomic outcomes. These developments, together, contributed to excesses and ultimately resulted in severe market disruption.

**8** These two questions were central in the considerations of policymakers in the decade following the bursting of the Japanese real estate and equity market bubbles in Japan in the late 1980s and to the handling of the Asian financial crises at the end of the 1990s.

**9** The G-5 countries are Germany, France, Japan, the United Kingdom, and the United States. The G-7 meets at both the level of finance ministers and central bank governors and the level of leaders. Russia joins the leaders to make the G-8, but the focus of that group primarily has been on issues other than economic policy coordination.

**10** The Chiang Mai Initiative Multilateralization (CMIM) also includes Hong Kong as a participant.

**11** In addition to the Asian members of the G-20 that are members of the BCBS and FSB, Hong Kong and Singapore also participate in those quasi-formal bodies.

**12** Henning and Khan (2011) emphasize Asia's underrepresentation in global governance today, but at the same time propose that Asian countries should strive to present a common view in international forums, including representing the views of Asian nonmembers of those groups.

**13** For historical reasons Russia is not a member of the ADB. Eight republics of the former Soviet Union are members of the ADB. Russia, of course, is a member of APEC and attends the East Asian Summit.

**14** The ADB and IMF classifications of developing Asia, as well as the World Bank's East Asia and Pacific group, include a number of small Pacific island nations as well as a number of large nations of this type, such as Indonesia and the Philippines.

**15** The 13 economies are Bangladesh, China, Hong Kong, India, Indonesia, Korea, Malaysia, Pakistan, the Philippines, Singapore, Taiwan, Thailand, and Vietnam.

**16** I am particularly grateful to my colleague Joseph Gagnon for his guidance on this exercise and to Sarah Bagnall for performing the calculations.

**17** The seven-country euro-area core group consists of Austria, Belgium, Denmark, France, Germany, Luxembourg, and the Netherlands. Gagnon also considers a 10-country group consisting of the 11 original members of the euro area less Luxembourg and a 13-country group of the 11 original members plus Denmark and Greece.

**18** The three Asian regions are the core countries in the ASEAN group (Indonesia, Malaysia, the Philippines, Singapore, Thailand, and for some tests Vietnam); the ASEAN group plus the three countries that are also part of the Chiang Mai Initiative (China, Japan, and Korea); and the ASEAN+6 group (including Australia, New Zealand, and in the inflation and growth comparisons India). The exclusion of Vietnam from the inflation comparisons is due to its high inflation rate during the 1985–96 period, and the exclusion of India from the unemployment comparisons is due to the lack of data for India on that variable.

**19** For this purpose we use PPP-based GDP as weights.

**20** The Asian data are drawn from the September 2011 *World Economic Outlook Database*. See Gagnon (2011) for the data sources he employed.

**21** Table 1, as well as Tables 2 and 3, reports three standard deviations. The first is the standard deviation of the observations on weighted average for the region. The second is the standard deviation of the average for each country across the region. The third is the average of the standard deviations for each country within the region. See the footnotes to the tables.

**22** We ran these regressions for 1999–2007 to see whether the results appeared to be influenced by the effects of the global financial crisis. There did not appear to be any influence, and we report the results for the longer sample period.

**23** The availability of data forced us to start with the year 1985 for the results reported in Table 1 and the following two tables, and we omitted 1997–98 because those data were likely to be strongly influenced by the Asian financial crises, which tended to affect all Asian economies in a similar fashion.

**24** The region-wide standard deviation has increased for the ASEAN+3 and the ASEAN+6 groups.

**25** It can be reasonably argued that within Europe there was not one dominant group of countries when the Treaty of Paris was signed in 1951 establishing the six-country European Coal and Steel Community of France, Germany, Italy and the Benelux countries. That group became the nucleus of the European Union, but its predecessor, the European Common Market, was rivaled by the European Free Trade Area. Even today not all major countries in Europe (Switzerland and Norway, in particular) are members of the European Union. The European Union itself is split between those countries that are part of the euro area and those that are not. Nevertheless, the European Union and its euro-area subgroup are a much more compatible group of countries in terms of stages of development than any of the candidate groups in Asia.

**26** As of late October 2011, the baseline forecast appeared to be optimistic as it assumed that Europe would pull out of its economic and financial difficulties and that the U.S. administration would receive Congressional approval of a substantial proportion of its request to blunt the impact of a prospective immediate U.S. fiscal contraction via its proposed “jobs” legislation.

**27** The Public Information Notice of the Board’s discussion (IMF 2011b) was released on October 21. The Bank of Indonesia cut the rate a further 50 basis points to 6 percent on November 10.

**28** One reason for these divergent foreign exchange movements was that the U.S. dollar depreciated 9.6 percent over this period. Following the abrupt change in global financial market sentiment at the end of July, the situation reversed, the appreciation of the renminbi continued albeit at a slower pace, the dollar appreciated, and most of the other Asian currencies, aside from the Japanese yen, depreciated sharply against the dollar, the renminbi, and the yen.

**29** I discuss these issues in Truman (2010a, b).

**30** One difference between the two tables is that the change in reserves in Table 6 is a true flow concept as recorded in the international transactions accounts of these countries, with the exception of Malaysia and Taiwan, as indicated in the footnotes. The data in Table 5 are derived from the change in the stock of reserves, which includes valuation effects.

**31** I look more closely at this argument below.

**32** See Chan et al. (2011) for a summary, as well as G-20 (2011a).

**33** See the discussion in Goyal et al. (2011).

**34** The estimated effect on the Asian current account balance is 1 percent of GDP if the Asian region moved all the way to the norm for financial integration for the world as a whole, which would be quite a move and would take some time.

**35** Korea and Singapore were not included in the sample of emerging market countries because the IMF classifies them as advanced countries.

**36** On the other hand, I have never seen much merit in criticisms of the broad content of the adjustment measures required of Asian countries during the crises. Indeed, those who complain now about that content face a logical problem when they simultaneously argue that it is the improved economic, financial, supervisory, and regulatory policies adopted in Asia that helped to shield and support Asian economies somewhat from the virulence of the global financial crisis.

**37** Two examples of such advocacy are Kawai (2009) and Sussangkarn (2010).

**38** The principles do state that the regional financial arrangements must respect the preferred creditor status of the IMF, which also is one of the Henning (2011) principles.

**39** The G-20 leaders in Cannes expressed support for a modest expansion of the IMF lending instruments to include a new IMF precautionary and liquidity line that would be available on a case-by-case basis to provide short-term liquidity to countries with strong policies and fundamentals that are facing exogenous shocks.

## COMMENTARY

# Asian Regional Policy Coordination

Dong He

### Introduction

Let me first thank the organizers for inviting me to be part of this very important and interesting conference, and for giving me the opportunity to discuss Ted Truman's paper on Asian regional policy coordination. I hope my experience in the Executives' Meeting of East Asia-Pacific Central Banks (EMEAP) surveillance process will offer a useful perspective.<sup>1</sup>

Ted Truman's paper provides a comprehensive framework for a discussion of international coordination of economic policies. He argues that effective international coordination involves five key elements: identification, a shared diagnosis, agreed policy actions, scope for midcourse policy corrections, and learning lessons to prepare better for the future. Following this framework and examining three areas of actual or potential Asian policy coordination—macro-economic policies, reserve management, and crisis management—he concludes that in Asia the identification of the problem is often incomplete, the diagnosis often is not broadly shared, and the policy responses are inadequate. Based on this assessment, Ted argues that Asian authorities should not overpromise what they can achieve via regional policy coordination, and warns against Asian exceptionalism, the view that Asia can and should be insulated if not disconnected from global policy coordination processes and their requirements.

### Internationalism vs. Regionalism

I agree with Ted that Asian policymakers should not overpromise what they can achieve via regional policy coordination, given the diverse nature of the regional economies. At the same time, I am surprised by his view that the main risk against more effective regional policy coordination in Asia is a violation of the principle of open regionalism and an overemphasis of Asian separateness. The paper does not provide any evidence that Asian policymakers have shown tendencies of Asian exceptionalism or voiced such views. If anything, Asian policymakers appear to have erred on the side of excessive internationalism. A prime example of Asia's open regionalism is the link of the Chiang Mai Initiative to International Monetary Fund (IMF) programs.

I would argue that the risk of an overemphasis of Asian separateness is very small. This is based on what I perceive as the consensus view among Asian policymakers about the economic structure of the Asian region and its relationship with other parts of the world, particularly the major advanced economies. The consensus view articulated by Asian policymakers can be summarized as follows: While intraregional trade of goods and services for final consumption and capital flows within Asia are set to grow tremendously in the decade ahead, that process is likely to complement, rather than substitute for, the global process of further trade and financial integration. Thus, continued prosperity in Asia very much depends on continued healthy development of the global economy.

The approach to regional policy coordination is also conditioned by the characteristics of Asian business cycle synchronization. Recent work that we have done at the Hong Kong Institute for Monetary Research shows that output fluctuations in Asia have remained less synchronized with global factors than those in the industrial countries, but the role of global factors has intensified over the past 15 years for most of the economies in the region. Emerging Asian economies cannot decouple completely from the advanced economies, even though they have sustained a strong and increasingly more important independent cycle among themselves (He and Liao 2011).

The characteristics of Asian business cycle synchronization, together with the basic world outlook of policymakers, jointly determine that open regionalism is the most likely approach to regional policy coordination. However, the strength of Asian regionalism is likely to be a function of the willingness by the major advanced economies and global institutions to accommodate and engage the region. The incentive for the region to contribute actively to global policy coordination will be strengthened if Asia's representation in global institutions is considered fair and if its voices are heard, and its views are taken into account. Conversely, the incentive for Asia to be withdrawn from the global policy coordination process will be stronger if there is no *quid pro quo*. In other words, it takes two to tango.

Having said this, I think Ted is correct in pointing out that key issues remain to be resolved in setting up crisis management facilities both at the regional level and at the global level. Effectiveness of regional facilities such as the multilateralization of the Chiang Mai Initiative and bilateral swap lines between regional central banks remain to be tested. However, a stable and healthy international monetary system cannot be effectively sustained, and a global liquidity crisis cannot be effectively managed, without the support of central banks that issue major reserve currencies. In this sense, reserve currency issuing authorities bear a very large responsibility in ensuring global financial stability. It is

in their own interests to take into account the potential spillover effects of their policies on the rest of the world that heavily uses their currencies for trade and investments.

## **Coordination of Exchange Rate and Reserve Management Policies**

A central claim by Ted in discussing regional coordination of macroeconomic and reserve management policies is that policymakers in the region failed “to arrive at a common Asian regional diagnosis of individual current account positions and a collective current account position as well as to derive a coordinated set of policies based on that diagnosis.” As a result of this failure, Asian economies overaccumulate foreign reserves and contribute to global imbalances.

Ted points out two basic problems with policy coordination in Asia: “First, China’s exchange rate policy vis-à-vis the U.S. dollar conditions the exchange rate policies and exchange rate performance of its Asian neighbors, often adversely affecting their own external positions and exerting influences on their own domestic economies via spillovers from currency wars. Second, China’s exchange rate policy actually imparts greater volatility and instability to effective exchange rates in the region not only for China but also for its neighbors.” Ted attributes this failure to his observation that policymakers in the region “have problems . . . in speaking truth to neighbors as well as even greater problems in speaking truth to power.”

To paraphrase, Ted argues that China’s exchange rate policy is the root cause of the region’s failure to solve the problem of persistent current account surpluses, because other currencies do not want to appreciate faster than the renminbi lest their economies lose competitiveness vis-à-vis China in other developing markets. And this lack of policy coordination is because China is such a power that authorities in other regional economies dare not raise their concerns.

My first comment on this analysis is that it is not clear that central banks in the rest of Asia have intentionally managed their exchange rates to maintain stability vis-à-vis the renminbi. In Genberg and He (2009), we document that most regional central banks have adopted policy strategies in which domestic price stability is the principal objective of monetary policy, while monetary policy instruments remain rather heterogeneous. While monetary authorities do pay attention to the exchange rates of their currencies, foreign exchange interventions are primarily aimed at smoothing out excessive volatilities; in general, they are not used to target exchange rate levels.

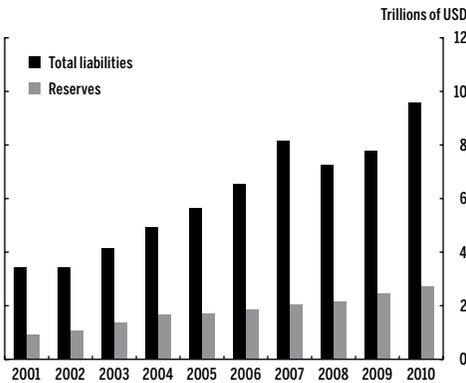
In fact, even though the stock of foreign reserves has continued to rise, the scale of reserve accumulation has been fairly stable relative to the size of

capital flows to the region. Figures 1A and 1B show that for non-China East Asia as a group, although foreign reserves increased from US\$910 billion in 2001 to US\$2.7 trillion in 2010, relative to the stock of total external liabilities, the ratio fluctuated mildly around a period average of 30 percent. The message of these charts is that foreign exchange interventions by most regional monetary authorities have been primarily for risk management purposes, aimed at maintaining a steady liquidity buffer against potential capital outflows.

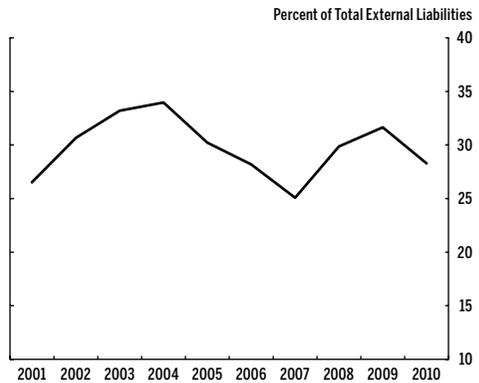
In any case, the spillover effect from the renminbi exchange rate policy on the rest of the region is not obvious. This may have been an important reason why China's neighbors have not coordinated to complain about it, not that they have problems speaking truth to power. The emphasis on exchange rate coordination hinges on the assumption that China is a major competitor with the rest of the Asian economies. But the trade structure among the Asian economies is diverse, including trade that is oriented for domestic use within the region, processing trade through China, as well as trade with economies outside the region. Thus, appreciation and depreciation against the renminbi would have different consequences for these different forms of trade.

FIGURE 1  
**Reserve Accumulation in East Asia**  
(Excluding China)

**A Foreign Reserves and Total External Liabilities**



**B Foreign Reserves**

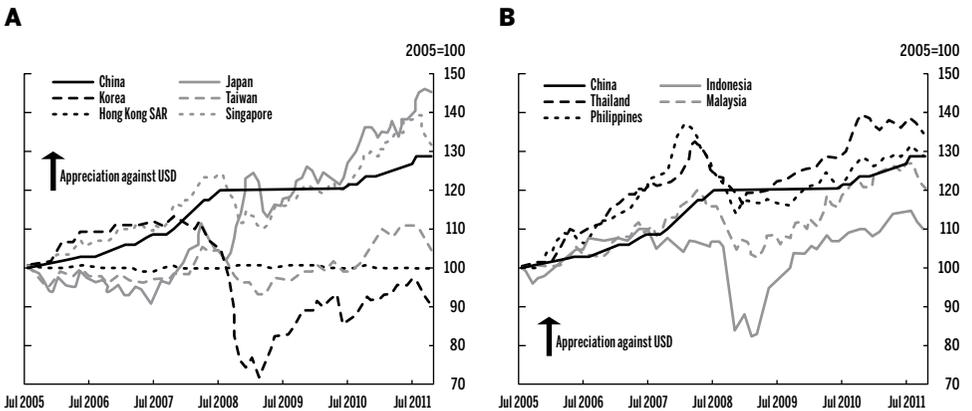


**Sources:** For 2000–07, author compilation using updated and extended version of the External Wealth of Nations Mark II database developed by Lane and Milesi-Ferretti (2007); for 2008–10, author compilation using IIP data of national authorities.

**Notes:** Includes Hong Kong, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand. Total liabilities = foreign direct investment liabilities + portfolio equity liabilities + debt liabilities + derivatives liabilities.

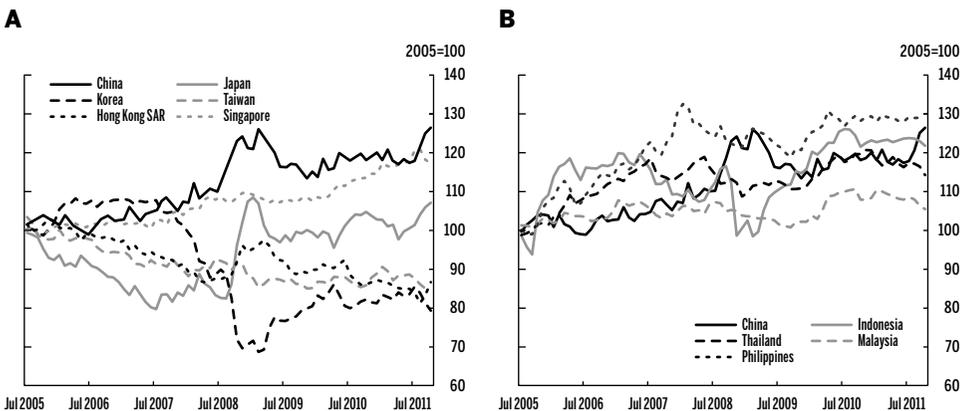
Second, Ted's argument is in fact counterfactual in that it does not recognize that there has been significant inter- as well as intraregional exchange rate adjustments in the past six years (Figures 2 and 3). Since July 2005, when China announced a more flexible exchange rate regime, the renminbi has appreciated by 30 percent against the U.S. dollar and by 27 percent in real effective terms, according to the Bank for International Settlements. Of course, it is possible to argue that adjustments should have been even larger in view of the remaining

**FIGURE 2**  
**Nominal Exchange Rates**  
 Bilateral Exchange Rates vis-à-vis the U.S. Dollar



Sources: Bloomberg and author's calculations.

**FIGURE 3**  
**Real Effective Exchange Rates**



Source: Bank for International Settlements.

global current account imbalances, but this presumes that nominal exchange rate adjustments are the most appropriate vehicle for dealing with such imbalances. This presumption is the second shortcoming of the coordination failure argument. While real exchange rate adjustments typically accompany current account adjustments, it is generally believed that changes in nominal exchange rates can influence real exchange rates only temporarily.

In fact, China's current account surpluses are attributable to a set of structural factors and institutions embedded in the economy. For all these reasons, the burden of adjustment cannot be shouldered alone by the nominal exchange rate. Undertaking a comprehensive analysis of the underlying causes of China's external imbalances, a recent IMF report shows that a wide variety of structural factors, such as income distribution across the corporate, government, and household sectors, incomplete social welfare reforms, and factor price distortions, systematically encouraged savings in China (IMF 2011). Research by Professor Shang-Jin Wei and his coauthors shows that population structure and policies can account for a significant part of the actual increase in the household saving rate since the early 1990s (see Wei and Zhang 2011). While continued flexibility of the renminbi exchange rate would certainly need to be part of the solution, it alone is unlikely to be effective in reducing the external imbalances.

## Conclusions

To conclude, I believe that the progress in regional policy coordination in Asia is commensurate with the degree of trade and financial market integration within the region. Asian policymakers are pragmatic. They coordinate if they see the need for it. The process of economic policy coordination in Asia has not been driven by political objectives, which appear to have been the case in some other parts of the world. Having said this, I believe that Asian policymakers will have stronger incentives to coordinate policies, as regional economic integration is set to deepen and policy spillovers become more widespread. However, rather than focusing on coordination on the setting of policy instruments such as the exchange rate, Asian policymakers are focusing on developing more liquid financial markets and fostering institutions that could be the basis of deeper forms of cooperation in the longer-term future.

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## NOTE

1 Founded in 1991, EMEAP is a cooperative organization of central banks and monetary authorities in the East Asia and Pacific region. Its primary objective is to strengthen the cooperative relationship among its members. It comprises the central banks and monetary authorities of the following 11 economies: Australia, Mainland China, Hong Kong SAR, Indonesia, Japan, Korea, Malaysia, New Zealand, the Philippines, Singapore, and Thailand.



**GENERAL DISCUSSION**  
**Asian Regional Policy Coordination**

**Chair: Barry Eichengreen**

**Mr. Eichengreen:** I want to ask about the obvious disagreement between the two speakers in this session about the question of speaking the truth to power. It is relevant to the scope of surveillance in the region. Long-time observers of the region talk about the ASEAN way, which is the tradition of non-interference in neighbor's affairs and not criticizing the policies of other countries in the region. Is the ASEAN way still the way of the region? Is there still a reluctance to interfere, and if so, is it a serious obstacle to the kind of firm surveillance that would be required for real reserve pooling and policy coordination?

**Mr. Truman:** In the paper I talk about two particular cases that you might think about as following the ASEAN way. One is Vietnam, which has real problems at the moment. The question I raise is, to what extent have the informal processes and coordination that exist within Asia—ASEAN and broader—addressed that problem? It would appear from the outside that the principle influence over Vietnam's policies over the last several years came from the traditional source of the IMF, notwithstanding the fact that Vietnam actually has a somewhat stand-off view of the Fund on the financial side. The other case, which is even more interesting and which may cut the other way, is Indonesia. The executive board and staff of the Fund thought the Bank of Indonesia should be ready to raise interest rates because inflation was a problem, and since then they've lowered interest rates by 75 basis points. So this shows the conflict within the region. My sense is, and I think the Europeans would agree, that starting in the 1970s, Europe increasingly took surveillance into their own hands, and both surveillance and financing were provided within the European context. It worked for three decades, but in the end the outside had to come in, with surveillance and programs and financing. So it is very difficult for neighbors to speak truth even when it's not a question of power. That's one advantage of having outside voices. But my colleague from Hong Kong probably knows more about this than I do. I'm only an outside observer.

**Mr. He:** In my personal experience with the EMEAP (Executive Meeting of East Asia-Pacific Central Banks) surveillance process, there are usually frank

discussions among the senior officials of the central banks. In fact, if you read the monetary reports of EMEAP central banks—of course they're not public documents—they usually are more blunt than the assessments by international financial institutions such as the IMF. These reports focus mostly on regional issues and common vulnerabilities in the region. But I do agree with Ted that, in the case of individual members of ASEAN such as Vietnam, outside analysis by the IMF is essential. That's why I have continued to emphasize that independent surveillance by international financial institutions is still very important for regional coordination.

**Mr. Aizenman:** I enjoyed listening to Ted's presentation. If I followed, you're equating the integration in Asia to that in Europe. My reading is that Europe is now closer to being a zero contributor to global imbalances. This contrasts with Asia, which you mentioned has a current account surplus of \$550 billion with the rest of the world. This is a significant figure, particularly when the global economy is facing recessionary pressures and is looking for more demand for world output to come from Asia. This leads to another point, that there's a tendency to focus too much on exchange rates. I think the current tension over appropriate exchange rate levels may be related to concerns that some countries are seeking to subsidize the cost of capital or are not sufficiently protecting intellectual property rights. I'm aware that these factors may not be the appropriate focus of a Fed conference. But at times of recessionary pressure and unemployment in the United States exceeding 9 percent, such real-side factors may dominate future discussions of global coordination as much as or maybe more than exchange rate economics.

**Mr. Truman:** Two points. First, I was using the figures about the global imbalances to talk about whether capital is flowing north or south, so I was trying to make an analytical point more than assessing Asia's contribution to global imbalances. That relates to your question about exchange rates and comments on my paper. Second, no offense to Shang-Jin's work, but I do think nominal exchange rates have something to do with the story. I've lived long enough to have gone through this before. We debated in the 1960s and 1970s whether nominal exchange rates were a contributing factor to the small imbalances of that period. I think the vast evidence proves that nominal exchange rates do matter. They're not the only factor—they can be wiped out, for example by inflation on the depreciation side or deflation on the appreciation side. But nominal exchange rates are a very efficient means of changing the price between traded and nontraded goods, and that is part of the adjustment process both in the countries that are depreciating and those that are appreciating. Some of it will

be offset, but the overwhelming evidence suggests that exchange rates matter. Even in the case of China, there are many papers that show things that are different from Shang-Jin's. For example, my colleague Bill Cline has a paper that shows very convincingly that exchange rates matter.

**Mr. Eichengreen:** In the interest of continuity, I'll turn to Shang-Jin.

**Mr. Wei:** I reiterate my view that beyond a reasonable horizon the nominal exchange rates may not play much of a role for real exchange rate adjustment. I want to turn to a different point. There's a lot of talk about global imbalances, without really making a distinction that some imbalances are potentially good and others are potentially inefficient. Therefore some imbalances need to be corrected, others do not. For example, efficient trade reforms, such as China World Trade Organization accession, may benefit other countries as well as China itself. These reforms have contributed to the sizable Chinese current account surpluses that we see now. Why? Some people first thought that China's WTO accession meant unilaterally reduced barriers on imports that would lead to a reduction in the current account surplus. However, that's only a partial equilibrium intuition. In general equilibrium, the reforms reduced the price of goods in which China has a comparative disadvantage—capital intensive goods. According to the Stolper-Samuelson effect, this leads to a reduction in returns to capital, and a way for China to restore equilibrium is to export capital by running current account surpluses. In fact, part of China's current account surplus can be attributed to this channel. I estimate that it accounts for about 20 to 30 percent of the surplus. That's efficient; you don't want to do something to block that access. There are obviously inefficient current account imbalances that need correction, but if underlying structural factors are the cause, it's not obvious that the nominal exchange rate is the socially best way to do the adjustment, so that's the point I want to make.

**Mr. Spiegel:** I'd like to revisit the question of regional cooperation in encouraging the development of local financial markets and in particular bond markets. Prior to the global financial crisis, there was a lot of motivation for the ABMI (Asian Bond Markets Initiative) and the ADF (Asian Development Fund), along the lines of the concept that Asia as a region was overbanked. This was based on comparing Asia with Latin America or various benchmarks. But during the crisis, Asia as a region performed relatively well, partly because of the nature of its financial system. Do the speakers think that these initiatives are now anachronistic, or is there still scope for government intervention in encouraging the

development of local currency bond markets and other regional financial initiatives in the region?

**Mr. He:** That's a very important question. The idea that bond markets will provide a spare tire, according to Mr. Greenspan, is very popular in policy circles. But I have some doubts about that. I think the financial crisis experience shows that when the banking system doesn't work, bond markets probably would not independently provide a source of finance either. That doesn't mean that these initiatives have disappeared in Asia. The idea is still to encourage diverse forces of financial intermediation. At the moment the ADF funds are not being spent, but there are initiatives to standardize payment and settlement systems. If the markets are small, that's not necessarily a stabilizing force, so there may be rationales for using off-shore markets to swap back into local currencies. But how do you manage the financial stability risks associated with currency mismatches, are these hedging instruments effective, etc.? So I think all these issues are being researched, and whether that calls for policy intervention has also been discussed in various forums. I agree with you, it is very difficult to develop bond markets, particularly ones that are large enough and liquid enough. But I think the development of renminbi markets is very promising because the renminbi is set to become a major currency in the region. There's a lot of regional interest in seeing more bond markets denominated in renminbi.

**Mr. Truman:** Three points. First, I do have something in my paper on the bond market development question. There are certain advantages related to financial market development, but they're not related so much to how the region relates to the world as a whole. Just developing a better financial market isn't going to reduce current account imbalances. Second, on Mr. He's comments. I'm glad he basically agreed with me and was reassuring on the basic proposition of the paper. Third, I talk in the paper about the responsibility of major countries that issue major international currencies. I don't like talking about issuing reserve currencies, because I think that's a misconception. I am an advocate of developing a global swap network, and I outline in the paper a way I think it could be done that might satisfy both the central banks who don't like being bossed around by the IMF and the finance ministries. I think more progress in that direction is appropriate. As long as we're going to have a range of international currencies, potentially the renminbi, there have to be some appropriate safeguards under which liquidity could be supplied by the central banks issuing those currencies when there's a crisis. Thank you.

# Global Imbalances and Global Liquidity

Pierre-Olivier Gourinchas

The financial crisis has entered a dangerous phase. I argue in this article that the retrenchment currently taking place in the European banking sector has broad implications for financial stability. More generally, I argue that the focus should be on “global liquidity imbalances,” rather than “global imbalances.” Global liquidity imbalances track the liquidity mismatch across countries and over time, which may or may not result in current account deficits and surpluses (that is, global imbalances).

## 1. Introduction

Starting a little more than three years ago, the world economy experienced a dramatic convulsion, the ripple effects of which are still with us. The years preceding the crisis were—as is often the case—accompanied by robust growth, low inflation, and a generally benign attitude towards the potential risks facing the global economy. Despite this generally complacent attitude, one such risk factor was widely debated by academics and policymakers at the time: the growing external deficits of the United States and the corresponding surpluses in other parts of the world, that is, the question of “global imbalances.”

The global financial crisis and its aftermath have thrown this issue into even sharper relief. In the years since the crisis, much attention has been devoted to the connection, if any, between global imbalances and the financial and economic meltdown that ensued.

A casual look at the evidence should convince anyone that the connection between external balances and the occurrence or severity of crises is likely to be subtle. For instance, the commonly shared pre-crisis worry that large external deficits would make the United States vulnerable to a sudden stop never materialized. While the U.S. current account deficit contracted from \$800 billion in 2006 to \$470 billion in 2010, U.S. funding rates remained low. In many

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other instances, however, current accounts clearly matter. Consider the three euro-zone countries currently under International Monetary Fund (IMF) programs.<sup>1</sup> All three were running current account deficits of around 6.5 percent of output on average between 2000 and 2007. Conversely, with an average current account surplus of 2.5 percent of output between 2000 and 2007, the group of emerging market and developing economies experienced a relatively mild crisis. Even within groups of countries, the evidence is more complex, and one is at pains to document a robust relationship between current account balances and crises.<sup>2</sup>

Perhaps even more elusive is the notion that global imbalances may have contributed to global financial instability. A commonly heard argument is that global imbalances depressed world interest rates, fueling a search for yield, increasing leverage, and triggering financial market instability. But if low real interest rates can conceivably be at the root of the recent financial instability, they need not be associated with a particular pattern of global imbalances. The latter reflect asymmetries in the cross-country pattern of savings and investments. In a globalized economy, the former is in principle determined by *global* savings and investment, not their geographic distribution. In other words, a given world real interest rate is equally consistent with large, small, or the absence of any current account imbalances.

Does it follow that global imbalances are unimportant, or unworthy of study? The answer to this question is a qualified “no.” First, as argued by Obstfeld and Rogoff (2010) in a very careful and nuanced account on this question—fittingly enough, presented at the inaugural edition of this conference in 2009—global imbalances and the 2008 financial crisis can be seen as the product of common causes. Among the causes emphasized by the authors are domestic economic policies, credit market distortions, and poorly supervised or understood financial innovation. In other words, *global* imbalances provide a useful lens on patterns of *domestic* imbalances that determine macroeconomic outcomes.

Second, current account reversals, when they happen, are always painful affairs. They require drastic adjustments both in relative prices and in patterns of demand. Domestic demand needs to shift away from traded towards nontraded sectors, while production needs to experience the reverse shift from nontraded towards the traded sector. Equivalently, national saving needs to rise and domestic investment needs to decline, a sure recipe for a decline in aggregate demand. These adjustments never happen costlessly.

Third, and this is the line I will pursue in this paper, current account balances provide a particularly useful warning sign when they adequately measure funding risks. Whether this is the case or not has changed dramatically in the

last 40 years, e.g., since the advent of the modern era of financial globalization in the early 1970s. This process has been accompanied by extremely rapid growth of *gross* external claims and liabilities. Nowadays, it is these gross external positions and in particular their maturity and currency structure that determine whether a country is vulnerable or not. In other words, rather than global imbalances, narrowly defined as current account deficits, it is *global liquidity imbalances*, defined as the cross-border mismatch between pledgeable assets and funding outlays, that matter. In some instances, as for the countries of the euro area now, current account balances accurately capture these risks. In many other cases they do not, and funding risks could materialize regardless of the current account balances. It follows that while the current account may still be a useful metric of external financial stress, its use should come with a robust *health warning* since it also fails to capture a growing share of episodes of financial stress. Nowhere was this more evident than for Europe as a whole during the recent financial crisis. As McGuire and von Peter (2009) and Shin (forthcoming) demonstrate, despite a current account close to balance, Europe experienced a sudden U.S. dollar shortage in 2007 and 2008 when wholesale dollar markets refused to roll over short-term dollar liabilities of European global banks. Understanding how the pattern of vulnerabilities has changed over time is therefore of paramount importance.

In short, the views presented here are in broad agreement with Obstfeld's excellent Ely lecture (Obstfeld 2012). Protracted current account imbalances should always be looked upon with a wary eye by policymakers as a potential symptom of deeper macroeconomic excesses. In addition, it is becoming increasingly important to monitor the financial and liquidity imbalances that are the main focus of this paper.

In the years since the crisis, both global imbalances and global liquidity patterns have shifted in important ways. Some rebalancing is clearly under way. According to the September 2011 World Economic Outlook, the current account deficit of the United States declined from  $-1.62$  percent of world output at its trough in 2006 to  $-0.75$  percent in 2010 and is expected to shrink further to  $-0.67$  in 2011. One might conclude from this evolution that the world economy is on a firmer footing, even if the rebalancing is incomplete and IMF statisticians forecast global imbalances to widen somewhat in coming years. I do not share this view: it overlooks the ways in which patterns of global liquidity have shifted in recent years. One of the most damaging consequences of the necessary deleveraging that accompanied the crisis has been a broad reclassification and repricing of liquid and information-insensitive assets into illiquid and information-sensitive ones. Information-sensitive assets suffer from asymmetric

information problems, especially adverse selection resulting in market shut-downs. The acute shortage in safe liquid transaction instruments that existed before the crisis has been *exacerbated* by the crisis. This fuels deleveraging, contaminates financial and public-sector balance sheets, and further amplifies the crisis. Even solvent institutions or sovereigns can find themselves suddenly in the crosshairs of the markets. As the scarcity of cross-border liquidity grows, it fuels additional precautionary demands: Households, the corporate sector, and the public sector try simultaneously to secure access to safe assets. Whether and how this liquidity imbalance gets resolved is critical for the stabilization of the world economy, regardless of the consolidation in current account imbalances achieved so far.

Of particular importance to the pattern of global financial risks will be the relative patterns of demand and supply of liquidity between the United States, Europe, and emerging market economies (EMEs), especially those arising from rapidly growing emerging Asian economies.

This article begins with a broad discussion of the pattern of global imbalances in the run-up to and the aftermath of the crisis. Since the topic has been covered extensively in the previous literature, I do not dwell on details, and rather focus on the relevant facts. Section 3 reviews when and how the concept of current account imbalances is useful from a theoretical perspective. A key focus will be on sudden stops, that is, the inability to roll over maturing liabilities. The aim of this section, borrowing from Calvo's (1998) important paper is to provide a discussion of *varieties of funding crisis*. A central conclusion is that, in a globalized financial environment, gross positions often provide a more accurate picture of funding risks than current account balances and calls for better measures of cross-border liquidity. Section 4 explores the current patterns of global liquidity imbalances and draws out the implications of the deleveraging process currently under way for the supply of liquidity and the stability of the financial system.

## 2. Global Imbalances

The literature contains many fine accounts of the evolution of global imbalances until the onset of the global financial crisis in 2008. I follow here Blanchard and Milesi-Ferretti (2009) and distinguish three phases.<sup>3</sup>

First, between the mid-1990s and 2001, the external deficits of the United States were largely driven by the consequences of the East Asian financial crisis of 1997, as well as the dot-com boom in the United States. Between 1996 and 1998, the current account of developing and newly industrialized Asian economies shifted from -0.12 percent to 0.39 percent of world output (see Table 1

and Figure 1). With the additional improvement of Japan's current account, whose economy was still mired in the aftermath of the 1997 banking crisis, the shift represents 0.69 percent of world output. At the same time, U.S. investment increased briskly, fueled by the high-technology boom and expectations of further increases in productivity growth, attracting substantial equity and direct investment flows. Consequently, between 1996 and 2001 the U.S. current account worsened by 0.83 percent of world output.

The second phase started with the dot-com crash of 2001 and lasted until 2005. While private foreign investor's enthusiasm for portfolio investment in the United States suffered a blow in the aftermath of the stock market collapse, this did not affect much U.S. current account imbalances, which deteriorated by a further 0.40 percent of world output. Instead, rapidly growing foreign official demand for U.S. assets more than replaced private net capital inflows, allowing U.S. current account deficits to keep growing from -1.24 percent of world output in 2001 to -1.64 percent in 2005. That period is also characterized by the growing importance of China and oil producing country surpluses. Between 2001 and 2005, China's external surplus increased from 0.05 percent to 0.29 percent of world output, while that of oil producing countries expanded even more from 0.26 to 0.89 percent.<sup>4</sup>

The third phase, from 2005 to 2008, is marked by the growing surpluses of China, from 0.29 percent to 0.67 percent of world output, and the continued large surpluses from oil and commodity producing countries. By 2008, the combined surpluses of these two groups of countries represented 1.58 percent

TABLE 1  
**Change in Current Account Balances**  
as a fraction of world GDP

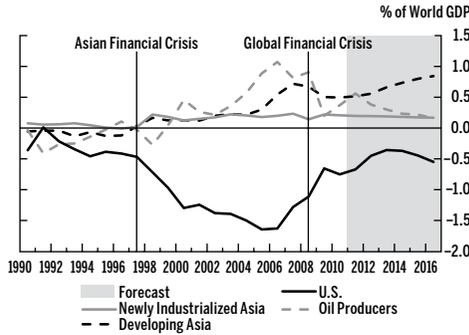
	1996	1996-2001	2001-2005	2005-2008	2008-2010	2010
United States	-0.41	-0.83	-0.40	0.53	0.36	-0.75
Euro area	0.23	-0.23	0.08	-0.25	0.22	0.06
Other advanced	0.25	0.14	0.08	-0.15	0.02	0.34
of which: Japan	0.22	0.06	0.09	-0.11	0.05	0.31
Newly industrialized Asia	-0.01	0.16	0.03	-0.04	0.07	0.21
Developing Asia	-0.12	0.24	0.18	0.37	-0.18	0.50
of which: China	0.02	0.03	0.24	0.38	-0.19	0.49
Oil producers	0.11	0.15	0.63	0.02	-0.53	0.37
Rest of the world	-0.22	-0.02	-0.06	-0.18	0.27	-0.20

**Notes:** The first and last columns report the current account in the corresponding years. Other columns report the change in current account over the period considered. The sum of current account changes does not add to zero because of the statistical discrepancy between global saving and global investment.

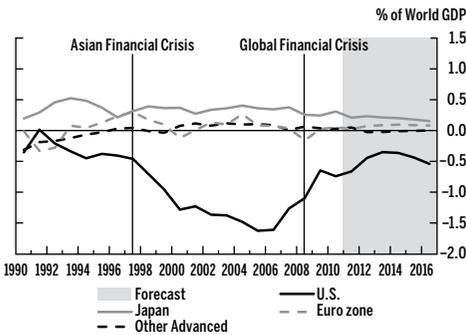
**Sources:** World Economic Outlook database, October 2011, and author's calculations.

FIGURE 1  
**Global Imbalances, 1990–2016**  
 Current Account Deficits as Percent of World GDP

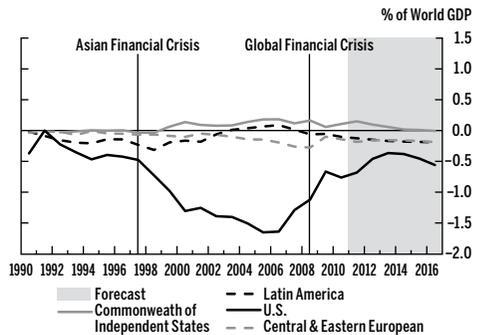
**A Asia and Oil Producers**



**B Advanced Economies**



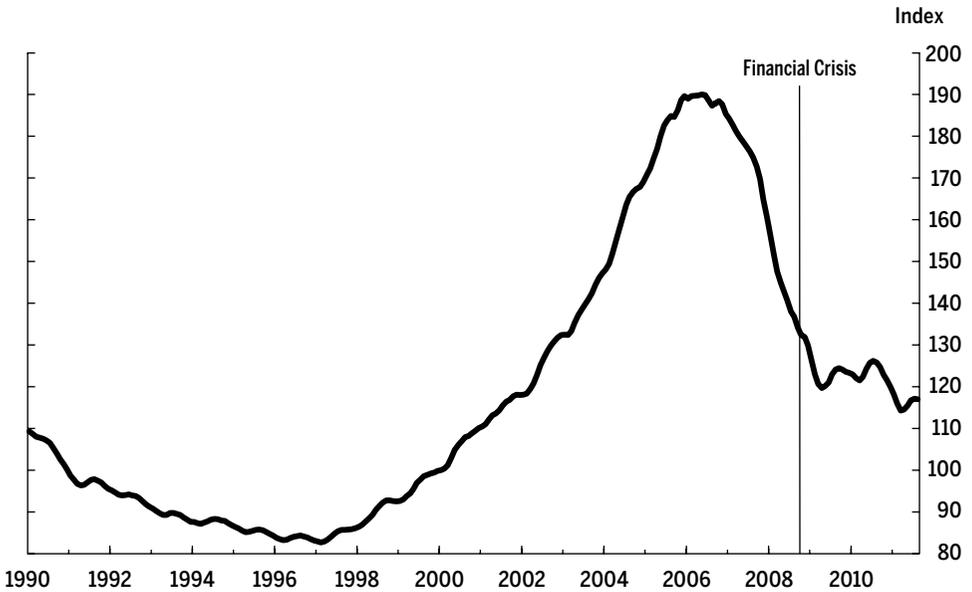
**C Latin America, CEE, and CIS**



Source: International Monetary Fund.

of world output. As Bernanke et al. (2011) document, the resulting excess savings from these economies were recycled mostly in the form of U.S. government and agency bond purchases via official reserve accumulation. In the United States, this period corresponds to the most acute and unsustainable phase of the U.S. residential housing market bubble. Between 1996 and 2005, real U.S. housing prices increased at an annual rate of 9.6 percent according to the Case-Shiller price index (see Figure 2). By the end of 2005, the U.S. housing market was showing increasing signs of fragility, peaking in March 2006. Not coincidentally, this is also the year when the U.S. current account deficit bottomed out, at \$801 billion. In fact, between 2005 and 2008, the U.S. current account improved by a sizable 0.53 percent of world output. Yet the period is also marked by increasing and ultimately unsustainable financial excesses. At the same time that the broader housing market was cooling off, the U.S. financial industry,

FIGURE 2  
**U.S. Real Housing Price Index, 1990–2011**

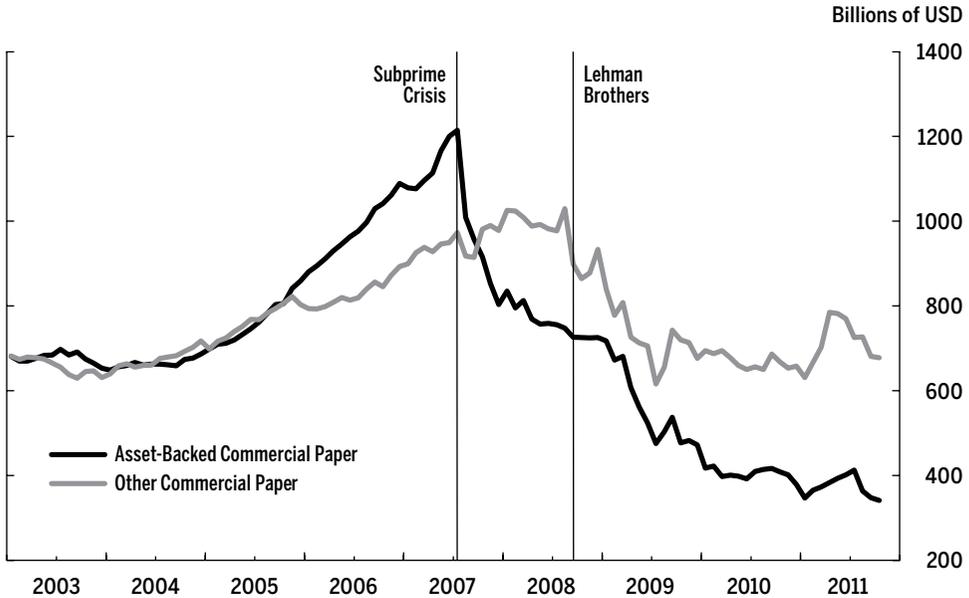


Source: Case-Shiller composite-10 Home Price Index deflated by U.S. consumer price index for all urban consumers, all items.

faced with abundant and cheap funding, embarked on an unprecedented orgy of securitization of U.S. residential mortgages. The amount of outstanding asset-backed commercial paper—the short-term funding instruments often used to acquire residential mortgage-backed securities, remained relatively constant around \$500 billion between 2001 and 2005. It then started to increase dramatically, peaking at more than \$1.2 trillion in July 2007 when the subprime crisis erupted, and collapsed precipitously afterward (Figure 3). As argued by Acharya and Schnabl (2010), Bernanke et al. (2011), and Shin (forthcoming), European financial institutions' appetite for U.S. structured credit products, driven in no small part by regulatory arbitrage, played a key role in the buildup and the subsequent collapse of the global financial system. This last development highlights what will be a central theme of this paper: Current account balances provide a poor guide to subsequent financial vulnerabilities. The improvement in global imbalances after 2006 occurred *despite* an increase in global liquidity misallocation that ultimately proved fatal.

The last—and ongoing—phase begins with the onset of the systemic part of the financial crisis towards the end of 2008. Since that time, the consolidation of global imbalances has continued, albeit at a more moderate pace. After an

FIGURE 3  
**Outstanding Commercial Paper, 2003–11**

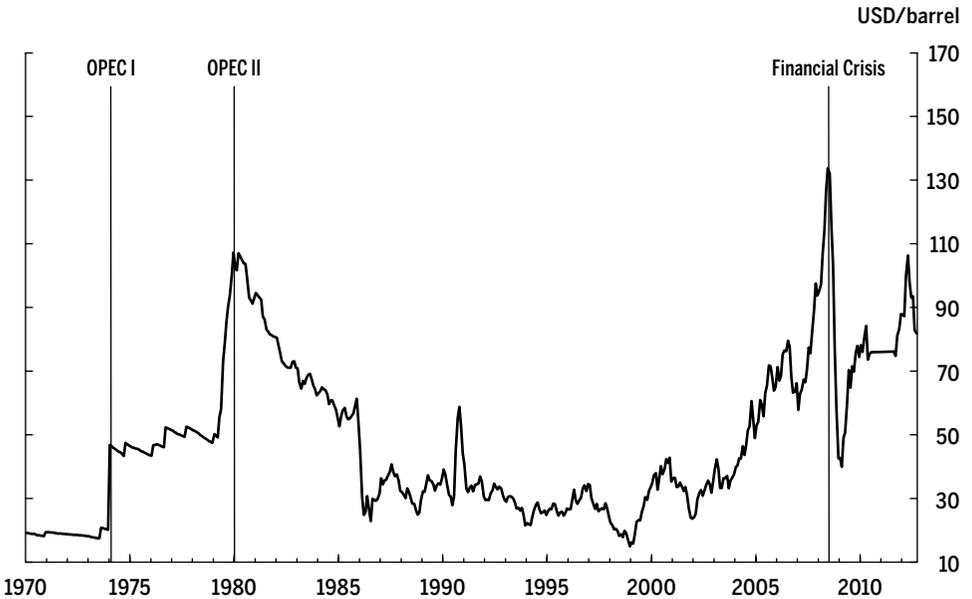


Source: Board of Governors of the Federal Reserve System.

initial sharp contraction in 2009, as world trade came to an abrupt stop, the U.S. current account deficit stabilized in 2010, around  $-0.75$  percent of world GDP, or \$471 billion. This adjustment was offset partly by a decline in China's large surpluses from 0.67 percent to 0.49 percent of world output, and a sharp decline in the surpluses of oil producing countries from 0.91 percent to 0.37 percent of world output, following the sharp decline in oil prices (see Figure 4). In Europe, 2009 marked the beginning of the euro area's sovereign debt crisis, with a significant reduction of current account deficits in many of the more indebted countries.<sup>5</sup> Overall, the region's current account moved from  $-0.22$  percent of world output in 2008 to 0.06 percent in 2010.

What are the prospects going forward? I can see three main considerations. First, we have entered an age of fiscal consolidation. After years of complacent attitudes towards public-sector or quasi-public-sector borrowing, markets—or, in some countries like the United States and the United Kingdom, public sentiment—are forcing sometimes severe fiscal adjustments. The contractionary consequences of this shift cannot be underestimated. A strong body of recent evidence convincingly establishes that fiscal consolidations have severe contractionary consequences, especially when not offset by a very activist monetary

FIGURE 4  
Real Price of Oil



Sources: West Texas Intermediate (USD/barrel): International Financial Statistics. Consumer Price Index: Federal Reserve Bank of St. Louis FRED database 34.

policy or a depreciation of the currency.<sup>6</sup> Fiscal policy has turned procyclical, and this is likely to weigh down on growth prospects in the short and medium term. At the same time, monetary policy remains resolutely expansionary in most parts of the advanced world, including the United States, Japan, the United Kingdom, or even the euro area. With many of these economies still at or close to the zero lower bound, activist monetary policy requires the use of nonconventional interventions. But the precise manner in which these nonconventional interventions shape private-sector expectations is still poorly understood or controlled, which may limit their effectiveness. Consider for instance the lack of understanding in important segments of the U.S. political spectrum as to how quantitative easing (QE1 and QE2) or central bank swap arrangements are designed to work. The political economy of these interventions complicates matters enormously in the current environment, preventing them from being as aggressive as they should be. Per se, these considerations suggest that advanced economies will continue to experience some consolidation in their current account imbalances, as envisioned by the IMF World Economic Outlook forecasts. The third consideration comes from the contrasted economic fortunes of advanced and emerging countries. Robust growth in the emerging world and

stalled recovery at best in many parts of the advanced world call for different monetary prescriptions: maintained easing in the advanced economies and gradual tightening in the emerging economies. The immediate and first-order implication is that currency prices need to adjust, contributing a further boost to the rebalancing of current account imbalances. That rebalancing is already under way, although fiercely resisted in some parts of the emerging world under the banner of “currency wars.” Since traditional monetary resistance via a combination of increased interest rates to tame domestic price pressures and sterilization of net capital inflows to limit the appreciation of the currency proves eventually futile, the discussion has shifted towards the use of capital controls. The danger is that the newly discovered tolerance of the IMF towards international capital movement restrictions, however nuanced, provides too much cover for what is often an attempt to prevent some much-needed macroeconomic rebalancing. As I will discuss, by driving up the accumulation of reserves by emerging economies, this further aggravates liquidity imbalances and contributes to the ongoing fragility of the world economy.

### **3. Varieties of Funding Crises**

From a conceptual point of view, it is well-understood that current account deficits (or surpluses) are not inherently good or bad. Modern economic theory provides many reasons why countries may optimally run large imbalances. Typical examples include the desire to smooth consumption over time, or the efficient allocation of capital across areas at different stages of economic development and with different returns to capital, or the consequences of aging populations in the advanced world. Typical examples of bad imbalances include the capital flow bonanzas described by Reinhart and Reinhart (2009) and Reinhart and Rogoff (2009), driven by fads, poor domestic regulatory oversight, or excessive public borrowing. Blanchard and Milesi-Ferretti (2011) provide a clear and concise treatment of the relevant issues. In their analysis, the authors distinguish current account deficits from surpluses, and domestic versus multilateral considerations. Their first message is that current accounts (surpluses or deficits) are bad when they result from domestic distortions, in which case it is in the interest of countries to remove the distortions and reduce imbalances, or when they inflict externalities on the rest of the world, in which case it might be of broader interest to reduce these imbalances, but not necessarily in the narrow interests of the country. A second message is that deficits and surpluses are not symmetric. While countries may face little pressure to counteract external surpluses, even good external deficits may make countries vulnerable to a sudden withdrawal of foreign capital, precipitating a crisis.

I want to focus here specifically on the connection between current account balances and these *funding crises*, in the spirit of the Calvo (1998) analysis of varieties of capital market crisis. Elements of this discussion echo earlier arguments about the *correct* definition of the surplus or deficit of the overall balance of payments.

As a preamble, write the following combination of the national income and balance of payment identities<sup>7</sup>

$$S - I \equiv CA \equiv PFF + ORT, \quad (1)$$

where  $S$  denotes national saving,  $I$  is domestic investment,  $CA$  is the current account,  $PFF$  represents net *private financial flows* and  $ORT$  denotes net *official reserve transactions*. According to this expression, a current account deficit ( $CA < 0$ ) needs to be offset either by net private ( $PFF < 0$ ) or official ( $ORT < 0$ ) inflows.

Consider the following baseline situation.<sup>8</sup> There are three periods, 0, 1, and 2. A small open endowment economy with no initial external debt suffers from an unexpected decline in output in period 0, offset by increased output in period 2, but unchanged output in period 1. Two questions arise: First, how does the country's current account respond to this adverse development? Second, how is the current account financed? If financial markets were complete, in the sense that a full set of state-contingent securities could be traded before period 0 realization of income, the country could have purchased a portfolio of these state-contingent claims, ensuring it against a low realization of income in the initial period. In such a world, the current account would be largely irrelevant. The country would run a trade deficit—consuming more goods than it produces—offset by the positive net factor payments it would receive on its portfolio of state-contingent claims.<sup>9</sup> Unfortunately, while the notion of complete financial markets is a useful teaching and modeling concept, it is largely irrelevant when looking at the real world! Without access to full insurance, the country wants to run a current account *deficit* at time 0, to buffer the impact of the reduction in income on current consumption. The more interesting question is: *how* is this current account deficit financed?

One could imagine, for instance, that the country issues long-term debt to be repaid in period 2, when output is high. Alternatively, it could sell claims to output in period 2 (equity). Either way, this allows the country to avoid a painful decline in consumption. Moreover, by matching the maturity of the external debt (two-period) to the maturity of the income stream (also two-period), it also eliminates rollover risk.

Consider what happens instead if the country issues one-period debt in period 0. Since output is unchanged in period 1, the country wants to roll the debt over until period 2 when higher income allows it to repay international lenders. The maturity mismatch between the debt (one-period) and the repayment stream (two-period) creates the possibility of a rollover crisis, as in the classical Diamond and Dybvig (1983) analysis. Suppose that in period 1, some of the external lenders need to liquidate their position. Unless it is known that fresh funding will come in and take their place, this opens the possibility of a run on the country, i.e., a *sudden stop*.

This simple analysis can be extended in a number of directions. Consider the following alternative scenario: In period 0, the country discovers natural resources or has the option to invest in a productive project that will take two periods to mature and requires an initial investment in period 0.<sup>10</sup> Financing this investment via external borrowing is optimal. However, if the debt is short term, the country is again exposed to rollover risk. Foreign lenders could become less optimistic about the country's prospects. More importantly, they could also become less sanguine in their belief about how optimistic other investors are likely to be. As a result, a sudden stop could occur in period 1. This situation is what most of us have in mind when we think of the relationship between capital flows and economic development for emerging and developing countries: Capital should flow to developing countries. However, funding risks are important and therefore large current account deficits are to be viewed with caution.

As the discussion above emphasizes, the current account accurately measures the country's vulnerability only if there is a maturity mismatch between (external) liabilities and (total) assets. In that case, and ignoring official flows for the time being, we can rewrite equation (1) as

$$S - I = CA = PF_D^{st} + PPF', \quad (2)$$

where  $PF_D^{st}$  denotes net private *short-term* debt inflows and  $PPF'$  denotes other net private capital flows. In the examples described above,  $PPF'$  represents long-term debt or equity inflows. The current account deficit measures both the increase in net short-term external borrowing—which creates a vulnerability—and the long-term flows, which do not.

Adding one layer, consider the following scenario. In period 0, the country learns of a valuable *foreign* investment opportunity that requires some initial investment. As before, the investment opportunity matures in period 2, but investment needs to occur in period 0. The only difference is that the investment opportunity is foreign, not domestic. The economics are unchanged: It is

optimal to finance this opportunity with external borrowing, a maturity mismatch arises if the borrowing is short term, which exposes the country to roll-over risk. The important difference is that while the country is still vulnerable, there is *no* current account deficit.<sup>11</sup> In case of a sudden stop, the country will have to (a) liquidate the project (possibly at a loss) before it fully matures and/or (b) cut down on domestic absorption to ensure that foreign lenders are repaid while maintaining the scale of the project. Either way, the crisis will be largely unrelated to the size and direction of the current account balance. This is a good characterization of Europe on the eve of the financial crisis. European banks funded long-term investments in the U.S. housing market through U.S. dollar wholesale money markets (Acharya and Schnabl, 2010, and Shin, forthcoming). The region's current account was largely balanced.<sup>12</sup> Yet it suffered drastic dollar funding crises in 2007, 2008, and again in 2011, when global European banks found themselves unable to roll over their short-term dollar liabilities. In terms of equation (2), this example means that  $CA = 0$  while  $PF_D^{st} < 0$  and  $PPF' > 0$ : The country is taking a leveraged external position, funding long-term foreign investment with short-term external debt. Beyond the European example, this example is of relevance given the rapid growth in gross international asset and liability flows and positions since the mid-1970s.<sup>13</sup> Gross financial flows dwarf net flows, just as gross asset and liability positions dwarf net positions.<sup>14</sup>

In the previous examples, funding risks could be measured by the amount of net short-term capital inflows,  $PF_D^{st}$ . It is immediate that this is an *artifact* of the assumption that the country begins in period 0 with no initial external debt. Otherwise, the correct measure of the funding risks needs to be adjusted by the stock of *maturing external liabilities*. To illustrate, suppose that the country enters a given period with gross external assets  $A$  and gross external liabilities  $L$ . The difference between  $A$  and  $L$  represents the net international investment position of the country  $NA = A - L$ . By analogy with the previous analysis, the country faces a rollover risk to the extent that foreigners may decide not to renew the funding on the component of  $L$  maturing at time  $t$ . This includes all short-term liabilities as well as the maturing part of longer term liabilities. Denote this component  $L_D^m$ . Imagine that the country also holds external claims and, importantly, that a component of these external claims  $A'$  are held in *liquid* instruments. Conceptually, liquid instruments would include short-term claims that convert into cash during the period, but also the fraction of long-term claims that can be *pledged* against liquidity, for instance through outright sales or repo transactions. If the stock of liquid claims  $A'$  exceeds outstanding maturing debt liabilities  $L_D^m$ , the country can meet the liquidity demand from foreigners by selling or pledging external assets. The resulting retrenchment

would allow the country to avoid a sudden stop. In all likelihood, the knowledge that the country holds enough claims that it is willing to liquidate to meet foreign redemptions could be sufficient to deter the sudden stop in the first place. In effect, it is as if the country has *collateralized* its external funding needs with liquid external claims. Of course, one can readily understand the role of official reserves holdings from that perspective. Importantly, neither the current account  $CA$ , nor the international investment position  $NA$  capture the correct funding risk  $L_D^m - A^l$ . A country could run a current account surplus (like Germany) yet face a serious funding risk ( $L_D^m - A^l > 0$ ), or run a large current account deficit (like the United States) and be relatively immune ( $L_D^m - A^l < 0$ ).

In reading this discussion, older hands may be reminded of the active debates occurring in the mid-1960s on the proper definition of the balance of payment surplus or deficit.<sup>15</sup> Because the balance of payments is a statistical statement using the double-entry accounting system, each transaction is reported twice (once as a credit, once as a debit) and there is, strictly speaking, no surplus or deficit. However, at various points in time, attempts were made to summarize the statement with a single concept of surplus or deficit, obtained by drawing a line through the accounts. The purpose of these various definitions was to obtain a measure of the liquid resources available to the United States to offset potential liquid liabilities coming due. In other words, it was precisely trying to provide a measure of *funding risks*. For instance, Walther Lederer, chief of the U.S. Department of Commerce's Balance of Payments Division in the 1960s, favored a definition of the balance of payments (sometimes called the liquidity concept) as the increase in official reserves, plus the decrease in all liquid liabilities to foreigners, specifically private short-term liabilities and U.S. government bonds and notes. While the shortcomings of this definition were widely noted, the important thing is to note that it looked at the structure of the gross flows, rather than net flows.<sup>16</sup> The Bernstein report, written in 1965, proposed instead to define the balance of payments as the balance on official settlements, corresponding to  $ORT$  in equation (1), on the ground that changes in official reserves captured the residual funding that private investors were unwilling to provide at current exchange rates, and that needed to be covered by official transactions to maintain stable exchange rates. That measure did not separate net and gross flows, but singled out official versus unofficial transactions. The various concepts were definitely colored by the constraints of the Bretton Woods system, especially the need to maintain fixed nominal exchange rates. They were also developed in an era where private financial transactions remained limited. Yet, they highlight the need to look more closely at the various components of the financial account, rather than simply the current account.<sup>17</sup>

The common shortcoming of all these measures was a focus on *flows*, rather than *positions*.

The previous examples can be readily extended to introduce public debt, banks, currencies, etc. Consider, for instance, a situation where a government borrows from domestic residents and promises to repay using future tax revenues. In practice, the liability side of the public-sector balance sheet always exhibits shorter maturity than the asset side, since the latter is equivalent to a perpetuity claim on future tax revenues. Therefore, governments are *naturally* vulnerable to funding crises, and a purely domestic run on government debt can occur, whereby domestic residents refuse to roll over their holdings of public debt. If the rollover crisis results in capital flight, the country is vulnerable, regardless of the current account balance. This indicates that it matters little whether the holders of public debt are domestic or foreign. What ultimately matters is the inability to roll over maturing liabilities, regardless of the jurisdiction where they are issued.<sup>18</sup> A similar situation arises if the borrowing is performed by domestic banks. What typically prevents self-fulfilling runs on governments or banks is the intervention of domestic monetary authorities ready to backstop vulnerable liabilities. In both cases, however, the official resources of a national central bank might not be sufficient to backstop the domestic banking or public sectors and simultaneously prevent a sudden stop on the external side. As the current situation in many European countries highlights, the distinction between private and public borrowing is often complex given the web of guaranties governments need to provide to their banking sector.<sup>19</sup> As Obstfeld, Shambaugh, and Taylor (2010) argued, this suggests that M2 is perhaps a more relevant concept of demandable financial liabilities that can be converted into foreign currency. But even M2 may provide an incomplete picture when financial intermediation operates through the shadow banking system. Again, the example of the euro area is illuminating on that point and suggests that we should add wholesale short-term bank funding as a potential source of *external* instability.

Funding vulnerabilities increase when liabilities are funded with short-term debt instruments. This begs the question: Why don't countries rely less on short-term debt and more on long-term funding or equity? As Rogoff (2011) aptly observed, reducing the reliance on debt and increasing that on equity-like instruments would likely make the international financial system much more resilient. Abstracting from possible tax or policy-induced distortions, the answer lies with the informational frictions and asymmetries that shape financial transactions.<sup>20</sup> Consider that every financial transaction involves potential adverse selection. Sellers of a risky claim to future income often possess superior

information than buyers. This adverse selection potentially reduces financial trade and efficiency, and in the limit can trigger a collapse in the market. As Dang, Gorton, and Holmström (2010) showed, debt instruments may be optimal because they are least *information-sensitive*. Information-insensitive assets—i.e., assets whose payoff is relatively unaffected by new information—are useful precisely because they mitigate the potential for adverse selection. Debt instruments are more information-insensitive because they offer a constant payoff, as long as default events remain remote. As Holmström (2008) argued, the safer the debt, the less information is needed for markets to operate and the smaller the scope for adverse selection. But debt does not always remain information-insensitive. If the assets backing the debt fall, or the net worth of the borrower declines, there comes a point where default events become more likely. At that point, debt instruments do become information-sensitive and lenders need to assess the quality of their investments and the extent of counterparty risk. This increase in counterparty risk, by reintroducing the potential for adverse selection, can lead to a market shutdown. Debt both increases trade—which otherwise may not take place at all—and also increases vulnerability to crises. Doesn't that mean that countries should issue long-term debt, rather than short-term? The answer is, not necessarily. First, short-term debt plays a disciplining role for borrowers. Jeanne (2009) provided a clean analysis of this point in a model where borrowers can divert part of the resources borrowed (through reduced efforts or otherwise). Short-term debt, precisely because it allows lenders to walk out, disciplines borrowers. At the same time, it makes the economy more vulnerable to aggregate shocks. This suggests that countries with poor fundamentals or weak domestic institutions may have little choice but to issue short-term debt. A second argument can be made in terms of liquidity provision, following the classic analysis of Diamond and Dybvig (1983). By issuing demandable deposit-type instruments, such as short-term debt, borrowers are providing insurance to lenders against liquidity shocks. A panic-based equilibrium may also occur as the belief that lenders will not roll over short-term loans is self-fulfilling. In the world with moral hazard of Jeanne (2009), the possibility of a run is essential to discipline borrowers. Instead, in Diamond and Dybvig (1983), runs are an inefficient byproduct. Because international liquidity is valuable, this suggests that countries with strong fundamentals and little likelihood of runs would become net liquidity providers. In practice, this liquidity provision is a defining feature of reserve asset countries.<sup>21</sup> The upshot of this analysis is that short-term debt contracts play a critical role in domestic and international transactions, for countries both with strong or weak balance sheets, and monitoring the risks involved should be a priority.

## 4. Global Liquidity Imbalances

If the current account is not an accurate measure of funding risks, what is? The previous discussion indicates that one should focus also on *global liquidity imbalances*, that is, the mismatch between maturing liabilities and pledgeable assets. This suggests looking at a *liquidity-coverage ratio* (LCR), defined as the ratio of the stock of pledgeable claims to maximum short-term funding outlays:<sup>22</sup>

$$LCR = \frac{A^l}{L_D^m}. \quad (3)$$

Unfortunately, an accurate measure of either the numerator or the denominator of this ratio is likely to be exceedingly difficult to obtain. First, the pledgeability of external claims is market-determined. Consider for instance the “haircut” that an asset receives in a repo transaction.<sup>23</sup> With a zero haircut, the full market value of the asset can be pledged against cash. An increase in haircut—as will happen if lenders develop doubts about the safety of their counterparties, for instance—reduces the market value of pledgeable claims  $A^l$ , increasing the possibility of rollover risk and market freezes.<sup>24</sup> From that perspective, it is also likely that domestic currency assets may lose their value precisely in times of stress because of uncertainties about the future value of the currency. In that case, the haircut applied to domestic collateral in exchange for international currencies is likely to increase significantly. This suggests that the relevant assets to be considered are high-quality, *safe* assets denominated in international currencies, whose market value and pledgeability remain stable, even during episodes of severe stress. This endogeneity is critical to understand how patterns of global liquidity have shifted in recent years.

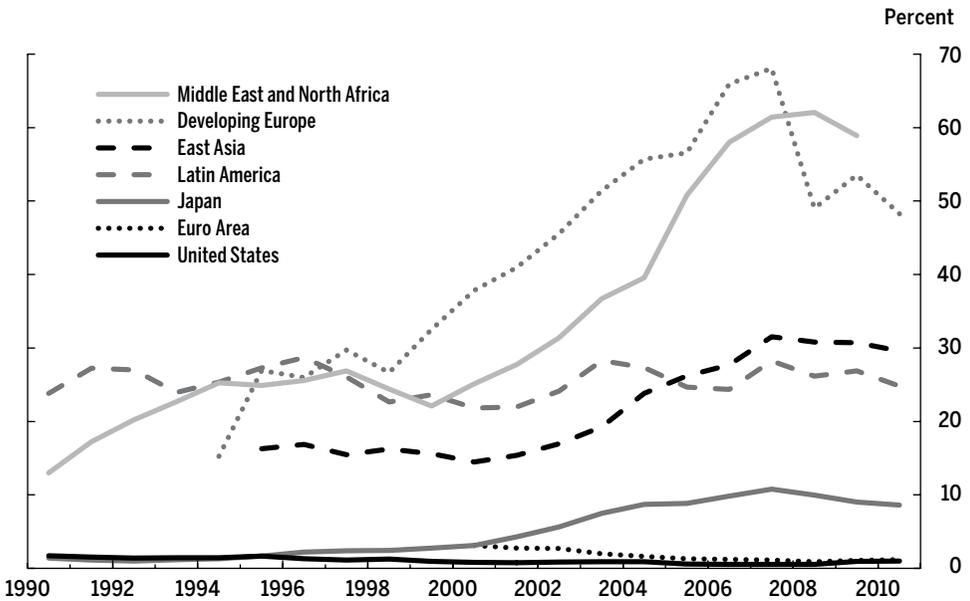
Second, the market value of short-term external liabilities is also not accurately observed. The relevant measure of maturing financial liabilities that could be converted into foreign currency may be closer to M2 or even broader aggregates, than to gross short-term external debt liabilities.<sup>25</sup> Last, a nontrivial difficulty arises from the fact that even if assets are pledgeable and liabilities are measured accurately, this approach assumes that the legal entity—a bank or government—that issued the short-term liabilities also controls the liquid assets so that one can offset the other. For some transactions, especially collateralized ones such as repo transactions or collateralized loans, this is accurate. But it is worth keeping in mind that this netting is far from automatic and in many instances who controls the assets and who issued the liabilities are different legal entities, with different incentives, in which case liquid external claims cannot be considered as an offset for short-term gross liabilities.<sup>26,27</sup>

From a policy point of view, an important distinction is that between public and private liquidity. Public liquidity consists of cash-like or pledgeable public instruments. It includes the reserves held in central banks by financial institutions (a component of high-powered money) but also the outstanding amounts of safe government or agency securities insofar as they serve as a secure store of value. Private liquidity is typically much larger. While it traditionally arises from the demandable deposits issued by the banking sector, it also includes money market fund deposits as well as all private-label safe assets issued by the financial sector.<sup>28</sup> As discussed earlier, the pledgeability of many of the private-label assets is determined endogenously. In the absence of counterparty risk, assets have a high pledgeable value, which implies that liquidity is high. This abundant liquidity allows investors to bid up asset prices, which means counterparty risk is low. Instead, when counterparty risk is high, liquidity is reduced, which brings down asset prices, and increases counterparty risk.

The sudden disappearance of *private* liquidity due to a market freeze, what Caballero (2010) called a “sudden financial arrest,” requires a massive injection of *public* liquidity to offset fire sales and deleveraging spirals. In the international context, an important twist comes from the fact that economic agents often need liquidity in foreign currency. To prevent a sudden stop, authorities need access to international means of payments that they can channel to domestic firms and financial institutions. This means that the question of the *international* provision of liquidity becomes first order.

As an illustration, Figure 5 reports the ratio of total reserves (minus gold) to M2 between 1990 and 2010 for the United States, the euro area, and Japan, as well as various groups of developing countries. This is a rather conservative ratio since it takes a narrow view of the pledgeable external assets (total non-gold reserves) and a rather extended definition of maturing liabilities, equated with demandable domestic deposits.<sup>29</sup> Figure 5 reveals a number of interesting patterns. First, the ratio increased tremendously for all groups of emerging countries, from an average of 23 percent in 1995 to 42 percent in 2009. Next, we observe a similar increase in Japan, from 1 percent in 1990 to 8.6 percent in 2010. By contrast, the ratio of reserves to M2 for both the United States and the euro area remained much lower, around 1 to 3 percent. But the similarity in the coverage ratio of the two regions masks a fundamental asymmetry. With the U.S. dollar still the uncontested reserve currency, the Federal Reserve does not need to hold large amounts of foreign reserves to provide liquidity to its domestic banking system. By contrast, the large foreign currency funding needs of the European banking system require ready access to potentially large amounts of international currencies. With such a low coverage ratio, the euro area suffers

FIGURE 5  
**Example of Liquidity Coverage Ratio**  
 Total Reserves minus Gold/M2



Source: World Development Indicators.

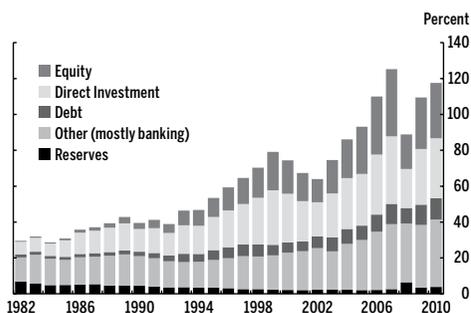
from a fundamental weakness. It is therefore important to understand the ways in which these global liquidity imbalances have built and evolved over time.

#### 4.1. Global Liquidity Sources and Sinks

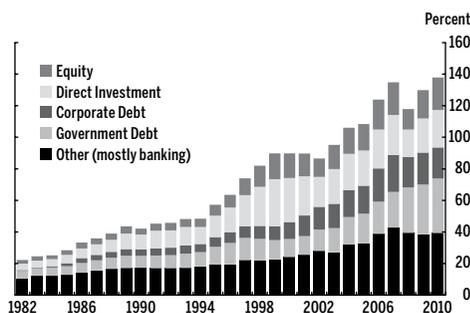
The first observation comes from looking at the structure of the external position of various countries. Figure 6 reports the breakdown of gross assets and liability positions for the United States since 1970. As is well-known, in the aggregate, the United States exhibits an asymmetric external balance sheet, investing in foreign equity and direct investment and issuing debt liabilities, where much of these liabilities take the form of government liabilities. In the words of Kindleberger (1965), the United States is a global liquidity provider.<sup>30</sup> Writing in the mid-1960s, Kindleberger argued that this was a natural specialization since the United States had more developed financial markets that allowed it to provide maturity transformation services to the rest of the world. The rest of the world at the time consisted mostly of Europe: Most of the U.S. external claims were long-term dollar bank loans to or direct investment in Europe, while most of the external liabilities consisted of European

FIGURE 6  
**U.S. Gross External Assets and Liabilities**  
 as a percent of U.S. GDP, 1982–2010

**A Gross External Assets**



**B Gross External Liabilities**



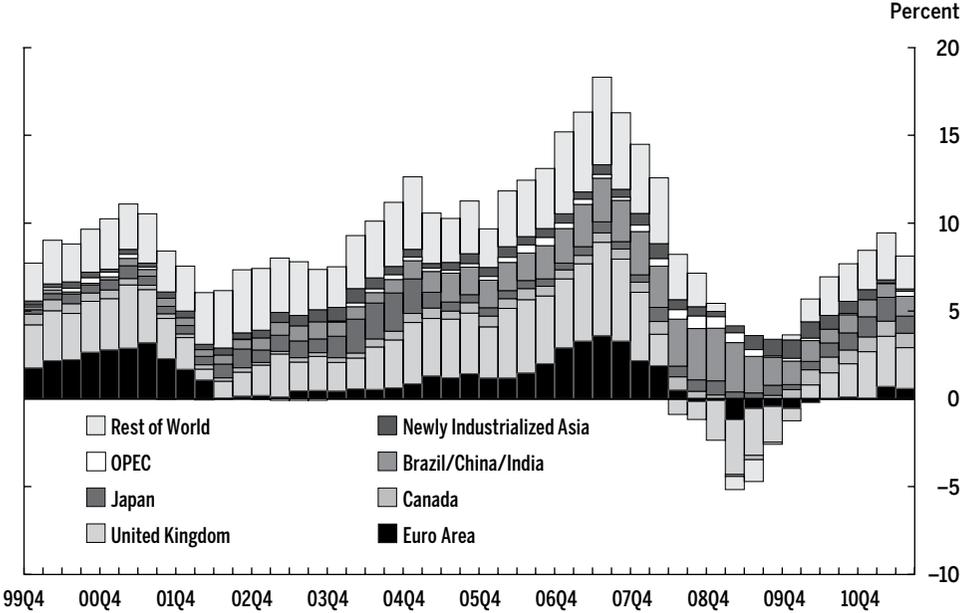
Source: Bureau of Economic Analysis.

bank deposits in New York or purchases of U.S. government securities. In other words, the United States was a liquidity source and Europe was a liquidity sink.

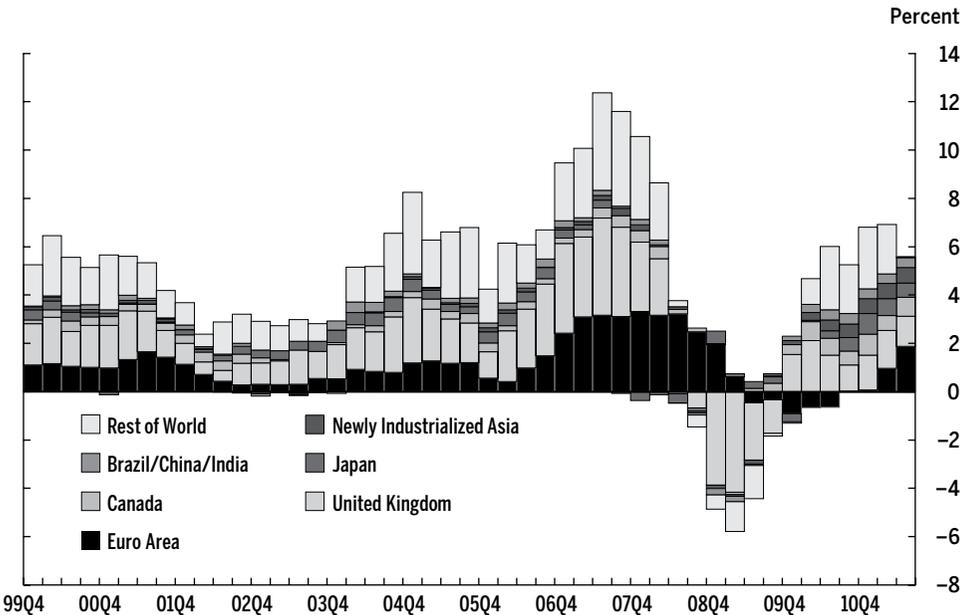
Things have changed significantly since the 1970s. While the United States is still a net liquidity source, a number of studies recently established that Europe, too, became a net liquidity provider, especially to the United States, through the cross-border activities of its global banks.<sup>31</sup> More specifically, European banks used their access to U.S. dollar wholesale funding markets to finance a significant share of their investment activities in the United States—notably in the U.S. housing market—and abroad. For instance, Figure 7 reports U.S. gross capital inflows and outflows by region since 1999. It is immediate, as Borio and Disyatat (2011) noted, that a substantial share of the gross inflows into the United States were coming from Europe and not from the high-saving emerging countries. Between 2002 and 2007, gross inflows from the United Kingdom and the euro area represented more than half of both gross inflows (panel A). A substantial share of the gross capital outflows was also going to Europe (panel B). If these flows had been matched in terms of maturity, this would not have created any significant funding risk for European banks. This was not the case. As Bernanke et al. (2011) showed, a substantial share of the gross inflows went into the acquisition of securitized U.S. residential assets. Many of these assets were considered low risk, or private-label safe assets. Figure 8, panel A, reproduced from their work, shows that between 2003 and the first semester of 2007, Europeans increased mostly their holdings of these private-label AAA-rated securities. By contrast, high-saving emerging and oil producing countries (labeled GSG, or global saving glut in this figure) invested

FIGURE 7  
**U.S. Gross Capital Flows by Region**  
 as a percent of U.S. GDP, 1999–2011

**A Gross Capital Inflows**



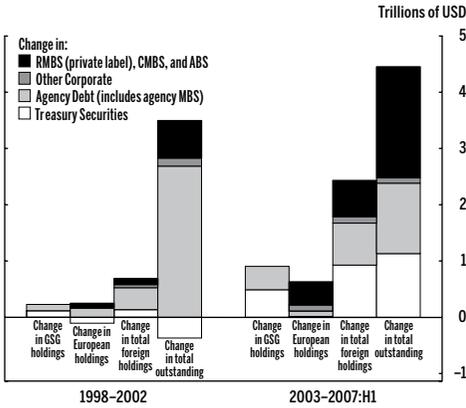
**B Gross Capital Outflows**



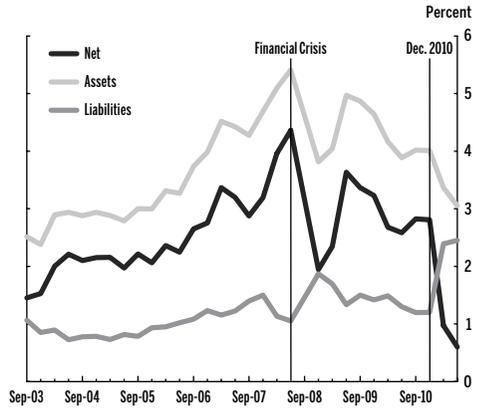
Source: Bureau of Economic Analysis.

FIGURE 8  
European Banking Liquidity

**A Inflows to AAA-rated Securities, 2003–07**



**B Interoffice Assets and Liabilities of U.S. Foreign Bank Subsidiaries and Branches, 2003–11**  
Percent of U.S. GDP



Source: Panel A: Bernanke et al. (2011); panel B: Board of Governors of the Federal Reserve System.

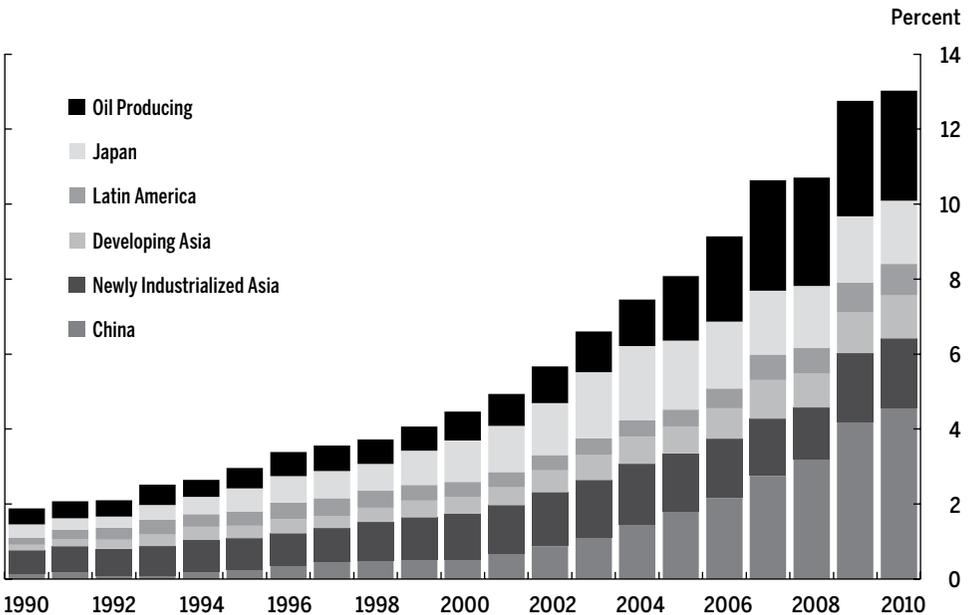
primarily into U.S. Treasuries and agency debt. European banks funded themselves in part using asset-backed commercial paper (ABCP) conduits (see Figure 3). According to Acharya and Schnabl (2010, Table 2), out of \$1.235 trillion outstanding ABCPs in January 2007, only 40 percent had a U.S. sponsor, with Germany and the United Kingdom sponsoring 53 percent of the rest.<sup>32</sup> Because the conduits included a guarantee from the sponsor bank, European financial institutions were in fact exposed to a significant degree of liquidity mismatch. In other words, Europe had become a source of liquidity too.<sup>33</sup>

In addition to their funding activity in the United States, European banks also used the dollar market as a funding market for their lending activities worldwide. Panel B of Figure 8 follows Shin (forthcoming) and reports the gross and net interoffice position of the branches and subsidiaries of foreign banks in the United States as a fraction of U.S. GDP. Starting in 2000, the gross interoffice asset position became positive, increasing rapidly to about 5 percent of U.S. output by the end of 2007. While a breakdown by nationality of the parent bank is not available, most of this net funding activity was likely concentrated with European banks. While some of these funds were re-intermediated back into the United States directly by the parent bank, it also served to fund the dollar lending activities of European banks worldwide. Another confirming piece of evidence provided by Shin (forthcoming) comes from the Federal Reserve’s

disclosure on its liquidity support operations under the Term Auction Facility. The subsidiaries of European banks were prominent users of this facility, indicating difficulties in channeling private U.S. dollar funding to their headquarters. Extensive use of this liquidity facility explains why, in panel B of Figure 8, net interoffice positions rebounded so quickly in 2009. Public provision of dollar liquidity from the Federal Reserve played a critical role in maintaining safe levels of dollar funding for foreign financial institutions.

If both the United States and Europe have become *liquidity sources*, then the rest of the world must be a *liquidity sink*. This is particularly the case of the EMEs and commodity producing countries holding vast amounts of liquid assets. As Bernanke et al. (2011) have shown, this is precisely where most of the demand for U.S. Treasuries and agencies originated, especially in the form of official reserve accumulation. Figure 9 reports the official reserve holdings of various countries and groups of countries as a fraction of world output.<sup>34</sup> What is remarkable from this graph is the absence of structural break when the financial crisis erupts. If anything, official reserve accumulation simply marked a

FIGURE 9  
**Official Reserve Holdings**  
percent of world GDP



Source: Lane and Milesi-Ferretti (2007), updated External Wealth of Nations database.

one-year pause before resuming its upward trend. As of 2010, the reserve accumulation of these countries exceeded 12 percent of world GDP, up from around 2 percent in 1990.<sup>35</sup>

This global pattern of liquidity provision is consistent with theories that emphasize the lack of financial development in the emerging world relative to their economic growth. In models such as Gourinchas, Rey, and Govillot (2010) or Mendoza, Quadrini, and Rios-Rull (2009), rapidly growing but financially underdeveloped emerging economies seek safe stores of value abroad. Because of their limited financial development, these countries find it preferable to invest in the relative safety of developed countries' government bonds. This accumulation is also consistent with the growing body of work that finds that reserves can play a significant role in reducing the likelihood of crisis.<sup>36</sup>

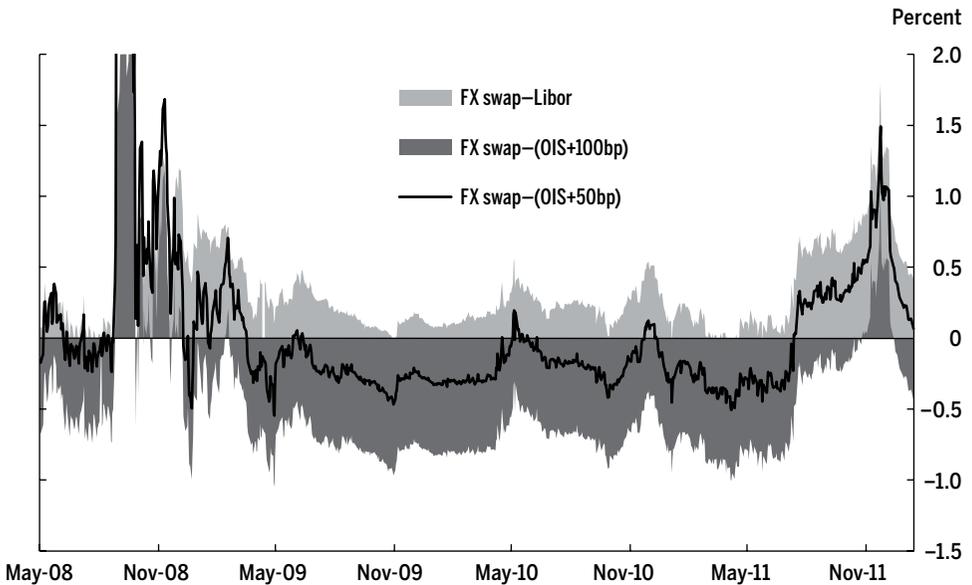
Nevertheless, it raises a number of important and yet unanswered questions: What is the optimal level of reserve holdings that emerging economies should reasonably aim for? More importantly, in a world where the very notion of a safe asset is increasingly being challenged and the pool of safe assets—a category that not so long ago included private-label assets as well as most European sovereign debt outstanding—is shrinking, what is the optimal diversification strategy? Clearly, the demand for liquid and stable stores of value from emerging economies is still growing robustly. The supply, on the other hand, is dwindling rapidly. This global liquidity imbalance is, in my view, far more serious than the usual global imbalance.

#### **4.2. From Banking Glut to Banking Drought: The Consequences of the Euro-Area Crisis**

Inspecting Figure 8, panel B reveals a worrying deterioration in the interoffice net position of foreign bank branches and subsidiaries in the United States. From December 2010 to March 2011, the net interoffice position dropped from 2.81 percent of U.S. output to 0.97 percent. This decline comes from a sharp decline in the gross claims on headquarters (from 4.01 to 3.36 percent of output), as well as a large increase in claims from headquarters (from 1.20 to 2.39 percent). The likely cause, in an eerie reoccurrence of the 2008 crisis, is the sudden decline in private dollar funding available to European banks as the European sovereign debt crisis worsened. This time, however, the associated liquidity squeeze has not been offset by a surge of public liquidity from the Federal Reserve. Instead, in August 2011, the Federal Reserve Bank of New York announced that it was stepping up its surveillance, requiring that U.S. units of European banks maintain sufficient access to liquidity.

European banks with short-term dollar liabilities and no access to the wholesale U.S. dollar markets can fund themselves in one of three ways. First, they can obtain U.S. dollars from the Federal Reserve discount window. Alternatively, they can obtain U.S. dollars from the European Central Bank (ECB) by tapping the ECB-Fed swap line that was reactivated in May 2010 and renewed since. Borrowing at the Federal Reserve's discount window is seen by the market as a sign of impending collapse and therefore rarely used, if at all. It is also not encouraged by the Fed. Borrowing dollars at the ECB was penalized until recently with a 100 basis point premium over the corresponding Fed rate, and therefore somewhat discouraged as well.<sup>37</sup> As a result, both liquidity facilities have remained largely dormant.<sup>38</sup> The last option consists of borrowing euros swapped into dollars. Yet, as Figure 10 indicates, the dollar-euro swap market is again showing intense signs of stress. The top line in that figure reports the deviation from covered interest rate parity at the one-month horizon. Specifically, it reports the spread between borrowing euros swapped into U.S. dollars,

FIGURE 10  
**Top part: Deviation of the Euro/USD Swap-induced Dollar Rate from LIBOR (1-Month) in Percent**  
**Bottom part: Difference between Euro/USD Swap-induced Dollar Rate and Overnight Interbank Swap plus 100bp Penalty (1-month)**



Source: MorganMarkets.

and the LIBOR rate. The deviation from covered interest parity jumped dramatically from less than 10 basis points in July 2011 to 90 basis points by the end of November of that year. This is a level not reached since early 2009. The bottom line reports the spread between the foreign-exchange swap euro-dollar rate and the cost of borrowing dollars at the ECB dollar window under the central bank swap line, at a rate roughly equal to the one-month overnight interest swap (OIS) plus a penalty (100 or 50 basis points). As long as this spread is negative, it is not profitable to tap the central bank swap line. Once this line becomes positive, the stress in the wholesale market reaches a level such that the central bank swap lines will be activated. As is clear from Figure 10, this point was reached on November 15, 2011. The subsequent reduction in the penalty from 100 to 50 basis points by the Federal Reserve a week later also helped make the swap lines significantly more attractive.

The intensity of the cutback on interoffice net claims (2.2 percent of U.S. output in six months) and the jump in dollar funding for euro-area banks illustrate the severity of the banking crisis that European countries faced toward the end of 2011.<sup>39</sup>

In an effort to strengthen bank balance sheets and reduce counterparty risks, in September 2011, European regulators instructed banks to reach Tier-1 capital ratios of 9 percent by June 2012, representing an additional 106 billion euros in fresh capital. Faced with increased capital requirements, an increase in wholesale funding costs, and depressed valuations, European banks tried desperately instead to reduce their leverage by shrinking their balance sheets.<sup>40</sup> Unsurprisingly, the result was a fire sale of epic proportions.

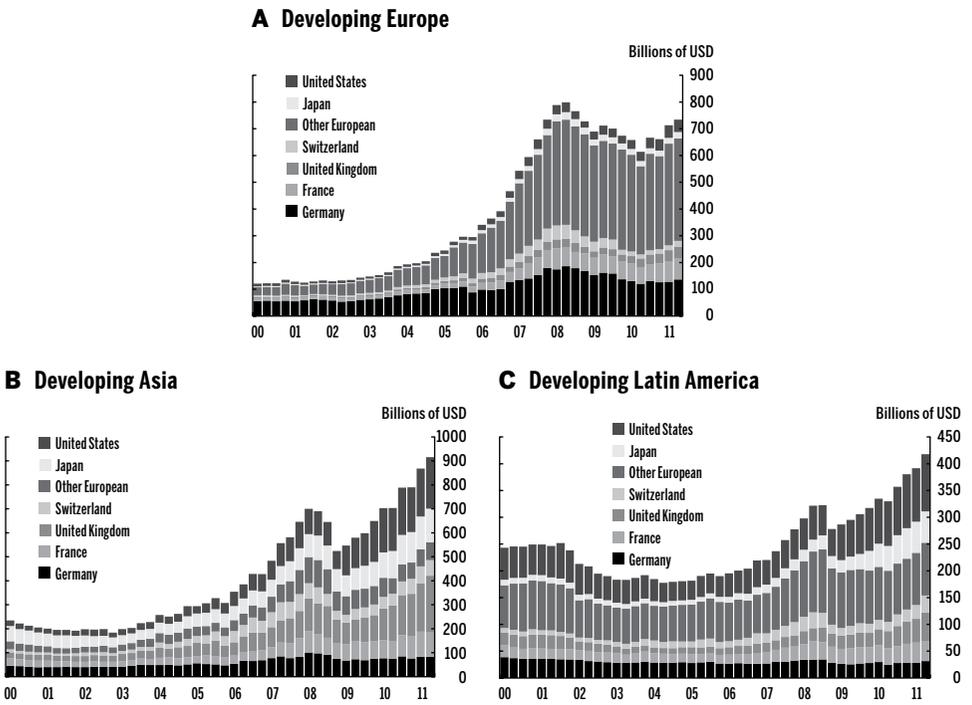
The consequences of this phase of the crisis, possibly the most dangerous so far, are likely to be felt far and wide, especially in emerging market economies. First, this liquidity crunch is the third 180-degree gyration in capital flows to EMEs since 2008. The first reversal occurred in 2008, at the onset of the crisis as investors worldwide liquidated their cross-border risky positions and flew to safety. This retrenchment triggered a massive sudden stop in many emerging market economies. Yet, the impact on EMEs was relatively short-lived, and a strong rebound occurred in 2009. The second reversal came with the continued easing of monetary conditions in advanced economies, especially the Federal Reserve's renewed efforts at quantitative easing (QE2) in November 2010 with a \$600 billion expansion until June 2011. That move, roundly criticized by many emerging market economies, rekindled gross capital flows to emerging market economies.

We are now likely to enter a third reversal, with the deleveraging of the European banking system again reducing global liquidity worldwide. In particular, it

is safe to assume that European banks will attempt to separate primarily from noncore assets. This implies, in particular, a reassessment of lending activity to non-European countries. One would expect EMEs with active intermediation activities from European banks to be especially vulnerable.<sup>41</sup>

We can get a glimpse of the exposure of emerging market economies to European banks from the Bank for International Settlements (BIS) consolidated banking data. Figure 11 reports the geographic composition of international claims by emerging market destination and reporting bank origins. The data indicate that the overall exposure is large in all destinations. It is especially important in developing Europe, where most of the international claims come from European banks (\$700 billion), but it is also high in developing Asia (\$500 billion) and Latin America (\$250 billion). Of the three groups, developing Europe is the most vulnerable since the outstanding international claims represent a quarter of the region’s GDP. By contrast, developing Asia is perhaps

FIGURE 11  
**Foreign Claims of Reporting Banks in Developing Countries, by Region**



Source: International Monetary Fund.

least vulnerable, with an exposure of 2.7 percent of GDP, given the large stock of official reserves at its disposal and the relative strength of its fundamentals.

## 5. Conclusion

This paper begins with a general overview of the evolution of global imbalances. While current account balances can be symptomatic of more serious illnesses, I argue that the focus should be instead on *global liquidity imbalances*. Liquidity imbalances measure the gap between maturing external liabilities (short term and otherwise) and the pledgeable value of external assets. Accurately measuring these global liquidity imbalances is a difficult but essential task, upon which global regulators at the BIS and the IMF have now embarked. Liquidity is an endogenous characteristic, and many liquid assets can be fair-weather friends. Unlike the pattern of global imbalances that has stabilized, if not disappeared, global liquidity imbalances are rapidly shifting, with the ongoing efforts at balance sheet consolidation in the euro-area banking sector. But these efforts carry their own risks. Looking ahead, one can imagine a number of policy responses to strengthen the international financial system and reduce the impact of liquidity imbalances. These range from the obvious (better data collection efforts to monitor global liquidity cycles) to the more ambitious (systematic use of central bank swap lines and multilateral provision of liquidity under IMF supervision). The central objective remains how to evolve from an international monetary system where financial intermediation takes place across borders but liquidity provision remains national, to a system where liquidity can be provided on a sufficient scale in times of global financial stress.

## APPENDIX

**Current Account Balances and Rollover Risk**

Consider the following baseline situation. A small open economy lasts for three periods,  $t = 0, 1, 2$ . There is no initial external position, and income in each period is  $y_t$ . Preferences are defined over consumption streams according to  $U = E_0 \left[ \sum_{t=0}^2 \beta^t u(c_t) \right]$  where  $\beta \leq 1$  is the discount factor. The world interest rate  $r$  is assumed constant and equal to  $1/\beta - 1$ . In period 0, the economy suffers an income shock, offset by a change in output in period 2, but unchanged income in period 1. Formally,  $y_0 + \beta \bar{y} + \beta^2 y_2 = (1 + \beta + \beta^2) \bar{y}$  so that the permanent income remains unchanged and equal to  $\bar{y}$ . Manipulating this condition, the change in output in period 0 is related to the change in period 2 income according to  $y_0 - \bar{y} = \beta^2 (\bar{y} - y_2)$ .

**Complete Markets**

Assume now that there are complete markets. Specifically, assume that there exists a set of state-contingent securities spanning the states of nature. These markets are opened before period 0, that is, before the realization of the initial period income  $y_0$ . Denote  $s_t$  a possible state of nature in period  $t$ , and  $s^t = (s_0, \dots, s_t)$  the history up to period  $t$ . Denote also  $\pi(s^t)$  the probability of history  $s^t$  being realized. Write  $q(s^t)$  the price of a state-contingent security that pays one unit of income in period  $t$  when history  $s^t$  is realized. The agent chooses consumption  $c_t(s^t)$  so that  $\pi(s^t) \beta^t u'(c_t(s^t)) = \lambda q(s^t)$  where  $\lambda$  is the strictly positive Lagrange multiplier on the budget constraint  $\sum_{t,s^t} q(s^t) (y_t(s^t) - c_t(s^t)) \geq 0$ . Assume further that country risk is perfectly diversifiable, that is,  $q(s^t) = \beta^t \pi(s^t)$ .

Under these assumptions, consumption is constant and satisfies  $c = (1 + \beta + \beta^2)^{-1} (E[y_0] + \beta \bar{y} + \beta^2 E[y_2]) = \bar{y}$  and the portfolio of state-contingent assets satisfies  $b(s^t) = \bar{y} - y(s^t)$ . In other words, in each period, the current account, defined as the trade balance plus the net factor payment on the cross-border portfolio, is equal to zero.

**Incomplete Markets**

Assume now that markets are incomplete. Specifically, suppose the only available asset is either a two-period risk free bond, or a one-period risk free bond. Under either scenario, the country will want to run a current account deficit if income in period 0 is lower than  $\bar{y}$ . One can show that consumption will still be equal to  $\bar{y}$ . Consequently, the current account in period 0 is simply  $CA_0 = y_0 - \bar{y} < 0$ . The interesting question is how this current account deficit is financed.

**Two-period bond**

Suppose that the country can issue two-period bonds at time  $t = 0$ . Denote  $d_0$  the amount of two-period debt issued. Then,  $d_0 = \bar{y} - y_0$  is issued in period 0 and  $\beta^2 d_0$  is repaid in period 2. Importantly, in period 1, the country does not need to go to the financial markets since  $c_1 = y_1 = \bar{y}$ .

**One-period bond and rollover risk**

Consider now what happens if the country issues instead one-period debt in the amount  $b_0$ . Under the optimal consumption plan, an amount  $b_0 = \bar{y} - y_0$  needs to be issued in the initial period. This one-period debt matures in period 1 and needs to be rolled over. The amount of the rollover is  $b_1 = \beta b_0 = \beta(\bar{y} - y_0)$ . Importantly, while there are enough resources to fund consumption at time 1, the country still needs to go to the market to roll over  $b_1$ .

## Financing Investment

Suppose now that the country can invest an amount  $I$  in a project. The project takes two periods to mature. In the absence of investment, income is  $\bar{y}$  in all periods. With investment, the project returns an income  $R$  in period 2. For simplicity, assume that  $R = \beta^2 I$  so that the return on the project is equal to the world interest rate. The analysis is then identical to the previous case. Assuming that it is valuable to fund the project (this is true at the margin), the country will want to fund the project via external borrowing to smooth consumption. It may face a rollover risk if the debt is short term, since the project is long term. It does not matter whether the project is domestic or foreign, although recorded current accounts would differ. To see this more clearly, observe that in the case where the project is foreign, the country borrows  $I$  at time 0 and invests  $I$  in the project. While net debt and the current account  $CA_0$  remain equal to 0, the country has become vulnerable to a rollover crisis because of the maturity mismatch between gross external assets (two-period) and gross external liabilities (one-period).

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## NOTES

1 Greece, Portugal, and Ireland at the time of this writing.

2 Looking at the short-term impact of the crisis for emerging market economies, Blanchard, Faruquee, and Das (2010) failed to find a strong and significant relation between external deficits and the severity of the crisis. Similarly, Gourinchas and Obstfeld (2012) did not find support for the claim that external balances are significant precursors of crises, whether for advanced or emerging economies. Jordà, Schularick, and Taylor (2011) studied 14 developed countries over 140 years and also found a limited role for external balances in predicting subsequent crises. Frankel and Saravelos (2010) surveyed a large number of earlier studies on crisis prediction. In their analysis too, current accounts fail to appear as consistent predictors of crisis.

3 See also Obstfeld and Rogoff (2010) for a largely consistent analysis.

4 The sum of current account changes in Table 1 does not sum to zero because of the discrepancy between global saving and investment. As Obstfeld and Rogoff (2010) observed, the historical “missing surplus” (i.e., excess of global investment over global saving) disappeared after 2004, replaced by a “missing deficit” of roughly equal proportions, about 0.5 percent of world output.

5 Greece, Ireland, Slovenia, and Spain each reduced their current account deficits by at least 4 percent of their output between 2008 and 2010.

6 See Guajardo, Leigh, and Pescatori (2010).

7 This expression uses the new set of conventions adopted in the IMF’s (2009) 6th edition of the Balance of Payments Manual. Purchases (sales) of foreign assets enter positively (negatively). Unless otherwise noted, I ignore the capital account and the statistical discrepancy.

8 The appendix provides a simple formalization of the discussion that follows.

9 In an endowment economy, the current account would be identically equal to zero after the period when state-contingent claims are traded.

10 Of course, the two scenarios are economically very similar. They only differ insofar as the proceeds from external borrowing go towards consumption in one case and investment in the other. In practice, the distinction is not clear-cut, and one would expect shocks that affect production possibilities to also influence consumption choices, but I abstract from this effect here and work under the veil of the Fisherian separation.

11 Strictly speaking, this is true in the limit case where the return on the investment equals the world interest rate. Otherwise the increase in net resources brought about by the project leads to an increase in consumption and a current account deficit.

12 The European Union current account deficit fluctuated between  $-1$  and 0.5 percent of output between 2000 and 2010.

13 See Obstfeld (2011) for a recent discussion. See also Forbes and Warnock (2011) for an analysis of extreme gross vs. net financial flow movements.

14 The rapid increase in gross cross-border positions has also been accompanied by a decrease in the correlation between current account and changes in net asset positions, due to the growing importance of valuation effects that are not recorded in the current account (Gourinchas 2008). I agree with Obstfeld (2011, 2012) that these valuation effects cannot be counted on—theoretically, or empirically—to provide a permanent “manna from heaven” relaxing the external borrowing constraint. Yet from year to year, their contribution can more than offset a given current account surplus or deficit.

15 See Cooper (1966) and Kindleberger (1965) for a summary.

16 This definition suffers a number of drawbacks. For instance, it treats short-term claims and liabilities asymmetrically so that all countries can simultaneously record a surplus (or a deficit). Further, it assumes that short-term external claims of U.S. residents cannot be used to offset a sudden funding gap.

**17** Along the same lines, in a recent paper, Forbes and Warnock (2011) look at extreme movements in gross capital flows, rather than the current account, to characterize episodes of capital surge, stop, flight, and retrenchment.

**18** Of course, the jurisdiction of issuance matters a lot for the resolution of funding crises.

**19** The difficulties are compounded in the case of the euro area since national central banks cannot play the role of residual buyers of either bank or government liabilities when faced with a liquidity crisis. The belated realization by the markets that the euro area lacked such a mechanism plays an important role in the current crisis.

**20** For early contributions emphasizing the role of asymmetric information in financial crises, see Mishkin (1991, 1999).

**21** See Gourinchas, Rey, and Govillot (2010) for evidence on the United States.

**22** Under Basel III's liquidity rules, banks will need to maintain a Liquidity Coverage Ratio, defined as the ratio of the stock of high-quality liquid assets to total net cash outflows over a 30-day period, in excess of 100 percent. Banks will also need to maintain a Net Stable Funding Ratio, defined as the ratio of available long-term funding to a weighted measure of long-term asset holdings. In the context of this paper, the two concepts are interchangeable.

**23** In a repo transaction, the owner of an asset with face value 100 and a haircut  $h$  can obtain  $100(1-h)$  in cash.

**24** See Gorton and Metrick (2012) for a discussion of the 2007 run on the repo market and Acharya, Gale, and Yorulmazer (2011) for a model of rollover risk and market freezes.

**25** This explains why measures such as the Greenspan-Guidotti ratio of official reserves to short-term external debt may also fail to capture the true vulnerability of an economy.

**26** For instance, a bank may borrow externally and make a loan to a domestic corporation that invests overseas in a subsidiary. If the bank faces a run, it is only holding a claim on the domestic firm, not on the foreign subsidiary.

**27** This measure of liquidity imbalance is related to the cross-currency funding gaps advocated by McGuire and von Peter (2009). The latter decomposes liquidity imbalances by currency. This is an important distinction insofar as it is in theory easier for monetary authorities to deal with liquidity imbalances in their domestic currency. The Bank for International Settlements (BIS), the IMF, and the Committee on the Global Financial System have also recently focused on the issue of global liquidity, as part of a G-20 subgroup working on global liquidity management (see BIS 2011). While acknowledging important data and conceptual issues in measuring "global liquidity," this working group proposes constructing indicators from data on quantities (cross-border credit, core, and noncore deposits) as well as prices (spreads) and tracking both over time and across countries.

**28** In principle, some of these claims should net out. In practice, a certain amount of double counting may be unavoidable and necessary, to capture the tower of claims backed by safe assets that tumbles down once market liquidity dries up.

**29** As Obstfeld, Shambaugh, and Taylor (2010) argue, the ratio of reserves to M2 provides a good measure of funding risks.

**30** See Gourinchas and Rey (2007) and Gourinchas, Rey, and Govillot (2010) for an analysis of the U.S. external balance sheet.

**31** See Acharya and Schnabl (2010), Bernanke et al. (2011), Cetorelli and Goldberg (2011), and Shin (forthcoming).

**32** The European-sponsored conduits also tended to be larger, about twice the size of U.S.-sponsored conduits.

**33** There remains the question of why European banks leveraged so much of their activity in the United States. The most convincing explanation has to do with regulatory arbitrage, allowing banks in some European countries, most notably Germany, Ireland, and the United Kingdom to exploit the loopholes in the capital rules instituted under Basel II.

**34** The data on reserves come from the updated Lane and Milesi-Ferretti (2007) data set on the External Wealth of Nations, covering the years 1970 to 2010. Reserves are defined as official foreign exchange reserves minus gold.

**35** After a careful look at the evolution of reserves during the crisis, Dominguez, Hashimoto, and Ito (2011) find that emerging countries did actively deplete their reserves during the crisis, but restored their reserves to pre-crisis levels rapidly once the crisis abated. They also find evidence that output recovery was stronger in countries with larger pre-crisis reserve accumulation.

**36** See Gourinchas and Obstfeld (2012) for recent evidence. That paper emphasizes, however, that the causality runs both ways: Reserves are likely to decline in countries with higher likelihood of a crisis.

**37** The penalty was reduced to 50 basis points on Wednesday, November 30, 2011. Tapping the swap lines also carries some stigma.

**38** The outstanding total ECB-Fed swap line was \$2.35 billion as of Nov. 16, 2011. This number pales in comparison with the \$280 billion ECB-Fed swap outstanding in December 2008.

**39** Another indirect observation of the stress on the European banking sector comes from the Federal Reserve balance sheet. Under the heading “reverse repurchase agreements—foreign official and international account,” it records transactions with foreign central banks that deposit their U.S. dollars directly with the Federal Reserve Bank of New York with government securities as collateral. Between May 2011 and November 2011, the amount of these reverse repos more than doubled, from \$54 billion to \$124 billion. It is likely that some of these operations reflect the decision of foreign central bank portfolio managers to move their U.S. dollar holdings out of European banks and deposit them directly with the Federal Reserve.

**40** For instance, BNP Paribas announced on September 14 the sale of 70 billion euros in risk-weighted assets.

**41** In a recent development, Austria’s regulator directly curbed the cross-border lending activity of Austrian banks to Eastern European countries. Not coincidentally, Hungary announced on the same day that it was seeking a precautionary line from the IMF.

COMMENTARY

## Global Imbalances and Global Liquidity

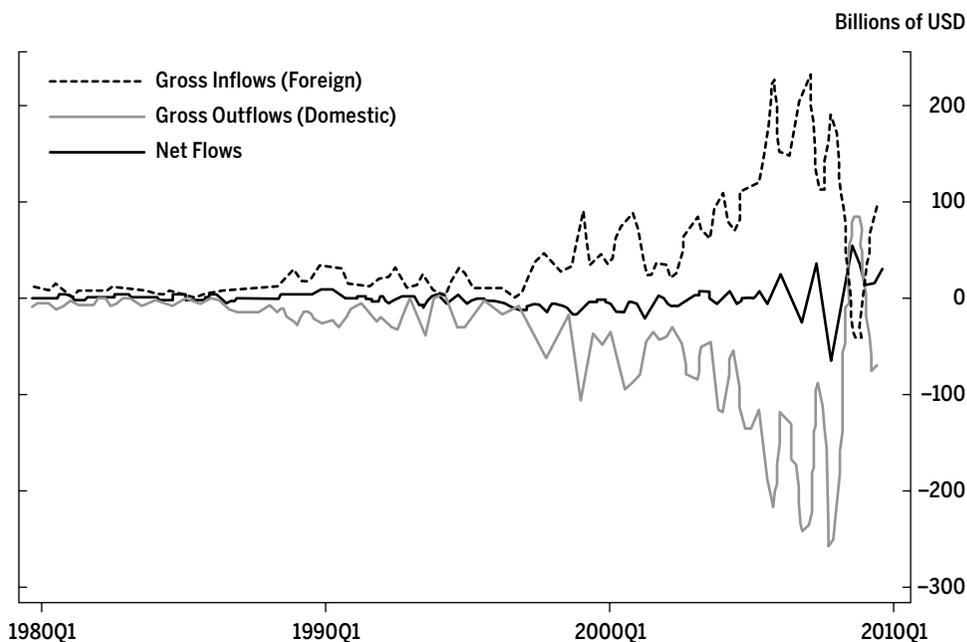
Kristin Forbes

People do not answer direct questions or requests for a number of reasons. They may not understand the question. They may not know the answer—or they may choose not to answer because the correct answer would get them into trouble. Or they may decide that the question isn't terribly interesting, and instead choose to reframe what they are answering.

My reading of this paper by Pierre-Olivier Gourinchas is that he chose the latter strategy. Months ago when paper topics for this conference were assigned, my understanding was that Gourinchas would write a paper on global imbalances that focused on the role of Asia (which was code for a paper on China's current account surplus versus the U.S. current account deficit and related currency issues). Gourinchas starts his paper with a brief consideration of this topic, using the standard approach of focusing on current account balances. He succinctly concludes that global imbalances have fallen since the global financial crisis, and although current account deficits can be a sign of vulnerability, they also can be a healthy indicator and are only weakly correlated with crises. Rather than rehash well-known discussions of the large U.S. current account deficit, the global savings glut, reserve accumulation, inflexible exchange rates in Asia, etc., Gourinchas quickly shifts the focus of the paper to what he believes is the more relevant and timely issue: global liquidity imbalances. I think we should all thank him for not forcing us to sit through another discussion of current account deficits and surpluses and the need for the United States to address its fiscal situation and China to allow more exchange rate flexibility. Instead, Gourinchas quickly shifts the focus to a new and extremely important set of issues related to gross liabilities and liquidity risks.

Gourinchas's argument builds on a fundamental rethinking of imbalances that has been slowly developing over the past few years in a series of papers focusing on gross capital flows and gross asset and liability positions (rather than previous work on net flows and positions). Figure 1 graphs net capital flows for France, and then disaggregates these flows into gross inflows (from foreigners) and gross outflows (by domestics). As shown in the graph, net current account balances—the focus of most previous work on imbalances—have been

FIGURE 1  
**Net and Gross Flows for France**



relatively stable compared to the movements in gross capital inflows and outflows over the past 15 years. Most countries around the world—both developed and emerging—show this trend.

Over the past few years, several papers have highlighted why it has become increasingly important to look at gross instead of net positions and flows. For example, Lane and Milesi-Ferretti (2008) and Gourinchas and Rey (2007) show how larger gross positions will cause seemingly minor valuation changes through exchange rates or relative market movements to have substantial reallocation effects in terms of international wealth. Forbes and Warnock (2011) highlight how disaggregating net capital flows into gross flows driven by domestic and foreign investors can significantly change our understanding of what drives extreme movements in capital flows. Bertaut et al. (2011) document how focusing on net capital flows misses the important role played by Europe in channeling financial flows from Asia to the United States before the crisis—patterns only captured by looking at gross capital flows. Shin (2011) also highlights the role of Europe in channeling capital flows—focusing on how European banks intermediate U.S. dollar funds—an exposure missed in measures of current account imbalances.

Gourinchas's paper takes this critically important rethinking of global imbalances by focusing on gross capital flows or positions (instead of net) to a new level. He argues that the key issue is the liquidity of the gross assets and liabilities—not just the magnitudes. More specifically, Gourinchas defines global liquidity imbalances as the liquidity mismatch across countries over time, basically the mismatch between short-term liabilities that need to be rolled over and the country's pledgeable assets. He proposes a specific ratio to measure this—the liquidity coverage ratio (the ratio of the stock of pledgeable claims to maximum short-term funding outlays). Although the details about the measurement and definition are complicated, the concept is clear and important. Rather than focusing on a country's net funding requirements, Gourinchas suggests we should be focusing on a country's gross funding needs. The last few years have shown how quickly markets can freeze up, how liquidity can vanish, how seemingly safe counterparties can be unable to complete their portions of a trade, and how assets judged as low-risk can suddenly become toxic. Just because a country had a reliable source of financing in the past, this is no guarantee that this funding will continue in the future, especially during times of stress. To understand these vulnerabilities, it is necessary to focus on a country's (and its sectors') gross funding requirements and the liquidity of these funds.

Gourinchas outlines some of the challenges in actually implementing his framework for analysis, such as what should constitute short-term financial liabilities. This should be much broader than typical measures (such as short-term external debt) and should include at least M2 (which includes all bank deposits) and possibly even broader aggregates (such as money market funds). This discussion is extremely useful in thinking about a range of issues that are not the focus of the paper. For example, it provides a rationale for many countries to hold reserves that are much larger than traditional models suggest would be needed. One suggestion for this paper would be to push this discussion even further by considering in more detail exactly what should be included in the liquidity coverage ratio and looking at this ratio for different countries. What is included in the ratio will have important implications for how this measure can affect policy.

In the final section of the paper, Gourinchas again chooses to refocus the paper assignment and, instead of focusing on Asia, applies his focus on global liquidity imbalances to the current challenges in Europe. He presents a compelling set of reasons why the situation today may be even worse than the headlines suggest given the liquidity challenges faced in the European banking system. This is not cheery reading. This is especially sobering as the paper stops after a dire assessment of the current situation.

This abrupt and depressing end leads to my main suggestion for the paper—to take these arguments to the next level by discussing what this new approach to understanding imbalances implies for the merits of different policy options. If global liquidity imbalances are a key vulnerability that can lead to crises, what steps should be taken, both during a crisis and a priori? For example, during the recent crisis, the Federal Reserve's swap lines provided a source of liquidity to address some of the challenges raised in the paper.<sup>1</sup> Should these lines be made permanent? Given the assessment of the problem provided in the paper, is there a different approach that the International Monetary Fund (IMF) should be taking to address the types of global liquidity shortages, or are the new lending facilities sufficient? Should there be greater use of American depository receipts to address global liquidity issues? Is this a reason to encourage faster internationalization of the renminbi, as discussed in an earlier session of the conference? Should there be greater regulation of gross liquidity positions and imbalances given the dangers they pose? Given the key role discussed in the paper of the United States as the global liquidity provider, what are the implications if the United States does not address its fiscal challenges and its debt is no longer viewed as a safe haven? Should the emerging world adjust policies so that they are no longer a "liquidity sink"?

Moreover, to answer these questions, careful thought should be given to the multilateral consequences of any policy proposals. One of the lessons that policymakers seem to be learning—albeit too slowly—is that policies targeted at addressing domestic economic conditions often have substantial multilateral effects. The second round of quantitative easing in the United States and exchange rate intervention in China were factors behind the surges of capital inflows to emerging markets in late 2009 and early 2010. Capital controls enacted by Brazil to limit these capital inflows redirected flows to other emerging markets.<sup>2</sup> Numerous papers have shown how banking regulations in one country lead to regulatory arbitrage. International institutions, such as the IMF, are beginning to provide useful analysis of these spillover effects of national economic policies. These considerations should also be included in a discussion of what should be done in response to global liquidity imbalances. Gourinchas's paper suggests that the immediate response to these imbalances may be to provide greater access to funding to reduce these liquidity imbalances. But what are the long-term multilateral implications?

To summarize, this is an extremely useful paper in reframing the debate on global imbalances. Global imbalances matter and are important. What matters, however, is not the traditional focus on net imbalances and current accounts. Instead what matters are gross imbalances, especially with regard

to liquidity. This focus, however, suggests that the global economy—and especially Europe—may face even greater challenges than currently understood. Now we need more guidance on what should be done given this critically important reframing of the challenges provided by Gourinchas.

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## NOTES

1 For example, see Rose and Spiegel (2011).

2 See Forbes et al. (2011).



## GENERAL DISCUSSION

# Global Imbalances and Global Liquidity

Chair: Barry Eichengreen

**Mr. Eichengreen:** I'm going to ask the old fogey's question: What is really new about the new view? If the new view focuses on gross flows, their composition, their currency denomination, and their maturity, is it simply the migration to the advanced economies of issues that a lot of people have been writing about under the rubric of currency and maturity mismatches on the national balance sheet? I think the answer to my own question would be that it's not only currency of denomination and maturity, but other liquidity and risk characteristics also need to be added to the mix. Another "what's new" question would be that the U.S. balance of payments in the 1960s reflected the fact that the United States was acting as banker to the world. The United States had deep and liquid financial markets in the 1960s, but it also had a central bank that could backstop intermediation. It's unprecedented that Europe is now providing the world with financial and intermediation services in a currency that the European Central Bank cannot itself provide. The question at the end of this monologue is, How did that situation arise, where we see an economy with this kind of maturity mismatch denominated in somebody else's currency? Kristin's slide on France suggested that it happened all at once in 1999, when there was a big break in the time series—so what happened in 1999?

**Mr. Gourinchas:** Thank you first Kristin for very constructive and useful comments. Barry, you had multiple questions, so let me try to give partial answers to each of them. If you look at what was going on in the 1960s, there was a lot of discussion that I summarize in the paper about what was the relevant concept of the balance of payments. At the time, Walther Lederer at the Department of Commerce argued that we should define the balance of payments as some measure of net short-term liabilities minus the change in reserves. The Bernstein commission was set up in the 1960s and came up with other definitions of the balance of payments. All of these efforts were addressing the same question that I'm talking about in this paper: they were trying to measure short-term funding or liquidity shortages. Of course at the time we didn't have any data on international balance sheet positions, so we worked with balance of payments

flow data, which was a constraint. I think what made the sort of evolution that Kristin is talking about possible is data, and here the efforts of people like Phil Lane and Gian Maria Milesi-Ferretti at the IMF and various other institutions in collecting better positions data that is broken down by type of assets and by counterparties is extremely useful. So that's one area where clearly we can do a lot better.

How did that situation arise? Well, 1999 may be a break point in the series for the gross flows, but in terms of the maturity mismatch, the turning point is the adoption of Basel II. Viral Acharya and Philipp Schnabl published an interesting paper a couple of years ago on the structure of asset-backed commercial papers. They show that all of the countries that were issuing ABCPs were engaged in some sort of regulatory arbitrage, exploiting the loopholes of Basel II to try to get no capital charge against the triple-A tranches of the securitized products. So that's the answer, regulatory arbitrage. Whichever way you define the liquidity coverage ratio, if you come down to that, a game will be played in terms of how we reclassify things.

Turning to what Kristin mentioned, how do we make this operational? Part of the difficulty is that even with the huge improvements in data we're not there yet. The Bank for International Settlements has been at the forefront, doing a fantastic job spotting dollar shortages almost as soon as they appeared. But they were triangulating, trying to estimate the amount of dollar funding needed, because there was no direct estimate. It was really pretty simple, you need a breakdown of liabilities and assets by currency and by maturity. We don't have that, and we should go in that direction.

**Ms. Forbes:** You said that much of this has been said before, and probably so, but some of it has been forgotten. If you read the debate on imbalances in the mid-2000s, there was very little focus on gross numbers, so maybe that's why it seems new to the younger people in this field. The second thing that is fundamentally new is the size of some of these positions. You can see it on my graph for France. The size of these gross positions relative to their underlying economies is much larger than it ever has been in the past, so I think that changes the debate. The third question is, why the break in the 1990s? Also, adding to what Pierre-Olivier said, if you create graphs like the one for France for these emerging markets, it's striking how gross inflows basically followed current account balances until the 1990s. After that, there was a wave of liberalization and reduction in regulations, such that domestic investors and banks that largely had not been allowed to were able to start investing abroad. That's where the gross outflows started to take off.

**Mr. Truman:** One difference is that the capital flows in the 1960s were dominated by the official sector rather than by the private sector. One needs to ask the question whether they are the same or different. Dong He suggested in his comment on my paper that the official sector capital flows we see now are responding to the private sector. That is a hypothesis, though perhaps a self-serving hypothesis if the reserves are being accumulated for other reasons. But it seems to me if you're going to go this route, you need to think about the private sector and official sector separately, including on the question of the demand and supply of safe assets.

My other comment is that, although Europe essentially had a balanced current account balance throughout the decade since the creation of the euro, it also was supplying about a €1½ trillion buildup in official gross claims on Europe, largely from within greater Europe, implying that the euro area was acting as a liquidity provider to itself through its own safe assets.

**Mr. Goodfriend:** I support what Pierre-Olivier was saying about what's new. Over the last 30 years, U.S. money market finance has been given all sorts of regulatory breaks that facilitated the supply of liquidity services. Exemptions from the mutual fund laws back in 1940 allowed money market funds to have constant net asset value, so they could compete with bank deposits. Exemption of the automatic stay in bankruptcy on repos has facilitated the repo market, and depository sponsors of money market funding were allowed to do so essentially by evading capital requirements. These developments allowed borrowers to fund themselves at lower explicit nominal interest cost. However, because there seemed to be no end to increases in liquidity, it fueled the credit bubble and collapse. This problem seems to have gone international, and is at the source of what's really different now.

**Mr. Kim:** I agree with you on most points, particularly the role of currency or maturity mismatches raising the vulnerability to crises. As for why so much borrowing was short-term, you mentioned this might be because of the disciplinary or liquidity role of short-term debt. But I also think it might be a reflection that maybe short-term liabilities were perceived as cheaper than long-term liabilities, despite risk vulnerability. We need to look at whether the cost difference between short-term and long-term debt instruments was at an equilibrium or else was somehow distorted.

**Mr. Gourinchas:** Thank you for the comments and questions. Ted, you raise an important distinction between the official sector and the private sector. In the normal state of the world there is provision of liquidity from both sectors. But

in times of crisis, private-sector liquidity dries up. Often official-sector liquidity has to step in to offset the decline in private-sector liquidity. That's what we've seen with the facilities for liquidity provision by many central banks around the world, and I think that's an important part of the response kit when we have a funding crisis. In the case of Europe, private liquidity has dried up, but the central bank is not an issuer of dollars, the currency that's needed to offset the shortage. That's when things like the swap lines become critical in alleviating some of the pressures.

So both official and private liquidity are important. It's complicated to measure what is the real pledgeable value of safe assets. On the public sector side, we witnessed in the last year a reclassification of risk-free assets—European sovereign debt—as risky assets. That has broad implication in terms of demand for the remaining safe assets, which is something that Kristin was touching on at the end of her comments.

Marvin, I agree with everything you said.

Jun, the question you raise about short-term debt is interesting. There's a lot of discussion these days about various distortions that can arise in the private provision of liquidity. The general view is that there is too much reliance on short-term debt instruments, so in that sense it might be too cheap. The issuers of liquidity don't face a high price for issuing and don't realize that by doing so they increase the systemic risk. In turn, they don't see a role for intervention in trying to structure the maturity of private-sector insurance. For instance, Jeremy Stein has argued that perhaps government should issue more short-term debt to squeeze that part of the maturity spectrum, raise short-term borrowing costs, and displace some of the private borrowing to the long-term side. In a closed economy analysis, one could imagine an international counterpart of what he's discussing. But then the question would be who would be issuing that sort of global liquidity. That's a hard question to answer.

**PANEL DISCUSSION**

**POLICY REFORMS AFTER THE CRISIS**



# Global Policy Challenges in the Post-Crisis Period

Jun Il Kim

The global financial crisis of 2008–09 has cast a long and wide shadow over the world economy. Financial disruptions in advanced economies, triggered by the bursting of housing bubbles, spilled over quickly into the real economy. They then crossed borders to impact emerging market economies, many of which were innocent bystanders. During the concerted policy responses to deal with the crisis, official interest rates in many countries were cut to near zero, while large-scale fiscal stimulus measures were deployed.

Another Great Depression was avoided thanks to these policy responses, but the global financial crisis has yet to give way again to normality. The economic recoveries in Europe and the United States are still faltering, with growth anemic and unemployment high even three years since the crisis erupted. Monetary policy has been overstretched on both sides of the Atlantic, with unconventional measures that have proven less effective than many anticipated. The fiscal legacy of the crisis is particularly challenging. The sovereign debts of major advanced economies have soared to over 100 percent of GDP, with little prospect of their fiscal deficits falling for years to come. Fiscal crisis engulfed the southern periphery of the euro area in 2010, and is now threatening the core. U.S. public debt meanwhile lost its triple-A rating in the course of a political clash over the debt ceiling. Unless addressed quickly and decisively, the sovereign debt crisis in advanced countries could mark the beginning of a new global banking crisis.

In the wake of these economic and financial developments over the past three years, the challenges now facing global policy are both enormous and unprecedented. Bank and household balance sheets are severely impaired, with losses in the trillions of dollars being incurred. Under these circumstances, monetary policy has proven no panacea, with its transmission channels broken or dysfunctional. Despite the super accommodative stances maintained since the outbreak of the crisis, liquidity and credit have not flown to where they are most needed. Fiscal policy meanwhile did play an important role in the early stage of crisis management but no longer appears able to. Governments in advanced

economies are heavily debt-ridden now, with little or no fiscal space to support economic recovery or recapitalization of their banks. Last but not least, millions of workers remain either unemployed or underemployed. If it continues for long, high unemployment will destroy human capital and significantly undermine future growth potential.

In this light, the key global policy challenges at the current juncture can be summarized as follows:

## **Deleveraging without Hampering Growth**

The global financial crisis and more recent sovereign debt crisis clearly indicate that, for long-run sustainability, the excessive leverage of governments, financial institutions, and households need to be reduced sooner rather than later. The aggregate indebtedness of advanced countries, as measured by the gross financial liabilities of governments, households, and nonfinancial corporations combined, doubled between 1980 and 2010—from 165 percent to 320 percent of GDP. In contrast, the corresponding number for emerging market economies barely changed and stood at 110 percent of GDP in 2010. A recent study shows that public debt at or above 85 percent of GDP tends to affect economic growth negatively, and similar thresholds seem to also apply to the private debt owed by households and nonfinancial corporations (Cecchetti et al. 2011). Deleveraging is thus an urgent task, not only for short-run financial stability but also for long-run growth and sustainability in many countries. Further delay will only make the problem worse.

However, deleveraging through fiscal austerity would in all likelihood be contractionary—and even more so if undertaken by many nations simultaneously. If deleveraging leads to stagnated growth or recession for an extended period of time, it is less likely to produce the intended outcomes. In fact, the possibility cannot be ruled out of a premature fiscal tightening or withdrawal of fiscal stimulus triggering a vicious spiral of rising public debt and stagnating growth. It was just two decades ago that Japan faced this same challenge, and failed to avoid such a spiral.

One global policy challenge would thus be how to deleverage in an orderly fashion without hampering either short-run recovery or long-run growth. In theory, one solution would be to put in place a credible fiscal plan that could anchor market expectations for long-run debt sustainability. Such a plan would then create extra fiscal space that could be used to facilitate economic recovery in the short run. The bulk of the increase in public debt since the global financial crisis has in fact been due to the collapse of government revenues amid severe recession, rather than to discretionary fiscal stimulus or the fiscal cost

of banking sector bailouts (International Monetary Fund 2010). In this respect, supporting a short-run recovery might help facilitate deleveraging at a lower cost.

This is much easier said than done, however. There is in reality great uncertainty about what constitutes a credible fiscal plan—in terms of its pace and the level of debt reduction it aims for. It is even more difficult to calculate an optimal path of debt reduction within a class of credible plans. Guidance on these issues would seem to require more research.

## **Regulatory Reforms: Striking the Right Balance**

There is no question about the need for strengthening of prudential regulations with a greater focus on systemic risk and a multilateral perspective. This is one of the key lessons of the global financial crisis. However, it is also critically important to avoid shifting the pendulum too much. Leveraged risk-taking is a crucial feature of financial intermediation. And of course, as demonstrated by the global financial crisis, too much leverage threatens financial stability. But too little leverage and risk-taking will undermine market efficiency and, ultimately, real investment and growth in the long run.

The recent international policy discussions on regulatory reforms are almost entirely geared toward reducing systemic risk, based on the belief that stronger regulations can help prevent financial crises and growth destruction. This belief certainly has some truth, as countries affected by financial crisis often register discernible declines in long-run growth. But overregulation would also risk negatively affecting long-run growth, by discouraging even productive leveraged risk-taking.

The large literature on economic development suggests that the quality and volume of financial intermediation matters a great deal for long-run growth. Existing studies also show financial deregulation to be a double-edged sword—enhancing growth by encouraging leveraged risk-taking on the one hand, but also killing growth through the recurrence of financial crisis that it gives rise to on the other. The data do, however, indicate that the growth-enhancing effect dominates (Ranciere et al. 2008). Such evidence, if taken literally, suggests that financial overregulation could on average hamper long-run growth, despite its positive role in preventing financial crisis.

In this respect, our global policy challenges are to better understand the conflicts between the financial regulatory roles of securing financial stability and of fostering economic growth, and to contemplate optimal financial regulation that balances the trade-offs between these two objectives. As the current international discussions on regulatory reform are taking place in a global

setting, the implications for growth of such reform will also likely be global—affecting long-run growth in both advanced and emerging economies.

Highly indebted advanced economies may be tempted to resort to some form of financial repression to facilitate deleveraging, as they did during the first three decades or so after World War II (Reinhart and Rogoff 2009). Although financial openness may reduce the scope for deleveraging by way of financial repression, stronger regulatory controls on liquidity and risk-based capital of banks under the Basel III framework may increase the demand for sovereign debt and discourage investment carrying higher risk weighting, including cross-border investment in emerging and developing economies. The growth effect of overregulation would thus likely be felt globally.

## **Strengthening the Global Financial Safety Net**

Global liquidity is created and destroyed through very complex interactions among many players, including official and private-sector lenders and borrowers. If we focus on the international dimension of the global liquidity cycle, the existing evidence suggests the cycle would be driven more by the actions of or market developments in advanced rather than emerging economies. While most emerging market crises over the past two decades or so were considered home-grown crises, the underlying vulnerabilities were, with few exceptions, related to surges in north-to-south capital flows originating in advanced countries and reaching the shores of emerging economies.

Whenever financial crises erupted in emerging economies in years past, the basic policy advice always concerned what emerging economies should do, with little discussion of what advanced economies could or should do to stabilize the global liquidity cycle. And while international policy discussions since the global financial crisis have addressed a variety of policy issues related to global liquidity, their focus still lies on north-to-north capital flows.

At present, and in the future as well, one of the most pressing issues for emerging economies will be how to guard themselves against the contingent risk of foreign exchange liquidity shortage and negative spillovers from advanced economies. Improved oversight of capital inflows and macroprudential regulations will help address the danger of global liquidity surges and the attendant risk of asset price bubbles. But emerging economies will still be vulnerable to sudden reversals or disruptions of global liquidity.

Global liquidity disruption has always been a unidirectional process: It starts from advanced economies and spills over into emerging economies. But its real consequences are of course not unidirectional. Retrenched growth and depreciated exchange rates in emerging economies ultimately feed back

into lower economic growth for advanced economies. There are thus good reasons to argue that major central banks should bear greater responsibility for strengthening the global financial safety net. And in this regard, the currency swap arrangements that the U.S. Federal Reserve offered to several emerging economies during the global financial crisis proved highly effective in calming the markets and stabilizing exchange rates. The existence of a well-functioning safety net would also help reduce emerging economies' temptation to hoard more and more foreign reserves, and thereby mitigate the problem of the global imbalances.

With greater responsibility, of course, might also come higher risk. For example, liquidity-providing central banks might have to bear balance sheet or policy risks if offering currency swap arrangements to emerging economies. However, the costs of such risk-taking would be far smaller than those of inaction—that is, the costs of adverse feedback effects from emerging economies.

Strengthening the global financial safety net may, it is said, also nurture moral hazard. But there are reasons to believe otherwise. First, financial crises have proven very costly to countries, not only economically but also politically. And the high cost of a financial crisis is by itself an effective deterrent to debtor moral hazard. Second, the safety net aims at addressing liquidity disruptions of a global nature, and not idiosyncratic or home-grown liquidity crises. Third, from the perspective of emerging economies, foreign reserves holdings and access to the safety net are close substitutes and thus essentially offer the same insurance benefit and moral hazard risk. So if, for example, access to a given central bank swap amount reduces an emerging economy's foreign reserves by the same amount, the total risk of debtor moral hazard will remain unchanged.

Finally, any remaining concerns about moral hazard could be addressed by an appropriate mechanism design. For example, some constructive ambiguity could be introduced as to central bank swap line availability. It should be emphasized in this regard, however, that too much ex ante ambiguity might be time inconsistent if the recipient country is systemically important. To be specific, access to swap lines could be conditional on a set of ex ante qualification standards. Such ex ante qualification would make decisions on access by the liquidity-providing central banks more predictable, while minimizing the risk of moral hazard on the side of the liquidity recipients. In short, constructive ambiguity works better the better it is structured.

## **Korea's Policy Reforms since the Crisis**

Despite having strong macroeconomic fundamentals, Korea was severely hit by the global financial crisis during its early stage. Once Lehman Brothers

collapsed, Korean banks found themselves facing significant funding difficulties in the international capital markets. The rollover rate on short-term foreign currency debt fell sharply, and so did the nation's foreign reserves in the first several months after the Lehman bankruptcy, while the Korean won depreciated more than 20 percent before settling at a new equilibrium.

In retrospect, Korea's financial vulnerability had been masked by its ample foreign reserves and good macroeconomic performance. Prior to the global financial crisis, Korea's economic growth had remained at a solid 4 to 5 percent, and its current account was running only a small deficit after a long period of surpluses. Inflation was rising slightly above target, but this was due mainly to supply-side factors such as oil prices. Foreign reserves exceeded US\$260 billion in the first half of 2008. More importantly, although real estate prices had risen in specific regions within the Seoul metropolitan area, Korea had shown no signs of a major housing bubble prior to the crisis, thanks largely to prudential regulations such as its loan-to-value and debt-to-income ratio requirements. On the financial front, however, short-term foreign debt (on a remaining maturity basis) rose to the high level of 78 percent of foreign reserves as of the end of 2007, and increased further to 97 percent by the end of 2008. In addition, the average loan-to-deposit ratio of domestic banks remained over 125 percent at the time of the global financial crisis, a level among the highest in Asia.

In a nutshell, the global financial crisis has demonstrated that stable macroeconomic conditions and a large reserve buffer are not sufficient to guard against adverse external shocks, particularly if underlying financial vulnerabilities are large. Indeed, the role of Korea's foreign reserves in stabilizing the foreign exchange market was limited due in part to the fear of losing reserves. The exchange rate reversed its course of rapid depreciation only after Korea signed its currency swap agreement with the Fed. Microprudential regulations meanwhile also were not enough to curb the currency and maturity mismatches on bank balance sheets.

Taking lessons from its experiences during the global financial crisis, Korea has since implemented important macroprudential reforms with a focus on managing risk related to foreign exchange liabilities. First, to prevent the buildup of systemic risk arising from banks' excessive exposure to short-term external debt, caps on the foreign exchange forward positions of banks were introduced in October 2010, which are at present set to 40 percent of capital in the previous month for domestic banks and 200 percent for foreign bank branches. Second, to reduce capital flow volatility and increase long-term and stable funding, a macroprudential stability levy (bank levy) was introduced in August 2011. The levy is imposed on nondeposit foreign currency liabilities at rates that vary

depending upon the maturity—from 20 basis points for less than one year to 2 basis points for five years or longer.

In parallel with these reform measures, a major change in the financial sector policy framework was enacted recently, with the revision of the Bank of Korea Act in August 2011 to impose a new mandate on the Bank of Korea (BOK) for financial stability, in addition to price stability. The amendment offers the BOK greater informational access for surveillance and a stronger legal basis for undertaking macroprudential policy and its role as lender of last resort, while at the same time requiring higher policy accountability. Specifically, the BOK can access nonbank financial institutions for information, enforce reserve requirements on bank noncore liabilities, and extend emergency liquidity support to nonfinancial enterprises if necessary. It is also required to submit a semiannual financial stability report to the Korean National Assembly.

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# A Macroprudential Perspective in the Conduct of Monetary Policy

Ryuzo Miyao

First of all, I would like to thank the organizer of this conference for inviting the Bank of Japan and allowing me to exchange views among such distinguished panelists and scholars.

Today I would like to highlight one of the key issues regarding the conduct of monetary policy, namely a macroprudential perspective in monetary policy-making. More specifically, I will discuss how to take into account the risk of accumulation of financial imbalances in the conduct of monetary policy, which could help prevent financial bubbles and subsequent crises. I would also like to introduce our experience and summarize what the Bank of Japan has done so far in this regard.

You may find it somewhat premature to talk about how to prevent future crises given that the world is still struggling in the aftermath of the global financial crisis. However, in order for Asia to keep playing a leading role in the global economy, the issue must be of great importance, although I should immediately add that we have not observed excessive financial imbalances in the region. Looking back at the period after the Asian crisis, we have witnessed a series of incidents that can be deemed crises. It appears that the frequency of such incidents is rising and that efforts to deal with one crisis might have provided the seeds for a subsequent crisis. In the coming years, Asia will not be allowed the luxury of simply being pleased with the situation.

## **The Essence of the Global Financial Crisis**

As background, let me briefly review the essence of the global financial crisis. Although a variety of economic and financial factors are involved, the essence of the global financial crisis is the formation and bursting of the credit bubble. In forming the bubble, the household sector in the United States expanded borrowing and consumption along with the boom in housing prices. On the financial front, new types of transactions such as securitized products and derivatives prevailed, and leverage also increased significantly. Such excess in real economic activity, asset prices, and financial markets had a shared influence among each of these components, and this led to further excess that spread beyond

national borders, resulting in the global credit bubble. Balance-sheet adjustment has continued to constrain recovery in many countries, which is typical after the bursting of a large-scale credit bubble.

Unlike the case of the information technology bubble in the early 2000s, the global financial crisis has had such a prolonged and serious aftereffect because financial imbalances have been accumulated widely on a significant scale in the form of the credit bubble. This accumulation of financial imbalances took place during a long period of global monetary easing amid the combination of high growth and stable inflation—the so-called Great Moderation. Such an environment led to the prevalence of optimism about the future. There was also growing overconfidence in the sophistication of financial technologies. In those circumstances, imbalances accumulated in the form of expanding credit and leverage as well as the rise in asset prices on a worldwide basis.

At this moment, the most pressing and immediate concern for the global economy is the sovereign debt problem in Europe. The problem could be described as a part of the prolonged balance-sheet adjustment process after the financial crisis. The introduction of a single currency may also have contributed to accommodative financial conditions and macroeconomic stability in the mid-2000s, resulting in the lack of fiscal and financial discipline during the period.

## **Two Views on How to Deal with Asset Price Bubbles**

On the monetary policy front, central bankers and economists have attempted to address the issue of what is a desirable response to the accumulation of financial imbalances, especially how a central bank should respond to asset price bubbles.

Discussions on this issue may be categorized into two broad views. The first view emphasizes *ex post* measures, arguing that a central bank should not apply monetary policy to asset price fluctuations but should carry out aggressive monetary easing after the bursting of a bubble. The second view stresses *ex ante* responses, arguing that, considering the magnitude of the adverse impact following the bursting of a bubble, a central bank should conduct monetary policy to prevent it.

Monetary policy responses to asset price developments involve a variety of issues, and it may not be possible to simply conclude which is right or wrong. Having said that, the global financial crisis has shown that, when asset price inflation is associated with a credit bubble, the impact of its bursting is significant, and *ex post* measures have certain limitations in terms of their effects, no matter how promptly and aggressively they are implemented. As a result, although there remains the challenge of implementation, as I will describe

shortly, there is seemingly a growing consensus that monetary policy should be conducted by sufficiently taking into account asset price inflation associated with a credit bubble, and including *ex ante* responses.

## **Importance of a Macroprudential Perspective**

In other words, we could say that a macroprudential perspective in the conduct of monetary policy has become more widely recognized as of essential importance. When one says “macroprudential,” it is usually in the context of how to ensure financial stability. In a macroprudential approach, risks are analyzed and evaluated from the viewpoint of the entire financial system, and institutional designs and policy responses are formed on these assessments. Such a macroprudential approach is also very useful in examining the risk of accumulation of financial imbalances when conducting monetary policy.

In the preceding discussion, I mainly touched upon asset price bubbles, which are one aspect of financial imbalances that could threaten the stability of the entire financial system and adversely affect economic activity. Such imbalances can also take the form of excessive mismatching in terms of interest rates and foreign exchange rates at financial intermediaries. As we have witnessed in the current crisis, imbalances could also develop in an unprecedented manner as a result of new financial techniques and products. Although they may take different forms, one common feature is that imbalances accumulate through the interconnectedness of financial institutions, financial markets, and other components of the financial system, all of which are accompanied by an excessive expansion of credit and/or leverage. This feature is key when examining the risk of financial imbalances in the conduct of monetary policy.

## **Challenges Involved in Implementation**

We now understand the importance of examining the risk of accumulating financial imbalances and evaluating where and how much risk lies in the conduct of monetary policy, at least conceptually. For actual implementation, however, difficult challenges remain. One such challenge is how to detect the accumulation of financial imbalances. To this end, efforts have been made globally, including by the Bank of Japan, to develop analytical tools.

Another challenge is how to respond to the accumulation of financial imbalances when they are detected successfully. In the first place, monetary policy by itself is not meant to achieve financial system stability, and moreover it is not possible to fully ensure financial system stability through monetary policy alone. Taking the example of asset price bubbles again, suppose a central bank tries to accomplish a soft landing of asset price inflation through monetary

tightening. Then the more market participants believe that such an attempt will be successful, the higher asset prices may increase further. If a central bank conducts monetary tightening aggressively enough to prick bubbles, this could end up with overkill and hurt the real economy.

As such, in order to restrain systemic risks from a macroprudential perspective, it is not appropriate to simply assign monetary policy directly for that purpose. Greater importance should be placed on macroprudential tools such as a restriction on the loan-to-value ratio for real estate loans and the countercyclical capital buffer in the Basel III capital adequacy requirements. It is also true that an accumulation of financial imbalances develops in a prolonged period of accommodative financial conditions, and therefore such a risk should be duly considered in the conduct of monetary policy.

## **The Case of the Bank of Japan**

Now I would like to explain the Bank of Japan's experience and summarize efforts we have been making so far.

Because we experienced the formation and bursting of a significant credit and asset price bubble in the late 1980s and early 1990s, the Bank of Japan placed importance on the risk of accumulating financial imbalances in the conduct of monetary policy. In 2006, when we exited from the quantitative easing policy, the Bank introduced a monetary policy framework in which economic and price developments are assessed from two perspectives. The first involves assessing the baseline scenario for economic activity and prices, examining whether the economy is on a sustainable growth path with price stability. The second perspective assesses the risks considered most relevant to the conduct of monetary policy, including risks that have a longer time horizon than the first perspective. In line with this second perspective, the Bank examines the accumulation of financial imbalances as one of the risk factors with a longer-term horizon.

The Bank's emphasis on the risk of financial imbalances can also be found in the policy commitment made in October last year in the context of the comprehensive monetary easing framework. The Bank has made it clear that it will continue the virtually zero interest policy until it judges that price stability is in sight on the basis of the understanding of medium- to long-term price stability—that is, the level of inflation that each Policy Board member understands as price stability. The current understanding is “a positive range of 2 percent or lower, centering around 1 percent,” on the basis of the year-on-year consumer price index inflation rate. The unique feature in the policy commitment in October 2010 is that an explicit macroprudential condition is attached to the

commitment, that is to say, the bank will continue the virtually zero interest rate policy “on condition that no problem will be identified in examining risk factors, including the accumulation of financial imbalances.”

In practice, however, detecting the accumulation of financial imbalances is not an easy task. In searching for early warning indicators for financial crises, vigorous research has been done globally at various institutions such as the International Monetary Fund and Bank for International Settlements as well as central banks, including us. The results of those efforts have shown that, for the purpose of detecting financial crises, it is useful to assess the degree of financial excesses by monitoring indicators such as asset prices, aggregate credit, total investment, and residential investment, most typically their deviation from a trend. The Bank has established a framework to regularly check such indicators in the conduct of monetary policy.

While developing analytical tools devoted to the conduct of monetary policy, the Bank has also been making efforts to better analyze and assess risks across the entire financial system. Specifically, it has produced diversified stress scenarios as part of macro stress testing and developed the new Financial Macroeconometric Model to analyze the feedback process in which stress exerted on economic conditions and asset prices spreads to the real economy through the behavioral changes of financial institutions. The Bank has also been developing indicators useful in analyzing excessive credit expansion and the financial sector’s risk-taking, as well as in detecting signs of instability in the financial system. These new tools and assessments were incorporated in our Financial System Report published in October, which is available at our web site. The Bank also attempts to further promote concerted efforts between these assessments of financial system stability and monetary policymaking. The recent economic outlook released in October and subsequent policy judgments reflect these new developments from macroprudential perspectives.

## **Closing Remarks**

Let me conclude. I have described the importance of a macroprudential perspective in the conduct of monetary policy and the Bank of Japan has been making certain efforts in this regard. However, I should admit that these are only partially completed and we should keep up our endeavor. In the aftermath of the global crisis, each country has implemented various policy reforms based on similar grounds. I would like to finish by expressing my sincere hope that a policy framework to prevent future crises will be further established worldwide in the coming period, through sharing experiences at various gatherings such as this conference. Thank you very much.



# Policy Reforms after the Crisis

Norman Chan

The title of this session is supposed to be policy reforms after the 2008–09 financial crisis. I think there's a big question about the title because I'm not quite sure the crisis is over yet. But in order to discuss policy reforms, it makes a lot of sense to try to understand the causes of the crisis. If you can't diagnose the root causes of the crisis, it will be very hard to try to prescribe the right kind of medicine to cure the problem.

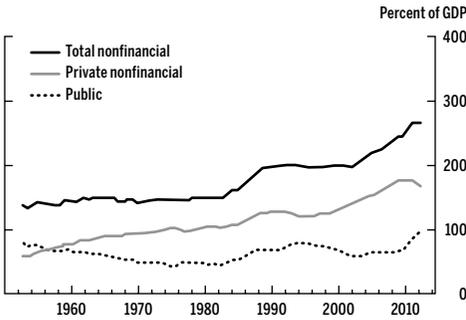
There are a lot of theories, books, and articles written about the crisis, why it happened, when it did, and the kind of lessons to be learned. I'm offering an Asian perspective from Hong Kong, several thousand miles from here. We may not see things exactly the way you see it here, but I think it's worthwhile to offer my perspective on the root cause of the global financial crisis and the more recent European debt crisis.

Figure 1 shows that the average debt level of the United States, United Kingdom, Germany, and France in 1980 was 165 percent of GDP. But by 2010, the average ratio in these industrial countries had risen to roughly 320 percent. The chart also shows that the rising indebtedness of these economies was attributable sometimes to household debt, sometimes to corporate debt, and sometimes to government debt. The question it raises for me is, What are the underlying reasons for this rising indebtedness? Why did people begin borrowing a lot more than they used to?

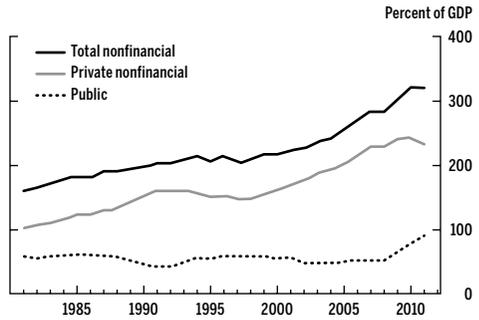
Many theories place some of the blame on financial innovation, referring specifically to securitization providing greater ease in obtaining credit, especially households seeking home finance. Interest rates also were following a declining trend since the 1990s, therefore increasing the affordability of leverage. During this period of great moderation, economic prosperity, job security, and employment income grew and were taken for granted, which in turn led to increased excessive risk-taking by households and corporations. Another theory, articulated by Ken Rogoff, is that the widespread practice of giving tax concessions to companies using finance over equity increased reliance on borrowing and led to excessive leverage.

**FIGURE 1**  
**Rising Indebtedness of Industrial Economies**

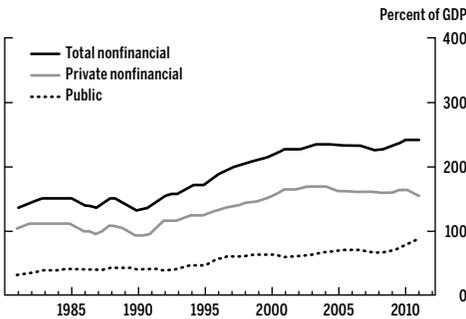
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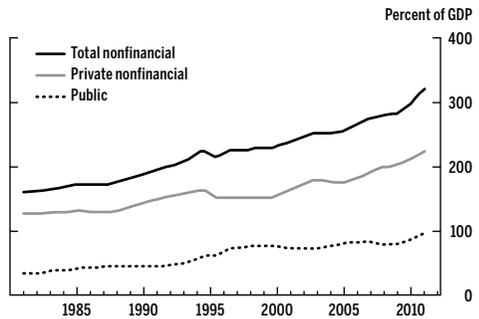
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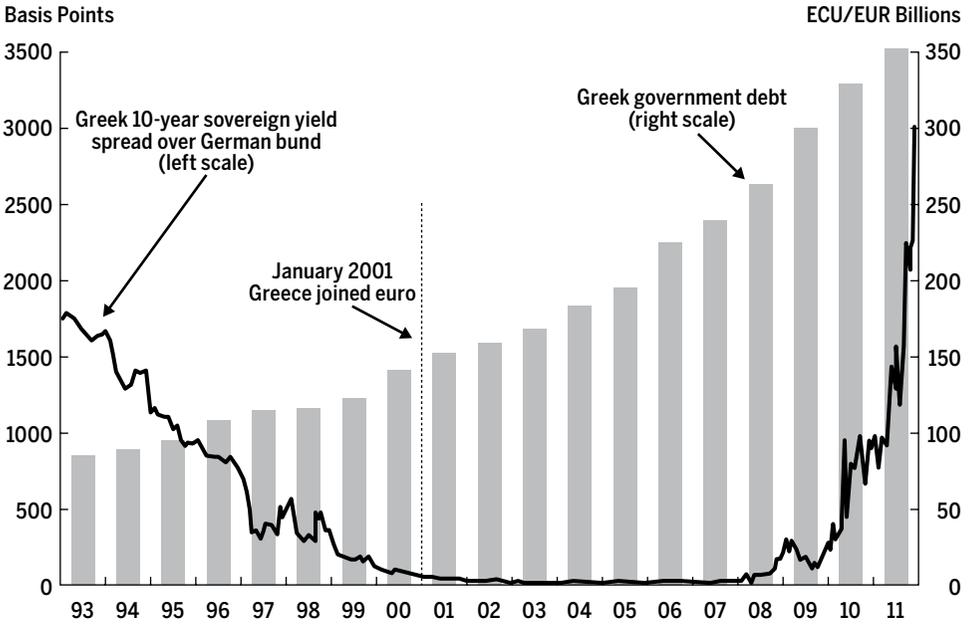


Source: Bank for International Settlements.

But I would highlight another factor, which I would call market failure. Figure 2 illustrates the Greek situation by plotting the spread of 10-year Greek common bonds over the German bund together with the level of Greek government debt. During the early part of the 1990s the market demanded a very high premium for lending to the Greek government, about 18 percent, but this spread gradually came down as Greece made moves toward joining the euro. Once Greece joined the euro zone in 2001, the convergence play kicked in, and, strangely, the market treated Greek sovereign debt as a triple-A rated entity. In fact, Greece's spread was only 20 basis points over the bund for a prolonged period over a couple of years. It's only after the collapse of Lehman Brothers in early 2010, when the market suddenly woke up to the fact that the Greek fiscal position was not sustainable, triggering the European debt crisis.

Some would call this a prolonged period of mispricing of risk, but I would call it market failure. What does that mean? My view is that this situation

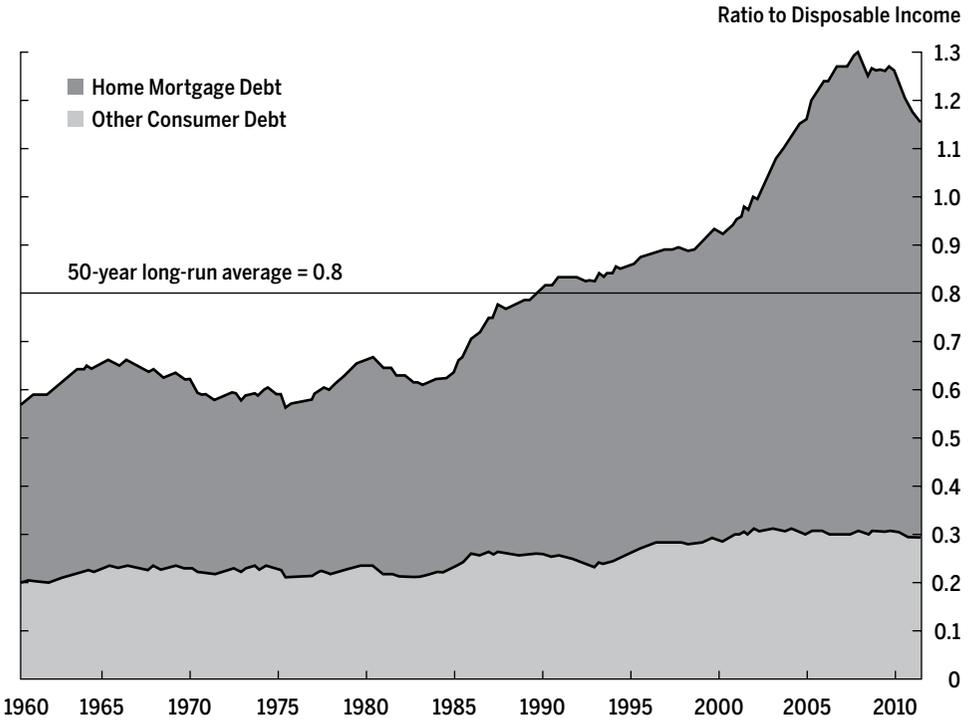
FIGURE 2  
**Market Failure: The Greek Example**



created tremendous problems for Greece, not only for the capital market and for creditors, but also for the debtor, Greece. Why? Because Greece for a long time was under an illusion—based on feedback from the markets—that piling up bigger and bigger debt was okay, and it was very affordable because the market was demanding only a few 20 basis points over the cost of German bunds. So borrowing by the government was pretty okay. That led to even weaker fiscal discipline over the years, and the result, as we now know, has been devastating.

Figure 3 shows the indebtedness of U.S. households, as measured by the ratio of home mortgage and other consumer debt to disposable income. The debt-to-income ratio started to rise steadily in the 1980s. The pace picked up after 2000, mainly due to home finance, not consumer credit. The ratio peaked at 1.3, compared to a 50-year average of 0.8. After the bursting of the housing bubble in 2006 and 2007, household balance sheets were badly damaged. To repair the balance sheets, households need to deleverage, save more, and spend less unless there's a rapid growth in household income, which is not happening yet. So in my view, household deleveraging in the United States will still have some way to go, although I cannot tell at what level it will reach a stable equilibrium.

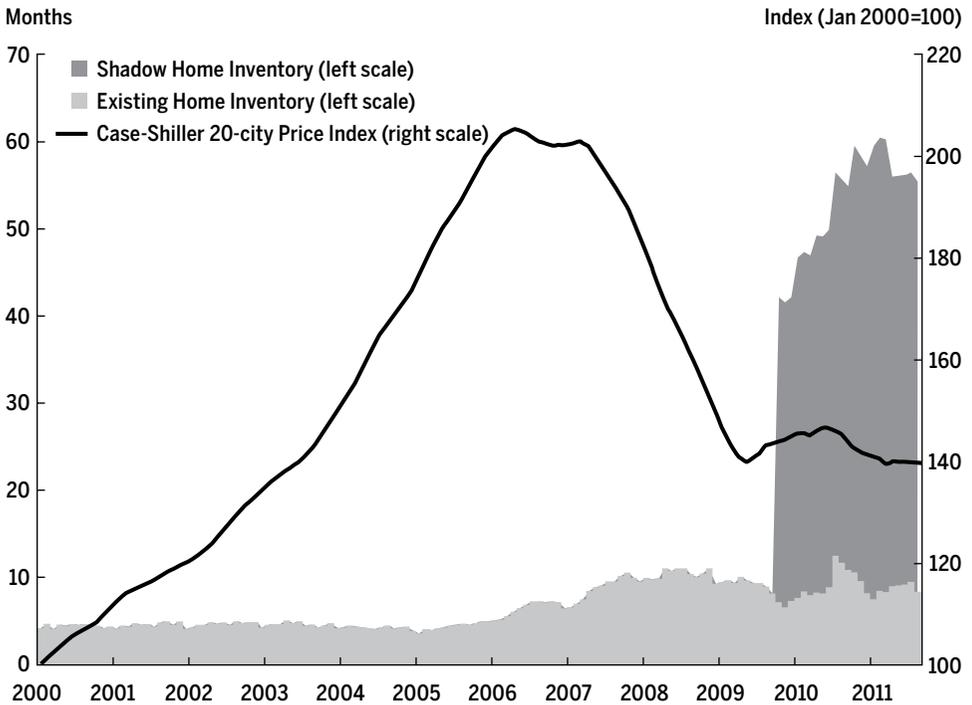
FIGURE 3  
**U.S. Balance Sheet Recession**  
 Household Deleveraging Still Ongoing



Source: CEIC.

Figure 4 shows the Case-Schiller index for 20 U.S. cities, together with the inventory of existing homes and the shadow home inventory estimated by Standard and Poor's. As we know, since the bursting of the housing bubble, house prices have come down quite a lot in many places, but the housing market remains very weak, and there's no short-term prospect of a rebound because of this supply overhang. The supply overhang is daunting, and adds up to 16 months of supply. Of course this is a dynamic relationship, because if investor appetites pick up, the inventory will come down very quickly. Nevertheless, this is a depressing situation because the housing market is very weak, and has become a huge negative drag in repairing household balance sheets. That, in turn, has a negative drag on consumption and consumer confidence. I think this explains my view of why large fiscal stimulus packages and unconventional monetary easing measures have not created the desired result of sustaining a stronger economic recovery in the United States.

FIGURE 4  
**U.S. Balance Sheet Recession**  
 Huge Drag from Housing Inventory



Sources: CEIC, Standard and Poor's.

So, what are the policy lessons? First, avoid excessive borrowing, clearly, because it was the reason for the 2008–09 crisis and the current crisis facing Europe. Of course, that's easier said than done, because many fiscal authorities around the world have, until recently, faced a lot of political pressure to increase spending in good times. And in bad times they have even more reasons to increase spending. As a result, public debt has piled up along with the problem of sustainability and fiscal position. But, given what we've seen in Europe, we hope we have learned from this latest crisis that even the biggest and most advanced economies in the world are not immune from the devastation that can result from excessive indebtedness.

The second point I want to mention as a policy lesson is to beware of the breakdown of market discipline, which is supposed to be the final line of defense for preventing excessive borrowing. Market discipline can and did break down for a considerable period of time during the crisis, thereby exacerbating the problem of excessive leverage.

The third point about quality and effective market regulatory structure has been talked about by many. There's a long menu of things to do on this particular point, but I think the priority is to work on rating agencies. The problem in the United States was amplified by the flawed models used by the rating agencies in assessing the creditworthiness of some exotic financial derivative products, such as CDOs, CDO-square, and CDO-cube. The Basel committee has done a lot of work to raise the quality and quantity of capital—they talk about capital buffer, conservation buffer, and also the liquidity coverage ratio and stable funding ratio. All of these are designed to reduce excessive leveraging by the financial sector and thereby in the economy, and maintain financial stability.

I'm not sure my fourth point is generally understood or accepted. I think because the root cause of the crisis is excessive leveraging, the only way out is deleveraging. Deleveraging is painful, but it's inevitable. Speaking from the Hong Kong perspective, we had a big, exaggerated housing bubble. When the bubble burst after the Asian financial crisis in 1997, we had fast and huge deleveraging in the Hong Kong financial system. It was very painful, I can assure you that. GDP contracted in Hong Kong in five quarters by 8.7 percent. The unemployment rate rose from 2.1 percent to 8.5 percent; deflation, over five years, amounted to a cumulative 15 percent, and housing prices fell 70 percent. So, a huge pain was inflicted on Hong Kong and the Hong Kong economy. But we have recovered and become a stronger, more resilient economy.

My final point is that deleveraging itself is not enough. Deleveraging must be accompanied by restructuring at the same time, because the financial system and the real economy must be restructured to generate greater productivity and competitiveness going forward.

## GENERAL DISCUSSION

# Panel on Policy Reforms after the Crisis

Chair: Barry Eichengreen

**Mr. Eichengreen:** So we have heard three interesting presentations. Mr. Kim and Mr. Miyao focused heavily on macroprudential issues. Norman Chan focused heavily on Europe and the United States, although the points he made are obviously not without implications for Asia. Let's open the discussion to the floor.

**Mr. Svensson:** As background to these presentations, I would like to make a general point on assessing the risks to financial stability and corresponding risks to an economy. In particular, we should not expect to find a single or just a few magic indicators that can tell us whether things are going wrong or not. We need to look for a kind of unsustainability syndrome which involves looking at a lot of indicators and a lot of details. It's not enough to look just at figures on debt-to-income, house price growth, or credit growth. One has to look at the reasons behind these phenomena. Credit growth may be good or bad, depending on what is on the other side of the balance sheet. Do we see good, productive assets growing too, with reasonable prices and good returns, or do we see credit used for consumption? One needs to look at the whole picture, with attention to the details. So one needs to look at balance sheets rather than relations to GDP and disposal income as well as leverage assets to equity. Looking at noncore liabilities for financial firms, as suggested in the Mishkin et al. paper is a very good idea, but we also need to look at liquidity mismatch and maturity mismatch.

There are many questions that need to be asked. Is there a construction boom or not? Do we see speculative behavior? Do we see households buying second and third homes? Do we see households buying homes to rent or buying to occupy? Are credit standards high and stable or deteriorating? Do households assume high appreciation in their housing cost calculations? Can they finance their houses if prices do not appreciate? Do we see increased risk-taking or not? And do we know initially whether risk-taking is optimal? It could be that risk-taking is too low, so a bit of high risk-taking is good. Or it could be that risk-taking initially is too high, so more risk-taking is bad. Is there a mortgage-financed

consumption boom or not? Do we see mortgage equity withdrawal? I think the saving ratio is another important indicator. If you have a low, even negative, savings indicator, things do not look sustainable. But if you have a high savings ratio, things look much better. In general, do we see an overheated economy? Do we see inflation? Do we see a loss of competitiveness? Do we see an increase in government budget deficits or in the current account deficit?

When we look back at the crises we have observed—Sweden before the 1990s crisis, Greece, Ireland, Portugal, Spain, the United States before Lehman, Europe before the current sovereign debt crisis—has there ever been a crisis in a country where only one or two of these indicators I mentioned flash red? If only one or two are red and all the others are green, things probably look pretty good. If several of them flash red, then we should be worried. But I don't think we should ever look at a single or just a few indicators. Credit-to-GDP growth is not enough. It depends on what is on the asset side.

**Mr. Eichengreen:** That is also the lesson that comes out, for example, from earlier empirical literature on currency crises. There isn't a single variable; for that matter, there isn't a stable relationship between a set of variables and crisis incidents. There really doesn't seem to be a substitute for the judgmental process that Lars is describing.

**Mr. Truman:** We have institutions, global financial stability boards, and the International Monetary Fund all busy working with their early warning systems. I agree with using multiple indicators, as Lars advocated. There are no simple rules to be followed, which gets one into the world of discretionary policy and leads those who are concerned about moral hazard to be even more concerned.

I have two questions. One is a specific question about Mr. Kim's presentation and what I call the "global swap network" version of the global financial safety net proposal. I advocate this and have written on it several times. I think there are two issues. One is the puzzle about the behavior of Korea during the last crisis. Korea was reluctant to use much of its reserves. This bears on the whole issue of what the reserves are, and what is the appropriate level of reserves. I'd like your comments on a three-key system, as I suggested in my paper. One key would be that the Fund would say there is a global crisis and the central bank would pay attention to the ramifications of that crisis. The second key is that the central banks would agree to the terms recommended by Basel. The third key would have a prearranged set of swap agreements with countries desiring funds applying and others agreeing under set conditions. Having this three-key system would leave discretion ultimately with the central bank that

applied and the central bank that said yes to the swap. Coming back to my question about reserves, the issue is that the central bank on the other side of lending to the Bank of Korea would also take on a certain amount of credit risk and a certain amount of criticism from its own domestic political forces. Watching how much the Federal Reserve lent out during the crisis in 2008 and 2009, one might perceive that those swap line drawings were perceived as being unconditional, but that was not always the case. Indeed, historically for the Federal Reserve, many swap drawings carried conditions such as, if you couldn't pay it off in three to six months, you would go to the IMF to pay it off or use your reserves. These kinds of conditions were not made public and were like phantom operations, but that may or may not be the case these days. So I'd be interested in your reaction to that sort of framework from your perspective and maybe from others like Norman and Anil.

My second question is more general about macroprudential tools. It seems to me that we're still worrying about whether we should turn the screws on credit more. And if you think about just the U.S. economy, you might think the problem is the reverse, that credit growth is slow, including to the housing market, and the screws may be too tight. That raises the general question about these macroprudential tools in the aftermath of the crisis. One could argue that this set of tools should be able to be used both ways, to turn the dial up or down. But again, looking at the current environment in the United States as an example, turning the dial down in an effort to stimulate the economy more would open policymakers to political risk and criticism from some quarters. If the president of the Federal Reserve Bank of San Francisco, with the approval of the Federal Reserve Board, said we're going to order banks to raise their loan-to-value ratios, I think he might be criticized by some people, and certainly by the press. On the other hand, in Asia my impression is that you can more easily turn the dial either way. Do you think there's an asymmetry in using macroprudential tools, and, if so, how have you gotten around that asymmetry?

**Mr. Eichengreen:** So let me turn back to the panelists quickly for responses, starting with Dr. Kim, if you want to respond on Korea's reserves or other matters.

**Mr. Kim:** In 2008, the Bank of Korea had a fear of losing its reserves, a feeling that has continued even till now. For example, in September 2011 Korea's reserves amounted to around \$310 billion. At the time we had lost maybe \$5 or \$6 billion in reserves. All the newspapers asked whether the \$300 billion level would be breached or not. So we joked to each other, that no matter how much reserves you have, the best thing is to say that your usable reserves end in

99 because there's always fear of losing below to the next hundred. But in 2008, the market's main concern was the *speed* at which the reserves were falling. At the time, the BOK initially intervened in the market. It later tried to use its limited resources more wisely. So it fed the reserves into the interbank markets through auctions to support the country's banks. It's very difficult to determine the optimal level of reserves. Olivier Jean was writing a paper on this issue, but he gave up because he said the cost benefit analysis of the optimal reserve model can generate any level of reserves. It's really hard to pin down even the optimal level of net foreign assets of a country. So, swap arrangements can be useful because they can provide contingent credit. Korea's reserve levels may be too high. China's reserves may be too high as well. But that may be good for Asia today. When we talk about the liquidity coverage ratio, the question is how much liquid assets are appropriate to hold relative to short-term and other volatile liabilities. In Korea, private domestic banks have very little in liquid assets, while they have large liabilities on their balance sheets. So whenever there is any dollar shortage in the market, they come to the Bank of Korea to draw down their foreign reserves. So the individual bank's risk quickly turns into a sovereign risk for Korea. To avoid that kind of problem, I think a swap arrangement with advanced economies is particularly useful, even if it's not a big amount. In 2009, the swap line with the Federal Reserve was only \$30 billion. At the time, Korea still had reserves of over \$200 billion. But this \$30 billion swap had a big signaling impact on the market. As for IMF lending, there's a lot of stigma from the Asian crisis. So for Korea, borrowing from the IMF is relatively less desirable from the perspective of policymakers. I don't know exactly what the proposed conditions are for swaps, but when engaging in swaps with emerging markets, the Fed could monitor emerging market central banks to ensure they meet certain standards, such as maintaining stable inflation.

**Mr. Miyao:** Let me briefly respond to Lars's comment. I agree that we need to look at the whole picture rather than looking at a single indicator. That includes not only micro indicators but also several disaggregated sector-by-sector assessments of risk-taking. For instance, in the corporate sector we look at the ratio of corporate investment to operating profits. For households, we look at the ratio of household investment to disposable income, multiplied by the size of household spending. For banks, we look at the ratio of outstanding loans to operating profits.

**Mr. Chan:** Lars. I think I agree with you, there are a whole host of indicators we need to look at. But I want to highlight a root cause or so-called original sin behind financial crises. You emphasized the need to distinguish between good

vs. bad credit growth. On the micro level, you may be able to make this distinction. But on a sectoral level, I doubt it. Look at the indebtedness of governments in Europe. Before the eruption of the recent European sovereign debt crisis, you had almost 20 years of steady growth in government indebtedness in the region. But the market gave the impression—I think, the illusion—that this growth in indebtedness was okay, until it was shown that it's not okay. All these ratios you talk about, with healthy or not healthy indicators flashing green or flashing red, are irrelevant because the comparison is from one decade, two decades, three decades ago.

It's important to recognize that something has fundamentally changed that the micro indicators don't necessarily reveal. Something is instinctively wrong with the way these governments conducted themselves. If you had argued with me on this point five years ago, I would not have been able to convince you because you would say that the market's providing liquidity funding. The interest cost was low. Italy was borrowing at 3 to 3½ percent. What's the big deal? Now borrowing costs are much higher. So the market is now demanding drastic measures from European governments going forward. When you're in the middle of a boom, you may have this intoxicating feeling that everything's rosy, like during the housing bubble in the United States, although to me all the indicators flashed red. But U.S. observers said, this time it's different, there are reasons why prices can only go up and not down. That is why the researchers have been trying to find some kind of threshold beyond which the probability of a crisis rises significantly. Maybe the danger zone is 60 or 80 percent of debt to GDP for government debt, we don't really know. When Argentina gave up its currency board, its debt ratio was 60 percent of GDP. But when the peso devalued, Mexico's debt ratio was much higher.

The lesson to be learned is that you have to be very prudent and return to the core values that our fathers and grandfathers treasured. Don't spend beyond your means. But this lesson is not something which is actually taken very seriously.

Regarding the question on macroprudential tools, it's very difficult to apply them because when you really need to start to tighten policy, it's like taking the punch bowl away when everything is good and everybody is having fun. And you have to convince the market that it is reaching a stage where you have to do something to slow down the cycle to reduce future risk. If the cycle continues to swing upwards, you can't just tighten once, you may have to continue tightening. Then you may face criticism for not having effective measures or for acting too early. When the cycle turns, it is even more difficult because, even if it is following the cycle trend, that's precisely the time when banks become

reluctant to lend to anyone with a higher loan to valuation ratio. If you loosen policy, then you're allowing banks to take more risk at the precise time when they are unwilling to do so. In practice, you have to think in terms of acting symmetrically: during the up-cycle, you have to tighten policy, and during the down-cycle, you must have the courage and discretion to be able to loosen it.

**Mr. Eichengreen:** Thank you. We now have Mark Spiegel, Pierre-Olivier Gourinchas, Andrew Crockett, and Muhammad Al-Jasser.

**Mr. Spiegel:** Thanks. My question actually follows directly from Chief Executive Chan's statement. I'd like to offer a revision to the first of the policy lessons you put on the board. It would be slightly more neutral to change the first term to avoid excessive leverage rather than excessive borrowing. The way you put it presumes that no mistakes were made on the lending side. At least on this side of the Pacific, the jury's still out on that, and I believe there's enough blame to go around on both sides. As Chairman Bernanke's statement suggested, the savings glut and other factors might have led to easy credit conditions and probably played a role in the buildup of imbalances prior to the crisis.

**Mr. He:** He talked about some reasons why Asian countries might have been building up their reserves for precautionary reasons. If that's the case, might there still be spillovers on the lending side that need to be considered when making policies? Because the world economy got into a lot of trouble because of the imbalances that came out of what may well have been precautionary savings motives.

**Mr. Gourinchas:** Thank you. This was a very interesting panel. I want to come back to something from Norman Chan's presentation and the comment by Lars. I agree that there is a need for a really fine-grained analysis on a case-by-case approach when we want to look at potential risks. But my sense from the recent literature is that we might not have to use such a large number of variables as has been suggested to pick up some of the vulnerabilities. I refer to some of my own work on this topic with Maury Obstfeld, which coincides with other papers by Jeff Frankel, and by Òscar Jordà, Alan Taylor, and Moritz Schularick. These all indicate that credit variables such as high ratios of credit to GDP seem to be very strongly associated with vulnerability. Real exchange rate appreciation and the output gap, especially in the upswing phase of a boom, also seem to be associated with increased vulnerability. In the context of the discussion we're having, it is interesting that reserves play a very strong role in moderating some of these risks. And what we found is that the effect of using reserves was almost as strong with the opposite sign as credit to GDP. So to the extent

that you're adding to reserves, you might be able to negate some of the impact of your credit growth. These few variables have been shown to be fairly accurate indicators of crises.

My second point is that central bank swap lines and IMF liquidity facilities can function identically, if the prequalifications designed for central bank swap lines are the same prequalifications that the IMF imposes for access to its precautionary credit line. My sense is that central banks are reluctant to make the swap lines permanent for a variety of reasons. The IMF, on the other hand, is very keen to bring countries back in and provide contingent liquidity services. However, some countries want to go to the IMF but are afraid of the stigma.

**Mr. Crockett:** It's hard in principle to disagree with Lars when he says you should take everything into account. But that's a prescription for inaction because you don't get a neat numeration of red or green flashing. And it's always easy to find rational expectations for why you don't need to worry. If you think back to the period before the current crisis—admittedly with the benefit of hindsight—a lot of people pointed to the danger signals. But many at the time, particularly in official circles, found no significant reason to worry, especially about the situation in 2006 and early 2007. So I agree with Pierre-Olivier, that a consensus is growing around a relatively small number of variables. And if you've got those variables with a significant amount of agreement, then it's much easier to take action than if you take everything into account and come to a judgment, apart from the moral hazard problem that Ted raises. Now, on Ted's question of how to use countercyclical policy in reverse. I agree with Norman that it's very difficult to push on a string. I suppose you could find some comfort had you been successful in the initial use of countercyclical policy. If you had prevented the financial imbalances from emerging so strongly in the first place, you would be unlikely to have a financially driven recession. And therefore, the banks might be more willing to change gears and move in the opposite direction once the restraints were relaxed. But apart from simply trying to predict and offset imbalances, one of the most important things is to make sure that the banking system, or financial system more generally, is resilient when imbalances blow up in the form of crises. Because we're never going to prevent crises from coming. We're never going to prevent procyclical conditions in the financial industry. But we can ensure that when those crises come, the system itself is resilient enough to withstand them.

**Mr. Eichengreen:** Thank you. So, Muhammad Al-Jasser, Joshua Aizenman, Jim Wilcox, and then I think we'll have to close.

**Mr. Al-Jasser:** Thank you, Barry. Thank you all for this wonderful seminar and for all the papers that have shed light on specific aspects that challenge us as policymakers. Thinking about Asia's role in the post-crisis global economy, the challenge now is for Asia, particularly China, to avoid a hard landing. We need to do everything we can to ensure that mistakes are not repeated. In my experience, all crises—be it the debt crisis of the early 1980s, the Asian 1996–97 crisis, or the present crisis—have resulted from a combination of managerial imprudence on the part of fiscal authorities and the financial managers of financial corporations, as well as supervisory imprudence on the part of the financial supervisory authorities. This imprudence leads to the feeling that problems can be dealt with later on or by another government, allowing the excessive buildup of leverage or sovereign debt. And then something has to give. Clearly, managers and supervisors abrogated their responsibilities during the various crises that we have talked about. The books of Kindleberger and of Reinhart and Rogoff that were mentioned today are full of examples of that. As a supervisor myself, I feel that many supervisors have abrogated their responsibilities at critical periods of time, which allowed those bubbles to build up. We can talk of macroprudential tools, but the essence of supervision and management is really a gut feeling. That's why I'm not very comfortable separating a central bank's supervisory role from its lender of last resort role. How could you ask a central bank to offer a bailout without having its finger on the pulse of the financial sector with supervision on a daily basis. This knowledge is crucial when making and exercising managerial and supervisory prudence that necessitates taking a countercyclical approach to fiscal policy, monetary policy, and bank supervision. We have practiced this at the Saudi Arabian Monetary Agency, which is the only reason we avoided all these crises. But this is only because we did not forget the lessons about the consequences of fiscal and financial imprudence from our own earlier experience.

So my question is, considering the frequency and severity of financial crises, is creative destruction necessary? Do these crises have to happen for us to learn and relearn all of these lessons? And what should we do, according to history and the literature?

**Mr. Aizenman:** Let me follow-up on the interesting comments from Norman Chan regarding the fiscal ratios of debt over GDP. I believe that most countries observe an asymmetric tendency in changing taxes. It's quite easy to reduce taxes. It's much harder to increase taxes. Now, this suggests to me that the key ratio is not debt to GDP, but debt relative to a country's tax capacity. So an

increase of debt relative to tax capacity—that is, the average tax collection over GDP for the past five years—is a good warning indicator of a crisis.

**Mr. Wilcox:** Thank you, Barry. I agree that we shouldn't bother to push on a string. But if I can start mixing metaphors, we could actually push on a stick, or better yet, a carrot. When it comes to supervisory leniency, this might in fact be an optimal time for bank regulators in Europe, and maybe in a lot of other countries all over the world, to ease up on capital rules. Supervisors often act as if they forget why, in their own personal automobiles, they have a spare tire. I presume the reason is because sometimes if you suffer a loss, say a punctured tire on a busy highway, you actually take the spare tire out of your trunk and use it. That is presumably why we have bank capital. It is there to absorb losses. Adhering to a 9 percent capital rule in the midst of this kind of a financial tornado is unnecessarily damaging to the macroeconomy, both in Europe and in other countries around the world. But having been burned once, supervisors don't want to be burned again, so there is some tendency to want to enforce these high capital rules at this time. Ted mentioned that some of us have been around long enough that we've heard these discussions before, and have seen some of these empirical results. I'm reminded of what St. Augustine said in the fourth century: Lord, grant me chastity, but not yet. And that's how I feel about these capital rules. Ultimately we are going to need higher capital rules than we've had in the past. But not right now.

**Mr. Eichengreen:** Thank you. We are running over, but there is time for a 30-second response by any of the panelists who are so inclined.

**Mr. Kim:** Responding to the last comment. There was a lot of discussion at meetings I've been involved in about not only capital ratios, but also the liquidity coverage ratio. The question was whether this ratio should be enforced at all times, or should it be lowered during a crisis. It's puzzling because we can think about the IMF lending facilities as a kind of multilateral version of bilateral swap agreements. But it's difficult to understand why many Asian countries are reluctant to borrow from the IMF, which doesn't have much conditionality. Instead, they want to have more swap lines with the Fed or the European Central Bank or even the Bank of Japan. It's a very good question, but I don't have an answer.

**Mr. Miyao:** Let me briefly comment on the earlier discussion of the U.K. experience and the separation of the Financial Services Authority and the central bank, in terms of macroprudential activities. In Japan's case, the regulatory

body is the Financial Services Agency, and the Bank of Japan doesn't have macroprudential tools. But one unique feature is that the BOJ also conducts microprudential activities such as onsite examinations and offsite monitoring of financial institutions. This is on a contractual basis, because they are not legally authorized. But we share this microprudential information with the FSA. And we try to collaborate with each other to have better assessments.

**Mr. Chan:** I can understand the logic that it's a hard time to require banks to raise capital by June of 2012. But when you have countercyclical measures, you have to think in a symmetric manner. That means, when it is a boom time, you tighten. And that will allow you room to loosen later. If you start from a very weak position, there's not much head room for you to maneuver. Actually, the European Banking Authority (EBA) is under tremendous pressure to raise capital requirements because the market's telling everybody that unless the banks have a high, credible capital level within a short period of time, there'll be problems. This is precisely what they're doing. But it's kind of becoming a chicken-and-egg problem because when you decide on 9 percent, it's very hard to go to the private markets for capital for recapitalization. And there's a lot of reluctance to go to governments for capital. Therefore, this forms a kind of negative feedback loop—when people worry about the banks, they worry about the sovereign. When they're worried about the sovereign, they worry about the banks, and the problem deteriorates. It's like a run on the bank. But I agree with you. When you use countercyclical measures, you have to learn to loosen policy in the down-cycle. Unfortunately, you didn't start with a strong position of tightening during the boom times. And that's the dilemma we're facing.

## **Closing Remarks**

# **Asia's Role in the Post-Crisis Global Economy**

**Barry Eichengreen**

The theme of this conference is Asia's role in the post-crisis global economy. Let me start by commending our organizers for their prescience. When their organizational efforts got under way many months ago, little did we know that discussions would have now turned to whether China and other Asian countries might provide resources, either via the International Monetary Fund (IMF) or directly, to help Europe to stabilize its finances, or that the most recent G-20 summit in Cannes would have revolved around this question. Asia's role, as everyone present here today knows, is now very much at the forefront of discussions of the global financial crisis. In a sense, the organizers' prescience is reassuring. It reassures me that there will, in fact, someday be a "post-crisis global economy"—that the current crisis, which has been dragging on now for more than three years, will eventually come to an end.

The papers they have commissioned similarly speak to the theme of Asia's role. They establish how deeply Asia is integrated into the global economy. The paper by Ted Truman documents the extent of capital flows between emerging Asia and the rest of the world, carefully distinguishing private from official flows. Pierre-Olivier Gourinchas covers similar ground but focuses more closely on Asia's dependence on the supply of liquidity—short-term capital—from the United States and, especially, Europe. This is something of which we have been strikingly reminded by current events, as European banks desperately deleverage and, in the process, shed their Asian loans. The paper by Eswar Prasad and Lei Ye describes the growing role of the Chinese renminbi, Asia's leading currency, in the international monetary system. The paper by Rick Mishkin and coauthors, taking Korea as a case study, focuses specifically on bank-intermediated flows, showing that these are strongly affected not just by domestic monetary policy but also by policy in the rest of the world, not least in the United States. We heard more about this from Deputy Governor Jun Il Kim. And what is true of Korea is also true, to a greater or lesser extent, of other Asian countries. The paper by Eswar Prasad, meanwhile, provides evidence of China's growing role in the global monetary and financial system.

While these papers all focus on monetary and financial linkages as a way of establishing Asia's deep integration into the global economy—appropriately for a Federal Reserve Bank-sponsored conference—I would observe that the same is true of trade linkages. Intraregional trade may be the most rapidly growing component of Asia's trade, but the largest share of the exports of Asian countries still go to other parts of the world. We saw in 2009, when the volume of trade collapsed, just how sensitive Asian economies are to disruptions to those self-same trade flows. This is a reminder that Asian countries can contribute to building a more robust post-crisis global economy not just by deepening, diversifying, and stabilizing financial markets and flows but also by deepening, diversifying, and stabilizing trade flows. Here the Trans-Pacific Partnership (TPP) highlighted by President Obama on his recent trip to Asia—and Japan's decision to participate in the TPP negotiations—points a way forward in the absence of progress on the Doha Round. Were China to join the TPP negotiations, the initiative would be more significant still.

The way forward in the realm of money, finance, and macroeconomic stability is less obvious. Should countries concentrate their efforts at the national, regional, or global level? The papers suggest, not unreasonably, that the answer is all three. Responsibility for inflation control, Lars Svensson's paper reminds us, rests ultimately with national monetary authorities. Restraining the strongly procyclical behavior of banking and financial systems is first and foremost a task for national regulators, the Mishkin et al. paper implies. The papers provide much sage advice about how the monetary policy toolkit might be expanded given today's challenging economic environment, and about how macroprudential policies should be implemented in practice.

I would, however, flag the absence of a companion paper on fiscal policy. What is best practice in this area? European countries are moving en masse toward debt brakes (known elsewhere as balanced budget rules). Should Asian countries follow, or should they be wary about locking themselves into a fiscal straitjacket? Might they better look to the experience of a country like Chile, where independent commissions provide forecasts for both growth and commodity prices and law requires the budget to be balanced over the business and commodity cycles, leaving the executive little leeway to adjust spending beyond what is consistent with those forecasts and their implications for revenue?

The papers we have heard are also unanimous about the continuing applicability of Tinbergen's assignment rule and Mundell's principle of effective market classification. Monetary policy should be assigned to the pursuit of price stability, regulatory policy to financial stability, and other policy instruments (there's that pesky fiscal policy again) to the pursuit of other objectives. Lars

Svensson's paper makes this point in a forceful way. To be clear, the Tinbergen assignment rule does not mean that monetary authorities should proceed in blissful ignorance of the impact of their decisions on financial stability, or that financial stability authorities should ignore the implications of their decisions on prices and economic activity. It does mean, however, in conjunction with the principle of effective market classification, that they should focus primarily on the target on which their instrument has its primary impact.

More interesting is what to do when the number of instruments is smaller than the number of targets and when some instruments are temporarily out of commission. This was the case with regulatory policy, I would argue, before the crisis, and is the case of fiscal policy, in some sense, now in the advanced economies. Lars suggests that, under these circumstances, monetary policymakers need to step up: Monetary policy then should become the "last line of defense of financial stability." But what exactly "last line of defense" means for the conduct of monetary policy, when the central bank does not control financial stability instruments, and those who control them are asleep at the wheel, could be spelled out in more detail. What the monetary authority should do *in response* to a crisis may be straightforward: It should engage in last-resort lending, quantitative easing, credit easing, and the like. More interesting and controversial is what it should do to head off a crisis—other than hope that the authorities responsible for deploying financial stability instruments are up to the task.

While the task of securing macroeconomic and financial stability starts at home, the growth of macroeconomic linkages and monetary and fiscal spillovers highlights the need for policy coordination at the global level. National regulators may resist applying tight macroprudential policies that threaten to drive financial services offshore; if so, this is something that needs to be addressed by coordinating the application of those measures. It is a good thing, in other words, that we have the Basel accords and a shame that there was an inability in the most recent round of Basel negotiations to agree on both a uniform international standard for countercyclical capital and additional measures to rein in systemically important financial institutions. Monetary and fiscal authorities, for their part, may resist acknowledging that their policies have important cross-border spillovers. It is a good thing, in other words, that we have the International Monetary Fund, and it is important to continue strengthening its role by increasing its resources, rebalancing quotas and executive board representation so as to strengthen Asian countries' voice, and perhaps using it as a vehicle for regularizing the provision of emergency swap lines. It is a shame, on the other hand, that Asian countries have not been able to get over their IMF phobia.

Yet progress here is—how to put it politely—less than might have been hoped. As the Truman paper observes, effective policy coordination has multiple prerequisites. It requires identifying the existence of a health-threatening condition; a shared diagnosis of its nature; agreement on the appropriate treatment; a capacity to adjust the dosage if the patient doesn't respond as anticipated; and changes in lifestyle to prevent that problem from recurring and becoming a chronic condition. (You will notice that I have replaced the language of policy coordination with the language of health care, which is an occupational hazard for someone who is married to a medical professional.) There is, I think, agreement between Asian countries and countries elsewhere, and specifically between the United States and China, that the global economy has a health problem. Indeed, it has a complex of problems: The patient is low on energy, is prone to spells of dizziness, and is subject to panic attacks. (I will now stop with the medical analogies.) But, three-plus years of G-20 working groups, summits and IMF surveillance exercises notwithstanding, there is still a lack of consensus on the causes and therefore on the appropriate treatment. There really is no alternative to continuing with efforts to build that consensus, but the results continue to disappoint. We need to do better.

So if global cooperation is imperfect, given the unavoidable difficulties of reaching a consensus on the nature of the policy problem and coordinating the associated policy adjustments when such a large and heterogeneous collection of countries is involved, but at the same time retreating into autarky—ignoring interdependencies—is not an option, then isn't there a case for policy coordination at the regional level? This was Asia's reaction to its 1997–98 crisis. Policymakers in the region can point to the Chiang Mai Initiative Multilateralization (CMIM), the ASEAN+3 Macroeconomic and Research Office (AMRO), the Asian Bond Fund, and the Asian Bond Markets Initiative as among their achievements. But it is tempting to conclude that there is less here than meets the eye. The CMIM has never been utilized. AMRO's remit is research rather than surveillance. (It's not the "ASEAN+3 Macroeconomic Surveillance Office.") Asian financial systems are still heavily bank based, and the development of bond markets remains painfully slow.

Why hasn't regional macroeconomic and financial cooperation been more extensive and successful? The Truman paper explains this on the grounds that Asian countries are exceedingly diverse in size and stages of development, and that because some of them are key players on the global stage they may therefore prefer multilateral to regional approaches to cooperation. To this I would add that Asia is home to an extremely diverse set of political systems. There is political diversity in Europe as well, but democracy, rule of law, and human

rights are prerequisites for admission to the European Union. And then there is the so-called “ASEAN way”—the norm of noninterference in neighboring countries’ affairs, which by definition limits the scope for firm surveillance at the regional level. Finally, Europe’s crisis is a reminder that, even where these obstacles do not exist, or where they are at least less formidable than in Asia, effective policy cooperation at the regional level is very hard work indeed. The implication of Europe’s crisis is not that Asia should turn away from regional cooperation but, rather, that it should be careful not to put all its eggs in that basket.



# Contributors

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Mr. Chan was appointed Chief Executive of the Hong Kong Monetary Authority (HKMA) on October 1, 2009. He joined the HKMA as Executive Director when it was established in 1993 and served as Deputy Chief Executive from 1996 to 2005. He steered a number of major financial policies and initiatives, including the development of Hong Kong's financial infrastructure, introduction of renminbi banking services in Hong Kong, and financial cooperation among central banks in Asia.

From December 2005 to June 2007, Mr. Chan was Vice Chairman, Asia, of Standard Chartered Bank. Prior to rejoining the HKMA, he was Director of the Chief Executive's Office of the Hong Kong Special Administrative Region Government from July 2007 to July 2009.

## **Barry Eichengreen, Professor**

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Mr. Eichengreen is the George C. Pardee and Helen N. Pardee Professor of Economics and Professor of Political Science at the University of California, Berkeley, where he has taught since 1987. He is a Research Associate of the National Bureau of Economic Research and Research Fellow of the Centre for Economic Policy Research. In 1997–98 he was Senior Policy Advisor at the International Monetary Fund. He is a Fellow of the American Academy of Arts and Sciences (class of 1997).

Mr. Eichengreen is also the convener of the Bellagio Group of academics and economic officials and chair of the Academic Advisory Committee of the Peterson Institute for International Economics. Recent books he has authored or edited include *Exorbitant Privilege: The Rise and Fall of the Dollar and the Future of the International Monetary System* (2011), *Emerging Giants: China and India in the World Economy* (2010), *Labor in the Era of Globalization* (2009), *Institutions for Regionalism: Enhancing Asia's Economic Cooperation and Integration* (2009), and *Fostering Monetary & Financial Cooperation in East Asia* (2009). Mr. Eichengreen was named one of *Foreign Policy Magazine's* 100 leading global thinkers in 2011. He is immediate past president of the Economic History Association (2010–11).

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Mr. Gourinchas is Professor of Economics at the University of California, Berkeley, and a visiting professor at Sciences Po and the Paris School of Economics. He was the recipient of the 2007 Bernàcer Prize for best European economist working in macroeconomics and finance under the age of 40 and the 2008 Prix du Meilleur Jeune Economiste for best French economist under the age of 40. He is also editor-in-chief of the *IMF Economic Review* and has been a member of the Bellagio Group since 2011.

Mr. Gourinchas's main research interests are in international macroeconomics and finance. His recent research focuses on the importance of the valuation channel for the dynamics of external adjustment and the determination of exchange rates, the determinants of capital flows to and from developing countries, international portfolios, global imbalances, international price discrimination, the global financial crisis, and reform of the international monetary system. He received his PhD in 1996 from the Massachusetts Institute of Technology and taught at the Stanford Graduate School of Business and at Princeton University before joining the University of California, Berkeley.

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Mr. Lardy has written numerous articles and books on the Chinese economy, including *The Future of China's Exchange Rate Policy* (2009), *China's Rise: Challenges and Opportunities* (2008), *China: The Balance Sheet* (2006), *Prospects for a US-Taiwan Free Trade Agreement* (2004), *Integrating China into the Global Economy* (2002), and *China's Unfinished Economic Revolution* (1998). He is a member of the Council on Foreign Relations and is a member of the editorial boards of the *China Quarterly*, *China Review*, and *Journal of Contemporary China*. Mr. Lardy received his BA from the University of Wisconsin in 1968 and his PhD from the University of Michigan in 1975, both in Economics.

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Mr. Lin is the Chief Economist and Senior Vice President of the World Bank, a position he has held since June 2008. Prior to joining the Bank, Mr. Lin served as Founding Director and Professor of the China Centre for Economic Research (CCER) at Peking University. He is the author of numerous books, including *The China Miracle: Development Strategy and Economic Reform* (2003) and *Economic Development and Transition: Thought, Strategy, and Viability* (2009), and has published more than 100 articles. Mr. Lin was a deputy of China's National People's Congress, Vice Chairman of the Committee for Economic Affairs of the Chinese People's Political Consultative Conference, and Vice Chairman of the All-China Federation of Industry and Commerce.

He was awarded the 1993 and 2001 Sun Yefang Prize (the highest honor for economists in China), among numerous other awards. Most recently, he was awarded the Professional Achievement Award by the University of Chicago Alumni Association. He is a Fellow of the Academy of Sciences for the Developing World and a Corresponding Fellow of the British Academy. Mr. Lin received his PhD in Economics from the University of Chicago in 1986.

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Mr. Mishkin was a Senior Fellow at the FDIC Center for Banking Research and past president of the Eastern Economic Association. He has taught at the University of Chicago, Northwestern University, Princeton University, and Columbia. He is the author of *The Economics of Money, Banking, and Financial Markets* (2010), as well as more than 20 other books, and has published over 200 articles in professional journals and volumes. Mr. Mishkin has served on numerous editorial boards, including the *American Economic Review*, has been an associate editor at the *Journal of Business and Economic Statistics*, *Journal of Applied Econometrics*, *Journal of Economic Perspectives*, and *Journal of Money, Credit, and Banking*, and was editor of the Federal Reserve Bank of New York's *Economic Policy Review*. He is currently on the editorial board of the *Journal of International Money and Finance* and *International Finance*.

He has been a consultant to the Board of Governors of the Federal Reserve System, the World Bank, the Inter-American Development Bank, and the International Monetary Fund, as well as numerous central banks. He was also a member of the International Advisory Board to the Financial Supervisory Service of South Korea and an advisor to the Institute for Monetary and Economic Research at the Bank of Korea. He received his PhD from the Massachusetts Institute of Technology in 1976.

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Mr. Miyao has been a member of the Policy Board of the Bank of Japan since March 26, 2010. Mr. Miyao served as Professor of Economics at Kobe University from 2003 through 2010, and previously as Associate Professor at Kobe University from 1995 through 2003. He also served as Director of the Research Institute for Economics and Business Administration of Kobe University from 2008 through 2010.

Mr. Miyao is an expert in macroeconomics, monetary theory, and time series econometrics. He has written extensively on monetary policy issues in Japan, as well as economic issues faced by other Asian economies. His research has appeared in numerous professional journals such as the *Journal of Money, Credit, and Banking* and the *Journal of the Japanese and International Economies*. Mr. Miyao received his BA and MA in Economics from Kobe University, and his PhD from Harvard University.

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Mr. Prasad is the creator of the Brookings-Financial Times global economy index (Tracking Indexes for the Global Economic Recovery; [www.ft.com/tiger](http://www.ft.com/tiger)). He is also a Research Fellow at the Institute for the Study of Labor, Bonn, and a Research Associate of the National Asia Research Program.

### **Sarah Bloom Raskin, Member**

Board of Governors of the Federal Reserve System

Ms. Raskin took office as a member of the Federal Reserve Board of Governors in October 2010. Prior to her appointment to the Board, Ms. Raskin was the Commissioner of Financial Regulation for the State of Maryland. In this capacity, Ms. Raskin and her agency were responsible for regulating interconnected financial institutions, including banks, credit unions, mortgage lenders, mortgage servicers, and trust companies. As the commissioner, Ms. Raskin served on the board of directors of the Conference of State Bank Supervisors (CSBS), and served as the chair of their Federal Legislation Committee. She was also the chair of the CSBS Regulatory Restructuring Task Force and chair of the Consumer Financial Products Agency Task Force, as well as a member of the State Liaison Committee for the Federal Financial Institutions Examination Council.

Ms. Raskin has served as Managing Director at the Promontory Financial Group. She also served as the Banking Counsel for the U.S. Senate Committee on Banking, Housing, and Urban Affairs. Earlier in her career, Ms. Raskin worked at the Federal Reserve Bank of New York and the Joint Economic Committee of the U.S. Congress. Ms. Raskin received her BA in Economics from Amherst College, and her JD from Harvard Law School.

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He has published widely on the subjects of business cycles, monetary economics, international finance, and labor economics in a number of academic journals. He received his BA and MA in Economics from Seoul National University and PhD in Economics from the University of California, Los Angeles.

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Mr. Svensson became Deputy Governor of Sveriges Riksbank in May 2007 and has served as Affiliated Professor at the Institute for International Economic Studies (IIES), Stockholm University since June 2009. He was Professor of Economics at Princeton University from 2001 to 2009 and Professor of International Economics at IIES from 1984 to 2003. He has published extensively in scholarly journals on monetary economics and monetary policy, exchange rate theory and policy, and international macroeconomics. He has lectured and visited at universities, central banks, and international organizations in many countries.

Mr. Svensson is a member of the Royal Swedish Academy of Sciences, a member of Academia Europaea, a foreign member of the Finnish Academy of Science and Letters, a foreign honorary member of the American Academy of Arts and Sciences, an honorary member of the Latin American and Caribbean Economic Association, a fellow of the Econometric Society, a fellow of the European Economic Association, a Research Associate at the National Bureau of Economic Research, and a Research Fellow of the Centre for Economic Policy Research. He was chair of the Prize Committee for the Alfred Nobel Memorial

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Mr. Truman is a Senior Fellow at the Peterson Institute for International Economics. He served as Assistant Secretary for International Affairs with the U.S. Treasury from December 1998 to January 2001 and returned as Counselor to the Secretary from March to May 2009. He directed the Division of International Finance of the Board of Governors of the Federal Reserve System from 1977 to 1998. From 1983 to 1998, he was one of three economists on the staff of the Federal Open Market Committee.

Mr. Truman has been a member of numerous international groups working on economic and financial issues, including the Financial Stability Forum's Working Group on Highly Leveraged Institutions, the G-22 Working Party on Transparency and Accountability, the G-10-sponsored Working Party on Financial Stability in Emerging Market Economies, the G-10 Working Group on the Resolution of Sovereign Liquidity Crises, and the G-7 Working Group on Exchange Market Intervention. Mr. Truman has also been a visiting economics lecturer at Amherst College and a visiting economics professor at Williams College. He has published on international monetary economics, international debt problems, economic development, and European economic integration. He is the author or editor of *Sovereign Wealth Funds: Threat or Salvation?* (2010), *Reforming the IMF for the 21st Century* (2006), *A Strategy for IMF Reform* (2006), *Chasing Dirty Money: The Fight Against Money Laundering* (2004), and *Inflation Targeting in the World Economy* (2003).

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Mr. Wei is Director of the Jerome A. Chazen Institute of International Business and N.T. Wang Professor of Chinese Business and Economy at Columbia University's Graduate School of Business and School of International and Public Affairs. He is Director of the Working Group on the Chinese Economy and a Research Associate at the National Bureau of Economic Research, as well as a Research Fellow at the Centre for Economic Policy Research. Mr. Wei has served as Assistant Director and Chief of the Trade and Investment Division at the International Monetary Fund, Associate Professor of Public Policy at Harvard University, the New Century Chair at the Brookings Institution, and

Advisor at the World Bank. He has been a consultant to numerous government organizations including the Board of Governors of the Federal Reserve System, the United Nations Economic Commission for Europe, the United Nations Development Programme, and the Asian Development Bank.

Mr. Wei's research covers international finance, trade, macroeconomics, and China. He has published widely in academic journals and the press. He is the author or coeditor of several books, including *China's Growing Role in World Trade* (2010), *The Globalization of the Chinese Economy* (2002), *Economic Globalization: Finance, Trade, and Policy Reforms* (2000), and *Regional Trading Blocs in the World Economic System* (1997). He holds a PhD in Economics and MS in Finance from the University of California, Berkeley.

### **John C. Williams, President and Chief Executive Officer**

Federal Reserve Bank of San Francisco

Mr. Williams took office as President and Chief Executive Officer of the Federal Reserve Bank of San Francisco (FRBSF) in March 2011. He previously served the FRBSF as Executive Vice President and Director of Economic Research. He began his career as an economist at the Board of Governors of the Federal Reserve System. He also served from 1999 to 2000 as a senior economist at the President's Council of Economic Advisers.

Mr. Williams's research focuses on monetary policy with uncertainty and imperfect information, learning, research and development, productivity, and business cycles. He has published numerous articles in leading research journals. He currently serves as editor of the *International Journal of Central Banking*. Mr. Williams earned his PhD in Economics at Stanford University. Previously, he earned a Master's of Science with distinction in Economics from the London School of Economics, and an AB degree with high distinction from the University of California, Berkeley.

### **Janet L. Yellen, Vice Chair**

Board of Governors of the Federal Reserve System

Ms. Yellen took office as Vice Chair of the Board of Governors of the Federal Reserve System in October 2010. Prior to her appointment, she served as President and Chief Executive Officer of the Federal Reserve Bank of San Francisco. Ms. Yellen is Professor Emeritus at the University of California, Berkeley, where she was the Eugene E. and Catherine M. Trefethen Professor of Business and Professor of Economics.

Ms. Yellen previously served as a member of the Board of Governors of the Federal Reserve System from 1994 to 1997, and as chair of the President's Council of Economic Advisers from 1997 to 1999. She also worked as an Assistant Professor of Economics at Harvard University, an economist at the Federal Reserve Board of Governors, and on the faculty of the London School of Economics and Political Science. Ms. Yellen has written on a wide variety of macroeconomic issues, specializing in the causes, mechanisms, and implications of unemployment. She graduated from Brown University with a degree in economics and received her PhD in Economics from Yale University.



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