

The Impact of the Financial Crisis on Emerging Asia

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1. Introduction

Three assumptions helped to guide initial thinking about the impact of the U.S.—now global—credit crisis. Each of those assumptions has had to be revised substantially.

The first one was that the crisis could be contained at relatively low cost within the United States. Yet the July 2009 update to the International Monetary Fund's *Global Financial Stability Report* (IMF 2009b) put global credit losses on U.S. loans and securities at \$2.9 trillion; projected credit losses on loans and securities originated in Europe and Japan bring the global tally to over \$4 trillion—a far cry from the early estimates of \$50 to \$100 billion of credit losses in the U.S. subprime market.¹ Support for the financial system coming from governments and central banks in the United States, the euro zone, and the United Kingdom totals nearly \$9 trillion (composed of \$1.95 trillion in liquidity support, \$2.52 trillion for asset purchases, and \$4.48 trillion in government guarantees).² The U.S. fiscal deficit for both 2009 and 2010 is expected to exceed 11 percent of GDP, and the ratio of U.S. gross government debt to GDP is projected to rise from 62 percent in 2006 to 97 percent by 2010.³ In April 2008, the IMF's *World Economic Outlook* (WEO) forecast 2009 U.S. economic growth at 0.6 percent; the July [2009] update is -2.6 percent, following real GDP declines of roughly 6 percent in both the fourth quarter of 2008 and the first quarter of 2009. The unemployment rate is up from 4.9 percent pre-crisis to 9.7 percent. In terms of duration and cumulative output loss, this recession is our worst since the Great Depression.

Authors' note: We are grateful to Bill Cline, C. Fred Bergsten, Joe Gagnon, Yusuke Horiguchi, Nick Lardy, Jong-Wha Lee, Mike Mussa, Marcus Noland, Ted Truman, Philip Turner, and Steve Weisman for helpful comments and suggestions on an earlier draft. We are likewise indebted to Jon Anderson, Stephan Danninger, Kristin Forbes, and Brad Setser for making available to us some of the charts and data used in Sections 2 and 3 of this paper.

Reflecting large declines in U.S. equity and housing prices, the household saving rate has risen from nearly zero in 2007 to about 5 percent and could rise to 7 to 8 percent.⁴

A second assumption, that emerging markets would be able to “decouple” from a U.S. downturn, crumbled after the collapse of Lehman Brothers in September 2008. The IMF’s projection of 2009 growth in the emerging and developing countries went from 6.6 percent in April 2008 to just 1.5 percent in July [2009]. In October 2008, the emerging market bond spread hit 850 points—almost six times its pre-crisis level in June 2007. Industrial production and exports in emerging economies have plummeted. Even after a rise of 42 percent in 2009, the cumulative decline in a popular index of emerging market equities (MSCI.EM) is similar (26 percent) to the decline in the Standard & Poor’s 500 index for U.S. equities (29 percent). The Institute for International Finance (IIF 2009) projects a further decline in net private capital flows to emerging economies in 2009 to one-fifth of their 2007 level.

Yet a third flawed assumption was that emerging Asia would be protected by its low exposure to U.S. subprime loans and securities, ample international reserves, current account surpluses, low dependence on commodity exports, high share of interregional trade, improved banking systems, and ability to implement countercyclical macroeconomic policies. This expectation dissolved as real GDP fell between September 2008 and March 2009 by an average annualized rate of 13 percent in Hong Kong, Malaysia, Korea, Singapore, Taiwan, and Thailand. The IMF (in the April 2009 WEO) downgraded its 2009 forecast for (wider) developing Asia to 4.8 percent (versus a forecast of 8.4 percent in the April 2008 WEO). Economic growth in China dropped from a peak of nearly 14 percent in the second quarter of 2007 to 6.8 percent in the fourth quarter of 2008. India’s growth sank from over 10 percent at the end of 2006 to less than 5½ percent in the final quarter of 2008. According to the (August 2009) Blue Chip Consensus forecast, Hong Kong, Malaysia, Singapore, Korea, and Taiwan are still expected to suffer outright recessions in 2009. Emerging Asia’s exports fell at an annualized rate of 70 percent between September 2008 and February 2009. In June 2009, China’s exports were still 21 percent below their level of a year earlier. Between year-end 2007 and October 2008, the MSCI emerging market index for Asia fell by 50 percent—versus 34 percent for the United States. Near the end of October 2008, Korea and Singapore entered into \$30 billion swap arrangements with the U.S. Federal Reserve.

The last six months have brought their own “news,” as financial conditions stabilized in the United States and other advanced economies and as economic performance improved sharply in emerging Asia, prompting *The*

Economist to proclaim the advent of “Asia’s Astonishing Rebound.” Cries of “decoupling” are being revived along with an accent on Asia’s superior economic “fundamentals.” China’s economic growth accelerated to 7.8 percent in the second quarter (2009) and its (consensus) growth forecast for 2009 as a whole has been raised on the order of 100 to 200 basis points.⁵ So, too, with India. As highlighted by the *The Economist* (2009), on a sequential and annualized basis, second quarter (2009) growth increased by 21 percent in Singapore, by 10 percent in Korea, and by 5 percent in Indonesia. Goldman Sachs (2009) now sees real GDP growth in emerging Asia reaching 5½ percent in 2009. Asia’s export decline is slowing, with most of the region’s exports having bottomed out in February [2009]. The region’s sovereign bond spread (over U.S. Treasuries) has declined from 815 basis points in October 2008 to less than 300 basis points in late August 2009. Stock markets have turned around, with China’s stock market up 58 percent since January and the MSCI non-Japan Asian equity index up 25 percent since the beginning of 2009.

The purpose of this paper is to document more fully how the global financial crisis has affected emerging Asia and to identify some of the key characteristics that have made these economies more or less vulnerable to a transmission of crises from the advanced economies.

In Section 2 we offer a thumbnail sketch of how key economic variables in emerging Asia have evolved since the crisis began in the summer of 2007, and we review several studies of the effect of financial stress or growth slowdown in advanced economies on emerging Asian economies. Section 3 discusses how emerging Asia is different from other emerging economy regions in ways that matter for the contagion of crises, the emphasis here is on currency and maturity mismatches, the nature of the region’s foreign trade links (product composition, the geographic pattern of trade, and the degree of net export-led growth), financial market integration with the advanced economies, and the scope for implementing countercyclical monetary and fiscal stimulus. Finally, Section 4 offers concluding thoughts.

We focus mainly on China, Hong Kong, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, and Thailand.⁶ Japan is excluded because of its size and advanced status. In the charts and tables in Section 2, we often employ (weighted) aggregate figures for “emerging Asia,” or “developing Asia”—constructed by either the international financial institutions (IFIs) or large financial firms. Because the Chinese economy is so large relative to the other economies in our group, there is a danger that weighted averages may not reveal much about those other economies.⁷ Consequently, we present both individual economy results as well as results for an unweighted average of Asian economies.

To clarify how emerging Asia is different, we often present calculations for a group of 12 other emerging markets, or OEMs—namely, Hungary, Poland, Russia, Turkey, Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela, and South Africa.

2. Impact of the Global Financial Crisis on Asian Economies: Some Mood Music

2.1. Before the Crisis to Now: Behavior of Some Key Economic Variables

As useful background, we summarize recent developments in economic growth, inflation rates, foreign trade, equity prices, sovereign bond spreads, exchange rates, international reserves, interest rates, credit flows, net capital inflows, financial stress, crisis severity, and headline public support for the financial sector.

2.1.1. Slowdown in Economic Growth

Tables 1 and 2 show the decline in economic growth during this crisis for country groups and for individual economies, respectively. We calculate the growth decline as the absolute value of the difference in real GDP growth rates between 2007 and (estimated) 2009, where the IMF's July 2009 forecasts are employed for estimated 2009 growth.⁸

TABLE 1
Economic Growth Slowdown, 2007–2009, by Country Groups

| Country Group Name | 2007 | 2008 | 2009f (July) | 2007–2009f, change |
|---|------|------|--------------|--------------------|
| Developing Asia ^a | 10.6 | 7.7 | 5.5 | -5.1 |
| ASEAN-5 ^b | 6.3 | 4.9 | -0.3 | -6.6 |
| Newly industrialized Asian economies ^c | 5.7 | 1.6 | -5.2 | -10.9 |
| Central and Eastern Europe | 5.4 | 2.9 | -5.0 | -10.4 |
| CIS and Mongolia | 8.6 | 5.5 | -5.8 | -14.4 |
| Middle East | 6.3 | 5.9 | 2.0 | -4.3 |
| Western Hemisphere | 5.7 | 4.2 | -2.6 | -8.3 |
| Memo: | | | | |
| World | 5.2 | 3.2 | -1.4 | -6.6 |
| Advanced economies | 2.7 | 0.9 | -3.8 | -6.5 |
| Emerging and developing economies | 8.3 | 6.1 | 1.5 | -6.8 |

^a Developing Asia: Bangladesh, Bhutan, Cambodia, China, Fiji, India, Indonesia, Kiribati, Laos, Maldives, Myanmar, Nepal, Pakistan, Papua New Guinea, the Philippines, Samoa, Solomon Islands, Sri Lanka, Thailand, Tonga, Vanuatu, and Vietnam.

^b ASEAN-5: Indonesia, Malaysia, the Philippines, Thailand, and Vietnam.

^c Newly industrialized Asian economies (NIEs): Hong Kong, Korea, Singapore, and Taiwan Province of China.

TABLE 2
Economic Growth Slowdown, 2007–2009, by Individual Economy

| Area | Economy | 2007 | 2008 | 2009f | 2009f–2007 | 1998–1996 |
|--------------------------------|--------------------|------|------|-------|------------|-----------|
| Asia | Singapore | 7.8 | 1.1 | –10.0 | –17.8 | |
| CEE | Russia | 8.1 | 5.6 | –6.0 | –14.1 | |
| Asia | Hong Kong | 6.4 | 2.5 | –4.5 | –10.8 | |
| LatAm | Venezuela | 8.4 | 4.8 | –2.2 | –10.6 | |
| LatAm | Argentina | 8.7 | 7.0 | –1.5 | –10.2 | |
| Asia | Malaysia | 6.3 | 4.6 | –3.5 | –9.8 | –17.4 |
| CEE | Turkey | 4.7 | 1.1 | –5.1 | –9.8 | |
| Asia | Korea | 5.1 | 2.2 | –4.0 | –9.1 | –13.9 |
| Asia | Thailand | 4.9 | 2.6 | –3.0 | –7.9 | –16.4 |
| LatAm | Colombia | 7.5 | 2.5 | 0.0 | –7.5 | |
| CEE | Poland | 6.7 | 4.8 | –0.7 | –7.4 | |
| Asia | Philippines | 7.2 | 4.6 | 0.0 | –7.2 | –6.4 |
| LatAm | Mexico | 3.3 | 1.3 | –3.7 | –7.0 | |
| LatAm | Brazil | 5.7 | 5.1 | –1.3 | –7.0 | |
| Asia | China | 13.0 | 9.0 | 6.5 | –6.5 | |
| Africa | South Africa | 5.1 | 3.1 | –0.3 | –5.4 | |
| LatAm | Peru | 8.9 | 9.8 | 3.5 | –5.4 | |
| Asia | India | 9.3 | 7.3 | 4.5 | –4.8 | |
| LatAm | Chile | 4.7 | 3.2 | 0.1 | –4.6 | |
| CEE | Hungary | 1.1 | 0.6 | –3.3 | –4.4 | |
| Asia | Indonesia | 6.3 | 6.1 | 2.5 | –3.8 | –20.9 |
| <i>Emerging Asia, average</i> | | 7.4 | 4.5 | –1.3 | –8.6 | |
| <i>Non-Asian OEMs, average</i> | | 6.1 | 4.1 | –1.7 | –7.8 | |

Source: IMF WEO database and updates, 2009.

Notes: IMF WEO July 2009 forecast for 2009 GDP growth. CEE: Central and Eastern Europe; LatAm: Latin America.

Tables 1 and 2 indicate that (1) all country groups show large declines in economic growth during this crisis; (2) when one uses a broad Asian emerging market aggregate—like “developing Asia”—that includes China and India (along with 21 other Asian economies), then the growth slowdown in emerging Asia is considerably smaller than that in other emerging market regions (with the exception of the Middle East); (3) the decline in growth in the ASEAN-5 (that is, the Association of Southeast Asian Nations economies of Indonesia, Malaysia, the Philippines, Thailand, and Vietnam) is comparable to that experienced for emerging and developing countries as a group, for advanced economies, and for the world as a whole; (4) the growth decline in the Asian newly industrialized economies (NIEs)—composed of Hong Kong, Korea, Singapore, and Taiwan—is considerably larger and comparable to the growth decline in the emerging economies of Central and Eastern Europe (though smaller than the growth decline in the Commonwealth of Independent States or CIS economies); (5) the five Asian emerging economies most affected during the Asian

financial crisis of 1997–98 (Indonesia, Korea, Malaysia, the Philippines, and Thailand), experienced growth declines about half as large as those during that earlier crisis;⁹ (6) turning to the individual country results in Table 2, Singapore had the largest growth decline within emerging Asia (followed by Hong Kong and Malaysia), whereas Indonesia, India, and China had the smallest declines; and (7) the (unweighted) average growth decline for the nine Asian emerging economies is similar (–8.6 percentage points) to that (–7.8 percentage points) for the group of twelve non-Asian OEMs.¹⁰

2.1.2. *Headline and Core Inflation Rates*

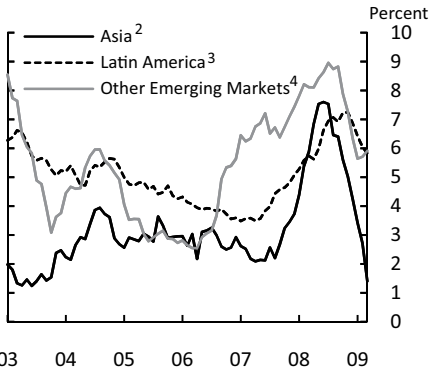
Panels A and B of Chart 1 display headline and core inflation rates for groups of emerging economies. While inflation rates in emerging Asia display a pattern during this crisis similar to those of other emerging markets—that is, rising from mid-2007 to early or mid-2008 and then falling—it is noteworthy that Asian inflation rates declined faster and farther than their emerging market counterparts; as in the pre-crisis period, inflation rates in emerging Asia are lower than in other emerging market regions.¹¹

2.1.3. *Contraction of Foreign Trade, the Terms of Trade, and Current Account Imbalances*

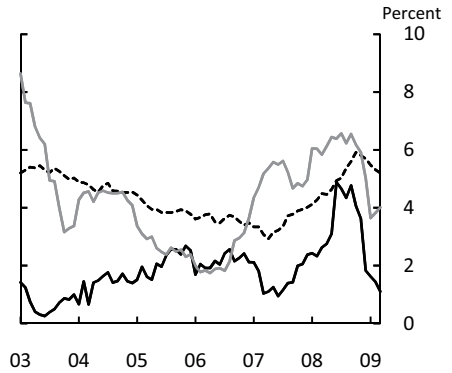
Panels C, D, and E of Chart 1 outline the volatile behavior of foreign trade during this crisis and highlight the collapse of foreign trade in the fourth quarter of 2008—linked to the sharp downturn in economic activity in advanced countries and exacerbated by lower availability of trade credit. There is a very strong similarity in the time pattern of exports across the different emerging market groups. This similarity is also confirmed by more detailed calculations. The peak-to-trough decline in exports for the nine Asian emerging economies was 47 percent (on an unweighted basis) versus 52 percent for the twelve OEMs; the rise in exports from the trough to the present was also similar (30 percent for Asian economies versus 22 percent for the OEMs). Within Asia, the economies that showed the most pronounced export contractions and expansions during this crisis were China, Korea, Hong Kong, and Taiwan. Panel D indicates that imports, too, tumbled across all emerging market regions beginning in the fourth quarter of 2008; indeed, in emerging Asia, the decline in imports has been larger than the export decline—contributing to a small further rise in emerging Asia’s trade balance (see panel E). Developing Asia has recorded a small improvement (2.1 percent) in its terms of trade over the 2007–09 period—not as favorable as the 6.5 percent improvement recorded by emerging economies in Central and Eastern Europe, but much better than the large declines

CHART 1
Emerging Markets' Economic Indicators

A Headline Inflation¹



B Core Inflation⁵



¹ Annual change in consumer prices, in percent; median of the economies listed. ² China, Chinese Taipei, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, and Thailand; for India, wholesale prices. ³ Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. ⁴ The Czech Republic, Hungary, Poland, Russia, South Africa, and Turkey. ⁵ CPI excluding food and energy.

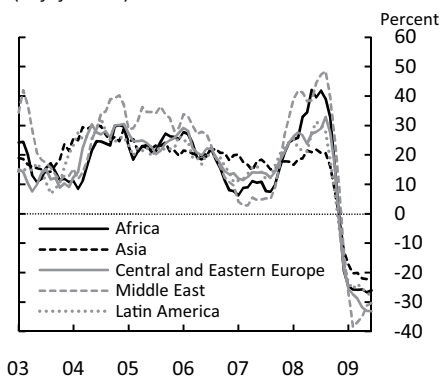
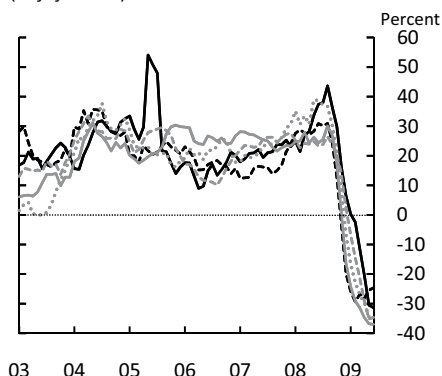
Source: BIS (2009).

experienced by emerging economies in Latin America (–6.7 percent), in the CIS (–10.2 percent), in Africa (–11.8 percent), and in the Middle East (–17.9 percent). The latest IMF forecast (July WEO, 2009a) sees little change in the current account surplus for developing Asia during the crisis—it falls from 6.9 percent of GDP in 2007 to an estimated 6.4 percent in 2009. We, however, expect emerging Asia's current account surplus to be considerably lower in 2009 if China's current account surplus in 2009 comes in at, say, 5 to 6 percent of GDP rather than the 10 percent of GDP surplus projected in April 2009.¹² Emerging Asia is likely to be the emerging market region with the largest current account surplus (relative to GDP) in 2009.¹³ Within emerging Asia, only India and Indonesia are projected to run current account deficits in 2009.¹⁴ In contrast, nine of the twelve OEMs are expected to face current account deficits this year.

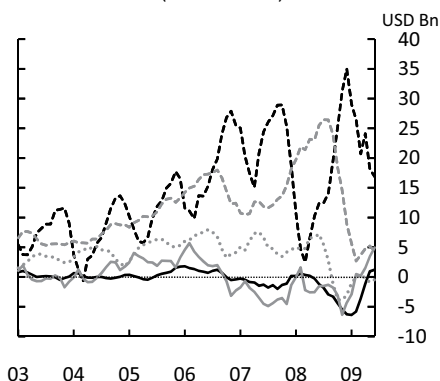
2.1.4. Equity Prices

Panel F of Chart 1 shows equity price movements during the crisis. As with the trade figures, the commonality across emerging markets is readily apparent. The index for emerging Asia peaks in the summer of 2007 and then falls sharply until turning up in early 2009. Using the regional MSCI indices, we calculate that the peak-to-trough declines in equity prices were quite similar among

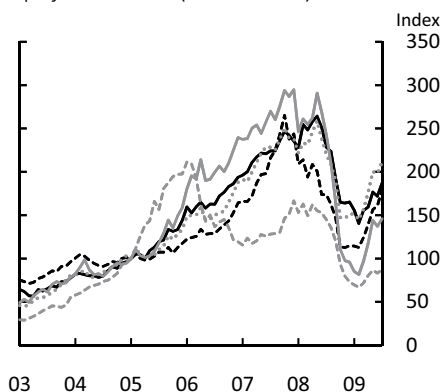
CHART 1 (CONTINUED)

C Export growth by regionExport growth, currency-adjusted terms
(% y/y 3mma)**D Import growth by region**Import growth, currency-adjusted terms
(% y/y 3mma)**E Trade balance by region**

Net trade balance (US\$bil 3mma)

**F Equity markets by region**

Equity market index (Jan 2003=100)



Source: Anderson (2009), UBS.

emerging Asia, emerging Europe, and Latin America (61, 71, and 57 percent, respectively). Over the crisis period as a whole (July 2007 to August 2009), however, substantial differences appear; the decline for the emerging Asia index (-17 percent) was considerably smaller than that for emerging Europe (-42 percent) but larger than that for Latin America (-7 percent).¹⁵ Within emerging Asia, the largest stock market declines (over the crisis period as a whole) have occurred in Singapore (-27 percent), Thailand (-21 percent), and the Philippines (-21 percent), whereas India has had the best performance (with the index practically flat). The three emerging economies with the largest stock market

declines (greater than 40 percent) during the July 2007 to August 2009 period—Russia, Hungary, and Poland—are all from Central and Eastern Europe.

2.1.5. Sovereign Bond Spreads

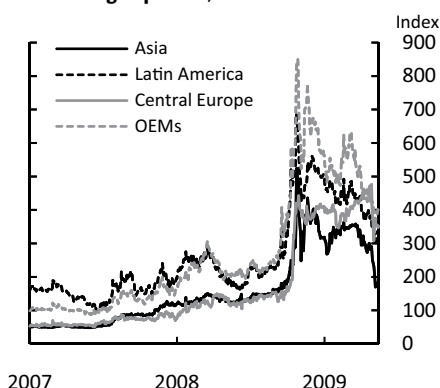
Interest rate spreads also move in tandem—showing a spike in the final quarter of 2008, and then a bumpy but significant decline since then; see panel G of Chart 1. That said, emerging Asia had both a smaller percentage run-up in sovereign spreads than either Latin America or emerging Europe between the beginning of the crisis (July 2007) and the peak point of risk aversion (October 2008), as well as a more rapid percentage decline since then; consequently, for July 2007 to August 2009, emerging Asia’s percentage increase in spreads was smaller than elsewhere. Within emerging Asia, the economy experiencing the largest increase in spreads was Indonesia, with an Emerging Markets Bond Index Plus (EMBI+) spread jump from 168 basis points in July 2007 to more than 920 basis points in December 2008. On the other side of the ledger, China saw a spread increase of roughly 270 basis points from the start of the crisis to October 2008.

2.1.6. Exchange Rates

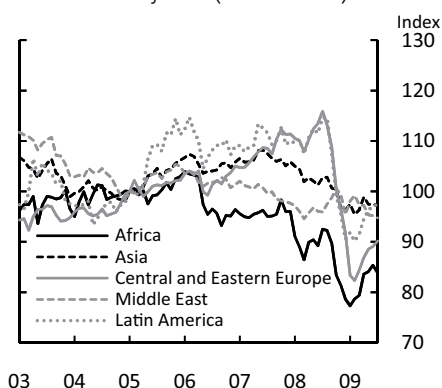
As emphasized by Ito (2007), during the height of the Asian financial crisis, the currencies of all emerging market economies in East Asia (except mainland China and Hong Kong SAR) suffered extremely large declines against the U.S. dollar. This time, the decline in the currencies of emerging Asia was more moderate, particularly with respect to the U.S. dollar.¹⁶ As shown in panel H, which shows movements in nominal effective exchange rates for five emerging market groups, currencies in emerging Asia were much less volatile during this crisis than the currencies of emerging economies in either Latin America or Central and Eastern Europe; the latter regions had more appreciation prior to the October 2008 collapse and much more depreciation after it. Hidden under this generalization, however, were some notable differences in currency behavior within Asia.

Table 3 shows that, among the 21 emerging economies, Korea’s currency experienced the largest fall (26 percent) in its real effective exchange rate between July 2007 and June 2009; the currencies of India and the Philippines have also been subject to nontrivial depreciations in their real effective exchange rates. In contrast, the Indonesian rupiah, the Malaysian ringgit, and the Chinese renminbi have all appreciated their real effective rates. Table 3 also indicates that movements in real effective rates can be quite distinct from movements in bilateral exchange rates and that unweighted regional averages

CHART 1 (CONTINUED)

G Sovereign spreads, international⁶**H Exchange rates by region**

EM NEER currency index (Jan 2005=100)



6 JPMorgan EMBI Global (EMBIG) sovereign spreads over U.S. Treasury yields (for Korea and Thailand, CMA five-year credit default swap premia), in basis points. Chinese Taipei, the Czech Republic, India, and Singapore are excluded from the regional aggregates.

Source: Anderson (2009), UBS.

can produce quite different results than weighted indices. In the former connection, the Russian ruble has been subject to a sizeable depreciation vis-à-vis the U.S. dollar during this crisis but (presumably because of even larger currency depreciations among some of its CIS neighbors), its real effective rate has actually appreciated on net since the crisis started. On average, the nine Asian economies showed a slightly larger depreciation of their real effective exchange rates during the whole crisis period than did the average of the currencies of the twelve OEMs.

2.1.7. International Reserves

Table 4 summarizes the evolution of international reserves (measured in billions of special drawing rights or SDRs) during this crisis. With the exception of African economies, developing Asia had the largest percentage increase in reserves among all the emerging market (EM) regions; only the CIS group showed a decline in reserves. Across our sample of 21 emerging economies, Korea showed the largest decline in reserves during the crisis, followed by Malaysia. All the remaining economies in emerging Asia showed reserve increases, with particularly large percentage increases recorded by Thailand, China, the Philippines, and Hong Kong. According to standard measures of reserve adequacy (with the exception of ratio of reserves to M2), emerging Asia has the most ample holdings of international reserves; in 2009, emerging Asia had a ratio of reserves

TABLE 3
Exchange Rate Movements, Emerging Economies, 2007–2009

| Area | Economy | Jul 07–Jun 09 % change vis-à-vis USD | JPMorgan REER Jun 97–Jul 98 % change | Jul 07–Jun 09 % change vis-à-vis USD | JPMorgan REER Jun 97–Jul 98 % change |
|--------|-----------------------------|--|--|--|--|
| Asia | Korea | -28.6 | -25.7 | -27.8 | -13.2 |
| LatAm | Mexico | -16.7 | -14.3 | | |
| CEE | Turkey | -16.3 | -11.7 | | |
| Asia | India | -15.6 | -11.1 | | |
| CEE | Poland | -12.6 | -10.9 | | |
| Asia | Philippines | -5.6 | -8.0 | -37.2 | -25.2 |
| LatAm | Argentina | -18.0 | -5.2 | | |
| Asia | Singapore | 4.1 | -3.0 | | |
| CEE | Hungary | -6.0 | -1.6 | | |
| Asia | Thailand | -0.6 | -1.4 | -36.8 | -15.7 |
| Asia | Hong Kong | 0.9 | -1.0 | | |
| LatAm | Colombia | -9.9 | -1.0 | | |
| CEE | Russia | -18.2 | 3.2 | | |
| LatAm | Chile | -1.1 | 4.1 | | |
| LatAm | Peru | 5.0 | 5.1 | | |
| Africa | South Africa | -7.8 | 5.6 | | |
| Asia | China | 10.8 | 6.5 | | |
| LatAm | Brazil | -3.6 | 7.0 | | |
| Asia | Malaysia | -2.0 | 10.6 | -39.1 | -24.5 |
| Asia | Indonesia | -9.9 | 18.7 | -81.2 | -64.4 |
| LatAm | Venezuela | 0.0 | 54.5 | | |
| | <i>Emerging Asia, avg.</i> | -5.2 | -1.6 | | |
| | <i>Non-Asian OEMs, avg.</i> | -8.8 | 2.9 | | |

Sources: IMF; JP Morgan.

Notes: A negative (positive) sign denotes depreciation (appreciation) of the local currency. REER = real effective exchange rate.

to short-term external debt that was roughly twice as high as in Latin America and six times as high as in Central and Eastern Europe.¹⁷ As shown in Table 4, that asymmetry across EM regions was also visible in the pre-crisis period (that is, in 2006–07).

2.1.8. Interest Rates

Another painful memory for those economies hardest hit in the Asian financial crisis was the decision to raise interest rates sky-high during a contraction in order to support the local currency and to discourage capital outflows. In Indonesia, for example, the discount rate hit 70 percent in July 1998 and policy interest rates also hit double digits in 1998 in Thailand and the Philippines (and almost that in Malaysia). We discuss monetary policy stimulus in Section 3, but for now it is sufficient to note that the rise in policy interest rates was more

TABLE 4
International Reserves, Emerging Economies, 2006–2009

| International reserves (in billions SDR) | | Reserves/M2 (%) | | | Short-term external debt as % of reserves | | | | | |
|--|--------------------|-----------------|-------------|------------------------|---|-------------|-------------|-----------------------------|-------------|-------------|
| Area | Economy | 2007 M7 | 2009 M3 | 2007M7–2009M3 % change | Economy | 2006 | 2007 | Economy | 2006 | 2007 |
| <i>Developing Asia</i> | | 1254 | 1577 | 25.8 | <i>Emerging Asia, avg.</i> | 32.6 | 35.0 | <i>Emerging Asia, avg.</i> | 28.8 | 30.3 |
| <i>Central and Eastern Europe (CEE)</i> | | 177 | 195 | 10.1 | <i>Non-Asian OEMs, avg.</i> | 40.0 | 40.5 | <i>Non-Asian OEMs, avg.</i> | 43.5 | 41.7 |
| <i>Western Hemisphere</i> | | 261 | 314 | 20.2 | | | | | | |
| <i>Africa</i> | | 167 | 212 | 26.8 | | | | | | |
| <i>Middle East</i> | | 172 | 210 | 22.5 | | | | | | |
| <i>Advanced economies</i> | | 1566 | 1673 | 6.9 | | | | | | |
| <i>CIS and Mongolia</i> | | 306 | 285 | -7.0 | | | | | | |
| Asia | Korea | 166 | 138 | -17.1 | South Africa | 14 | 14.5 | Poland | 71.3 | 91.8 |
| Asia | Malaysia | 64.1 | 58.5 | -8.8 | Mexico | 16.8 | 17.6 | Argentina | 105 | 82.5 |
| CEE | Russia | 267 | 247 | -7.4 | Chile | 27 | 17.9 | Chile | 48.5 | 79 |
| CEE | Turkey | 45.9 | 45.2 | -1.5 | Korea | 19.3 | 19.3 | Indonesia | 77.5 | 61.4 |
| LatAm | Venezuela | 12.1 | 12.1 | 0.3 | Hong Kong | 20.5 | 19.5 | Korea | | 61.1 |
| LatAm | Argentina | 28.1 | 30.1 | 7 | Turkey | 28.9 | 25 | Turkey | 66.9 | 54.6 |
| Asia | Indonesia | 32.9 | 35.3 | 7.2 | China | 24.2 | 27.7 | South Africa | 59.6 | 50.3 |
| CEE | Poland | 35.3 | 39 | 10.6 | Poland | 28.2 | 28 | Venezuela | 32.3 | 34.7 |
| LatAm | Mexico | 51.1 | 57.2 | 12 | Colombia | 27.9 | 28.7 | Colombia | 31.2 | 25.5 |
| Asia | India | 144 | 162 | 12.6 | India | 26.2 | 29.8 | Thailand | 26.6 | 24.7 |
| Asia | Singapore | 96 | 111 | 15.8 | Indonesia | 26.9 | 31.5 | Brazil | 23.7 | 21.8 |
| Africa | South Africa | 17.5 | 20.5 | 16.7 | Thailand | 27.5 | 31.6 | Philippines | 21.8 | 21 |
| LatAm | Colombia | 13.1 | 15.6 | 18.9 | Hungary | 34.6 | 31.9 | Peru | 17.3 | 20.9 |
| LatAm | Brazil | 101 | 127 | 25 | Venezuela | 53.6 | 34.4 | Russian | 13.3 | 16.6 |
| LatAm | Chile | 12.1 | 15.6 | 28.7 | Philippines | 29.1 | 34.9 | India | 14.8 | 15.8 |
| LatAm | Peru | 14.9 | 20.1 | 34.7 | Brazil | 27.6 | 40.7 | Malaysia | 16 | 15 |
| Asia | Hong Kong | 89.5 | 125 | 39.2 | Malaysia | 40.4 | 42 | China | 16 | 13.2 |
| Asia | Philippines | 16.5 | 23.2 | 41 | Peru | 63.6 | 77.6 | Hungary | | 12.2 |
| Asia | China | 907 | 1311 | 44.6 | Singapore | 79.7 | 79 | Mexico | 9.6 | 10.3 |
| Asia | Thailand | 47.3 | 76.2 | 61.2 | Argentina | 70.7 | 83.3 | | | |
| CEE | Hungary | 14.8 | 24.7 | 66.5 | Russia | 86.7 | 86.5 | | | |

Sources: IMF International Financial Statistics; World Bank World Development Indicators; Global Developing Finance.

limited in emerging markets during this crisis: it took place mainly in 2008 (in response to inflationary pressures and capital outflows), and the trend has been downward in 2009. All nine Asian emerging economies had lower short-term interest rates in 2009 than in 2007, with India and Korea having experienced the largest reductions and Indonesia and the Philippines the least. Those emerging economies that experienced a net increase in short-term interest rates as between 2007 and 2009 are all from other EM regions—mostly Latin

America or Central and Eastern Europe. On average, the nine Asian emerging economies saw a net reduction of 220 basis points in short-term interest rates over the 2007–09 period versus only 25 basis points for the twelve OEMs.

2.1.9. Credit Flows

Yet another worry during financial crises is that credit growth—including bank lending—to the private sector will dry up, adversely affecting real economic activity. Panels I and J of Chart 1 indicate that neither bank lending growth nor private credit growth has shown much of a decline in emerging Asia during this crisis. As widely reported, bank lending growth in China has surged at an annual rate of over 25 percent in 2009. Most noteworthy, emerging Asia is the only EM group where private credit growth and bank lending growth have not turned down sharply since the crisis began. One reason is that banking systems in most Asian economies had benefited from a strong rise in bank deposits in the run-up to the crisis; hence, their balance sheets were very liquid and (with the notable exception of Korea) they were not highly dependent on international wholesale funding.¹⁸

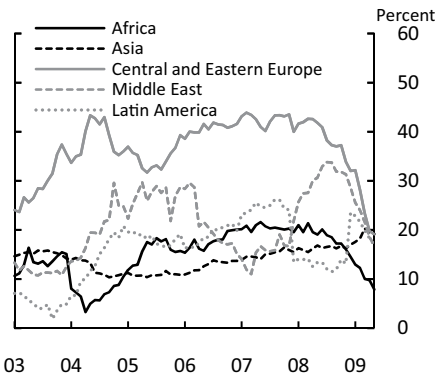
2.1.10. Net Private Capital Inflows

In previous financial crises in emerging markets a “sudden stop” in net private capital inflows has sharply reduced economic growth and investment, particularly in economies with a high share of foreign-currency-denominated debt and limited export openness.¹⁹ Net private capital inflows are forecast (by the IMF

CHART 1 (CONTINUED)

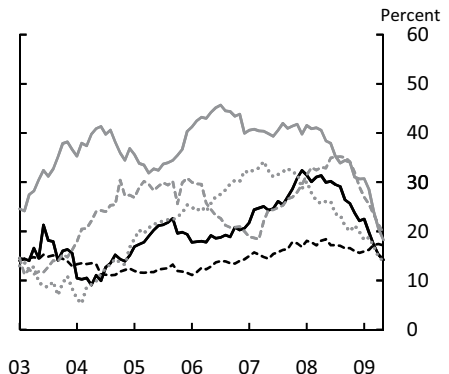
I Bank lending growth by region

Bank lending growth (% y/y)



J Private credit growth by region

Private sector credit growth (% y/y)



Source: Anderson (2009), UBS.

2009e) to be negative in all EM regions in 2009 except for Latin America. By far the largest percentage reduction in net inflows (as a share of GDP) in 2009 (relative to the average of 2005–07) is expected to occur in emerging Europe, followed (in order) by emerging Asia and Latin America; the only EM region expected to avoid a sudden stop is the Middle East. If it is realized, the forecast percentage drop in net private capital flows into emerging Asia during this crisis would be slightly larger than the sudden stop in the Asian financial crisis.²⁰

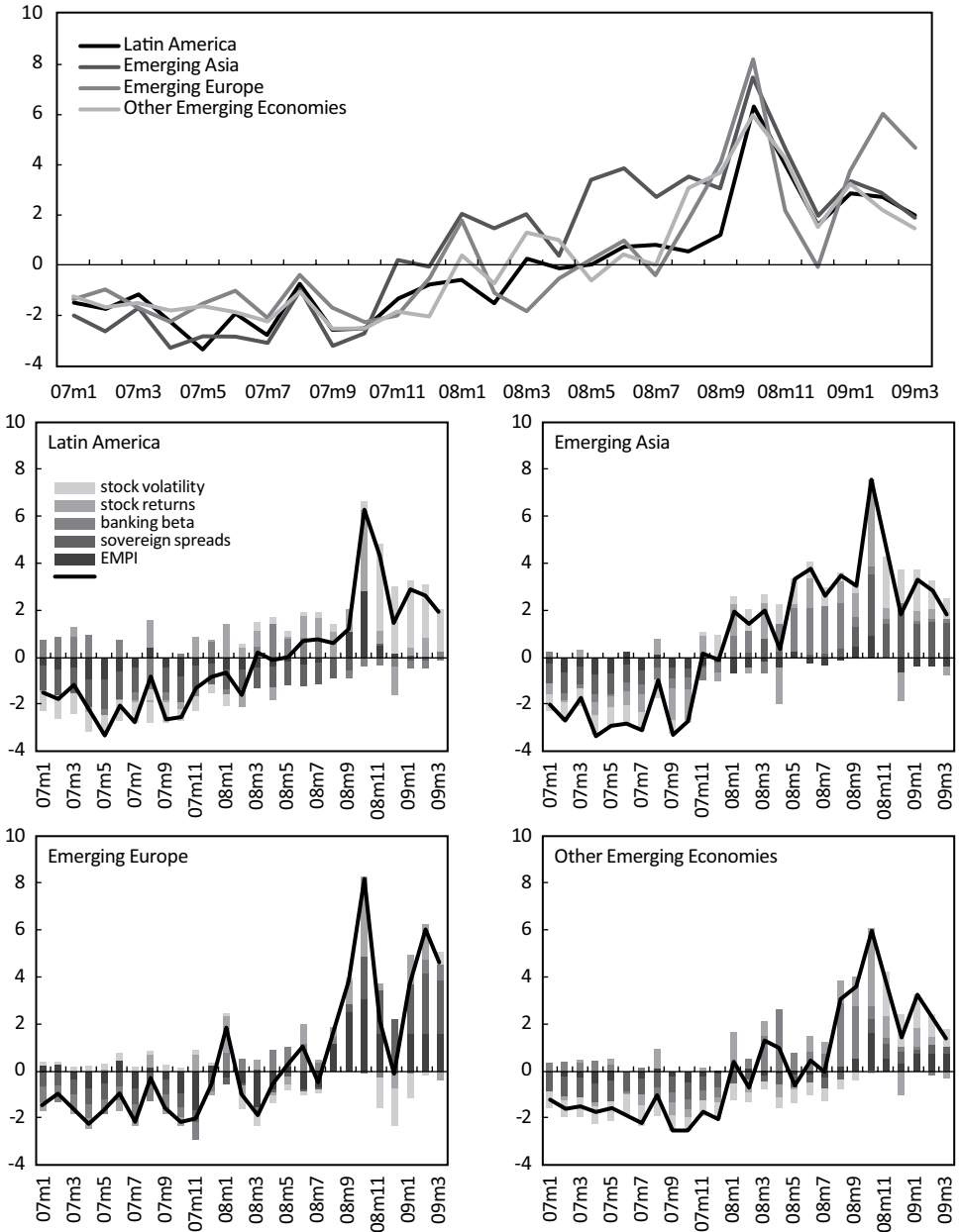
2.1.11. Financial Stress

“Financial stress” indices seek to combine equity, debt, and exchange market pressures into a single index. A praiseworthy effort to construct such a financial stress index (FSI) for emerging economies has recently been completed by Balakrishnan, Danninger, Elekdag, and Tytell (2009). Their FSI for emerging economies has five components: an exchange market pressure index, sovereign interest rate spreads, a “banking sector beta” (that measures the link between banking sector stocks and the overall stock market), a measure of stock price returns, and a time-varying measure of volatility in the stock market. The FSI is available for 18 emerging markets from 1998 to 2009 using monthly data; the “emerging Asia” group contains seven Asian economies (China, India, Indonesia, Korea, Malaysia, the Philippines, and Thailand—along with Pakistan and Sri Lanka). Chart 2 shows the behavior of the FSI regional indices over the 2007–09 (until March 2009) period, including the components of the index. Several features stand out. The period of maximum financial stress in all four EM groups is October 2008. The level of financial stress in emerging Asia in October 2008 is higher than that in any other EM region or group except for emerging Europe and (although not shown in Chart 2) is also as high as the level of stress at the height of the Asian financial crisis in 1998. All five components of financial stress are above average in emerging Asia in the fall of 2008 but the main contributions are made by very poor stock market returns and high sovereign spreads. In contrast, neither exchange market pressure nor high volatility in banking stocks are at exceptional levels at that time. Between November 2008 and March 2009, the level of stress in emerging Asia recedes gradually.

2.1.12. Alternative Indices of Crisis Severity

Just as some authors have proposed a comprehensive index of financial stress, some others have put forward more comprehensive indices of crisis severity. More specifically, Rose and Spiegel (2009) have suggested that the severity of this crisis should be measured (at the country level) by a combination of real GDP growth over 2008, the percentage change in the SDR exchange rate over

CHART 2
Financial Stress Index by Regions



Sources: Balakrishnan, Danninger, Elekdag, and Tytell (2009).

Note: Emerging Asia: China, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Sri Lanka, and Thailand. Emerging Europe: Czech Republic, Hungary, Poland, Romania, Slovak Republic, and Slovenia. Latin America: Argentina, Brazil, Chile, Colombia, Mexico, and Peru. Other emerging economies: Egypt, Israel, Morocco, Russia, South Africa, and Turkey.

2008, and the change in the country's credit rating as furnished by *Institutional Investor* or *Euromoney*. They then use factor analysis to extract the common component and show the results for the 40 most affected countries from their sample of 107 countries. To make a long story short, only one economy from emerging Asia ends up in the top ten, namely, Korea (ranked seventh) and only three are in the top 40, namely, in addition to Korea, Singapore (33) and Thailand (39). Iceland is the most affected, followed by Ukraine, Estonia, Argentina, Latvia, and Ireland. Among emerging market regions, the CIS economies are most affected, followed by emerging Europe. Emerging Asia is situated similarly (i.e., relatively little affected) to Latin America.

2.1.13. *Headline Financial Support to the Financial Sector and Borrowing from the IMF*

Another common feature of earlier financial crises has been very large fiscal costs of assistance to and restructuring of banking and financial systems. For example, Caprio et al. (2005) estimate that the fiscal costs of the 1997–2002 banking crises in emerging Asia ranged from 16 percent of GDP in Malaysia, to 28 percent in Korea, to 35 percent in Thailand, to 55 percent in Indonesia. The IMF (2009c) has recently estimated for G-20 economies the amount of headline support and up-front financing for the financial sector during this crisis. Korea tops the list for emerging economies, with headline support equal to 20 percent of GDP (although the up-front cost has been less than a half percent of GDP). Within emerging Asia, India is the only other economy with any significant headline support, estimated at close to 7 percent of GDP. No headline support has been necessary in the case of China and only very minor support in the case of Indonesia. Another sharp contrast with the Asian financial crisis is that this time none of our nine Asian economies has found it necessary to enter into a financial support program with the IMF.

2.2. Estimates of Spillover Effects on Emerging Asia

Suggestive though they are, before-to-now comparisons of economic outcomes do not provide an estimate of the “independent” effect of the financial crises cum growth slowdowns in the advanced economies on emerging Asia, nor do they measure the correlation between outcomes in emerging markets and those in the advanced economies.²¹ There are, however, some studies of such estimates. Following is a review of three of the most salient.²²

Balakrishnan, Danninger, Elekdag, and Tytell (2009, henceforth BDET) provide estimates of crisis transmission effects that are relevant for this paper's focus. They begin with indices of financial stress in both advanced and emerging

economies. We described the index for emerging economies (EMFSI) earlier. The index for advanced economies (AEFSI) is constructed from three banking related variables (the “beta” for banking sector stocks, the TED spread, and the slope of the yield curve), three securities market variables (corporate bond spreads, stock market returns, and time-varying volatility in stock returns), and one foreign exchange variable (time-varying volatility in the effective exchange rate). The regression equation for estimating crisis transmission effects is of the following form:

$$(1) \quad EMFSI_i = B1 + B2 \cdot AEFISI + B3 \cdot OEMFSI + B4 \cdot GF,$$

where *EMFSI* is financial stress in emerging economy *i*, *AEFSI* is financial stress in either an aggregate of 17 major advanced economies or in three separate advanced economy regions (namely, the United States and Canada, Western Europe, and Japan and Australia), *OEMFSI* is financial stress in other emerging economies, and *GF* are global control variables (namely, three-month London interbank offered rate or Libor, year-on-year changes in global industrial production, and commodity prices).²³ There are two episodes of high financial stress in advanced countries during the sample period: July 1998 to June 2003 (including the Long-Term Capital Management collapse, the dot-com crash, and the failures of WorldCom, Enron, etc.) and July 2007 to the present. Equation (1) is estimated for each of 18 emerging economies on data for the whole time period (January 1997 to January 2009), as well as for the two crisis subperiods. The model fits the data well. The key parameter of interest is *B2*, which measures crisis transmission from the advanced to emerging economies.²⁴ Its average value for the full sample is 0.7, it is statistically and economically significant, and the lags are very short (one to two months). Whereas in July 1998 to June 2003, the U.S. and Western Europe had roughly an equal effect on financial stress in the emerging economies, during this crisis, stress in Western Europe had a considerably larger effect than stress in the United States. Our primary interest is in the size of *B2* for Asian emerging economies. Five East Asian economies (China, Korea, Malaysia, the Philippines, and Thailand) are in BDET’s sample. For the sample period as a whole, the emerging Asian economies—taken as a group—rank in the middle of the pack, but there are notable differences among them; specifically, Korea is estimated to have the third (of 18) highest sensitivity to financial stress in advanced economies, behind Turkey and Chile; the ordinal ranking for the other Asian economies are the Philippines (9th), Malaysia (10th), Thailand (14th), and China (16th). BDET also provide separate estimates of *B2* for the current crisis. Interesting (and perplexing) enough, the ordinal rankings for this period differ considerably

from those for the sample period as a whole. In this crisis, China winds up with the second highest (among 16 EMs this time) *B2* coefficient (just behind Hungary), with Korea the sixth most affected; the Philippines, Malaysia, and Thailand are in the lower half of the distribution. The average rank for the Asian emerging economies as a group is again right in the middle.

Helbling et al. (2007) have studied the extent to which other countries can decouple from the U.S. economy—particularly during a U.S. downturn, drawing both on correlation analysis and model-based simulations. They find that the potential size of spillovers from the U.S. has increased with greater trade and financial integration, that such spillovers are largest for economies with close trade and financial linkages (particularly Latin America), and that such spillovers tend to be larger during recessions. Calculating simple correlations over the 1994–2006 period, they conclude that U.S. GDP growth is most highly correlated with GDP growth in Latin America and least correlated with growth in emerging Europe; the correlation with GDP growth in emerging Asia is in the middle. Emerging Asia has a higher correlation with U.S. stock market prices than other EM regions. Turning to regressions where output fluctuations in emerging economies are related to output fluctuations in the advanced economies and to a set of control variables, Helbling et al. (2007) report the following: growth declines in the United States have a much smaller effect on emerging Asia than on Latin America or the Caribbean; growth declines in the euro area have almost as large an effect on emerging Asia as do growth declines in the United States; and growth declines in Japan have a much smaller effect on growth in emerging Asia than do growth declines in either the United States or the euro area. In a more dynamic analysis using a vector autoregression framework, Helbling et al. (2007) again find that (negative) shocks to growth in the United States have a larger growth impact on Latin America than on the ASEAN-4 and NIEs and that the spillovers peak after one quarter. Finally, they find that within emerging Asia, the largest effects of a U.S. growth decline are felt by Hong Kong, Korea, Taiwan, and Malaysia; in contrast, spillover effects are smaller for India, the Philippines, Singapore, China, and Thailand.

Last but not least, Guimaraes-Filho et al. (2008) provide an intensive examination of spillovers from the United States to Asia—using a variety of approaches (trade and financial exposure, correlation analysis, regression analysis, model simulations, etc.). Among their major findings, (1) total export exposure of emerging Asia to the United States and the EU-15—including shipments of intermediate and capital exports used as inputs to goods assembled in third countries and then reexported to the U.S. and European Union (EU)

for final consumption—has gone up substantially and faster than direct exposure over the 1994–2006 period ; (2) total export exposure of emerging Asia to the U.S. in 2006 was roughly equal to its total exposure to the EU-15; (3) within emerging Asia, export exposure to the U.S. and EU-15 is highest by far for Singapore and Malaysia and lowest for India and Indonesia; (4) financial integration with the United States on both the asset and liabilities sides of emerging Asia’s balance sheet has increased sharply over this period; (5) emerging Asia’s holdings of U.S. portfolio securities is now much higher than U.S. holdings of Asian portfolio securities; (6) growth in emerging Asia is now much more highly correlated with the U.S. growth cycle than it was in the early 1990s—and so too with the correlation of equity prices; (7) growth spillovers from the United States to Asia are much larger than the spillovers from either the EU-15 or Japan, with the largest spillovers evident for the Asian economies that have the largest trade exposure to the United States; and (8) a 1 percent growth slowdown in the United States appears to generate approximately a 0.2 to 0.5 percent slowdown in emerging Asia as a whole, and a somewhat larger slowdown in emerging Asia excluding China and India.

To sum up, relative to other emerging market groups, the impact of the global financial crisis on emerging Asia has been mixed. Whereas the broader aggregates for emerging Asia that include China, India, and Indonesia show a relatively small growth slowdown during the crisis, the NIEs (Hong Kong, Korea, Singapore, and Taiwan) experienced very sharp growth slowdowns on a par with those in Central and Eastern Europe, though not as severe as in the CIS region. The volatility in, and time pattern of, emerging Asia’s exports, imports, sovereign bond spreads, equity prices, and financial stress indices are similar to those in most other emerging market regions, although the net change during the crisis has often been in emerging Asia’s favor—especially when compared to emerging Europe. In terms of international reserves, exchange rates, credit flows, market interest rates, and public sector support to the financial sector, emerging Asia looks, at least so far, to have been much less adversely affected than other EM regions or groups. Empirical estimates of the cross-country spillover effects of financial stress or growth slowdown in the advanced countries (holding other factors constant) generally find that emerging Asia is neither the most nor least affected EM region—whether during this crisis or over a longer time period. Growth spillover effects from the United States on emerging Asia have been growing. Within emerging Asia, Korea is the most sensitive to financial stress in the advanced economies, while the NIEs as a group appear most sensitive to a growth slowdown in the United States.²⁵

3. How Is Emerging Asia Different in Ways That Matter for Crisis Vulnerability?

Measuring the impact of the current global financial crisis on emerging Asian economies is one thing. Figuring out why the effects vary is quite another. In this section, we review arguments and evidence about the region's vulnerabilities. The emphasis here is on currency and maturity mismatches, foreign trade links, financial integration, and the scope for countercyclical monetary and fiscal policies.²⁶

3.1. Currency and Maturity Mismatches

Thinking back over past emerging market crises, including those in Mexico in 1994–95, Asia in 1997–98, Russia in 1998, Argentina in 2001–02, Brazil in 2001–02, Turkey in 2000–02, and the current crisis in Eastern Europe, one finds that practically all of them were made more costly by the presence of large currency and maturity mismatches. By a currency mismatch, we mean a situation where assets and liabilities are denominated in different currencies so that an entity's net worth or net income is sensitive to changes in the exchange rate (Goldstein and Turner 2004). When liabilities denominated in foreign currency are small and when the tradable goods sector is large (relative to the size of the economy), a depreciation of the local currency that's in a crisis poses less of a problem because it improves competitiveness and spurs net exports. In contrast, when foreign currency liabilities are sizeable and when export openness is low, negative balance sheet effects quickly transform currency depreciation into a net contractionary force; indeed, currency mismatches are probably the best explanation we have for why emerging market currency crises have frequently been linked with sizeable negative output effects. Maturity mismatches likewise count because entities that rely heavily on short-term funding sources and that have longer-term, relatively illiquid assets can find themselves in a fix when the heightened risk aversion during a crisis leads to sudden stops in net capital inflows and to extreme liquidity strains.

As noted in Section 2, only a few emerging Asian currencies (the Korean won and Indonesian rupiah) sustained large depreciations during this crisis.²⁷ Anderson (2008a) argues that this is because few Asian economies are highly dependent on exports of primary commodities, because Asian economies did not exhibit large switches during the crisis from current account surpluses to significant current account deficits, and because most Asian currencies were not large recipients of "carry trade" money (that had to be reversed once the Japanese yen appreciated strongly during the crisis). Obstfeld et al. (2009) maintain

that the emerging economies whose currencies depreciated heavily in 2008 were those with lower ratios of international reserves to the size of the domestic banking system (measured by M2).²⁸ Interestingly, our nine Asian emerging economies actually held a lower (unweighted) average ratio of reserves to M2 in 2007 (33 percent) than did our group of twelve OEMs (40 percent); see Table 4.²⁹ Still, both Korea and Indonesia had (reserves-to-M2) ratios considerably below the average. The reserves-to-M2 ratio in emerging Asia is lower than one might expect because some very large reserve holders in the region also have relatively large banking systems (so M2 is also large).

But even if currency depreciations in emerging Asia had been larger and more widespread for whatever reason, the region would have been in better shape to absorb them—relative both to the currency mismatch situation in some other emerging economies and relative to the mismatch situation in the region during the Asian financial crisis of 1997–98. Evidence supporting that argument is presented in Table 5.

Table 5 updates the Goldstein-Turner (2004) measure of aggregate effective currency mismatch (AECM) for a variety of emerging economies. The advantage of the AECM is that its coverage of foreign-currency-denominated assets and liabilities is reasonably comprehensive, it normalizes the economy's net foreign currency position by the economy's exports, and it typically takes on large, negative values in the run-up to and during major currency crises.³⁰ A negative value in Table 5 means that the economy has a net liability position in foreign-currency-denominated assets and liabilities. Two observations stand out. First, there is a marked contrast between the large negative currency mismatch in many emerging European economies (especially Latvia, Lithuania, Estonia, Romania, and Hungary) in 2007–08 on the one hand, and the lack of such (negative) currency mismatches in emerging Asia and Latin America on the other; in fact, the only emerging Asian economy with a negative currency mismatch in 2007–08 was Korea and it was small. Second, in four Asian crisis economies of 1997–98 (that is, Indonesia, Korea, the Philippines, and Thailand), currency mismatch was nowhere near the problem in 2007–08 that it was in 1996–98. In short, most emerging economies have reduced currency mismatches over the past decade—particularly some Asian emerging economies. Using ratios of short-term external debt to international reserves—a popular measure that combines currency and maturity mismatches but covers only a limited range of liabilities and assets—yields the same qualitative conclusion.³¹

For the same group of economies, we also looked separately both at the share of foreign-currency-denominated debt in total debt (including local bonds) and at export openness. The numbers that jump out are the high shares of foreign

TABLE 5
**Modified Aggregate Effective Currency Mismatch (AECM),
 Emerging Economies, 2002–2008**

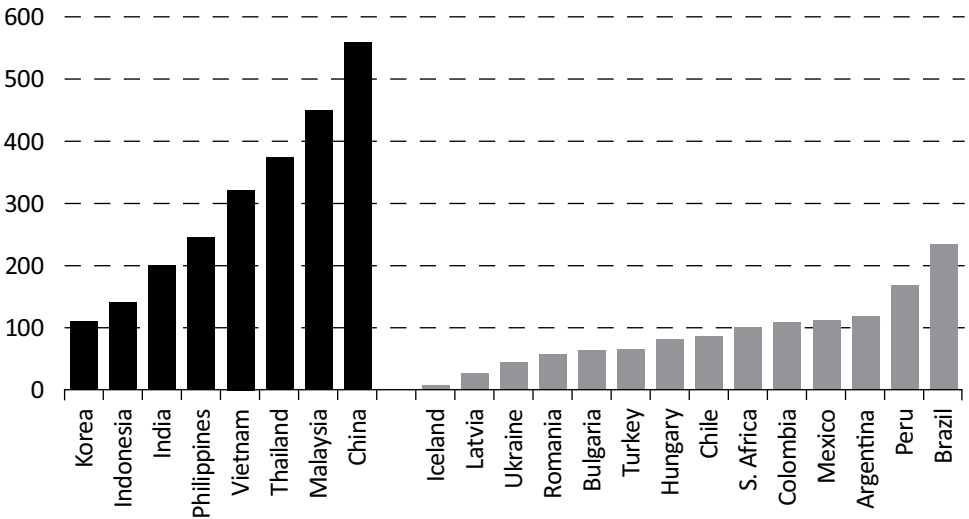
| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 1996 | 1997 | 1998 |
|-----------------------------------|--------|--------|--------|-------|-------|--------|--------|--------|--------|--------|
| Asia | | | | | | | | | | |
| China | 7.5 | 6.9 | 7.4 | 7.8 | 8.2 | 9.3 | 9.8 | | | |
| India | 3.9 | 5.7 | 5.9 | 5.2 | 5.7 | 8.6 | 9.7 | | | |
| Indonesia | 3.7 | 4 | 2.6 | 3.1 | 4.7 | 6.1 | 4.3 | -14.56 | -30.92 | -25.31 |
| Korea | 2.7 | 3.8 | 3.8 | 3 | 2.3 | 1.2 | -1.3 | -6.16 | -12.36 | -3.5 |
| Malaysia | 0.8 | 2 | 3 | 2.4 | 3.3 | 3.8 | 2.2 | | | |
| Philippines | -17.4 | -21.8 | -18.8 | -18.1 | -7.7 | 1.3 | 1.1 | -1.98 | -7.68 | -6.95 |
| Taiwan, China | 9.3 | 13.7 | 14 | 12.7 | 10.9 | 11.2 | 10.4 | | | |
| Thailand | 3.5 | 3.5 | 3.2 | 3.7 | 4 | 3.8 | 3.1 | -13.65 | -20.31 | -8.95 |
| Latin America | | | | | | | | | | |
| Argentina | -237.4 | -169.9 | -119.9 | -33.9 | -19.8 | -10.0 | 1.2 | | | |
| Brazil | -49.2 | -29.8 | -14.5 | -5.9 | -2.5 | 1.8 | 2.1 | | | |
| Chile | -8.3 | -10.1 | -6.0 | -3.1 | -0.3 | -1.3 | -2.2 | | | |
| Colombia | -14.0 | -4.6 | 5.1 | 3.8 | 4.8 | 6.1 | 7.7 | | | |
| Mexico | | -5.0 | -2.9 | -0.7 | 0 | 0.8 | 2.6 | | | |
| Peru | 30.8 | 30.7 | 27.8 | 22.1 | 21.5 | 27.4 | 30.6 | | | |
| Venezuela | 11.9 | 29.1 | 23.1 | 18.9 | 31.1 | 23.8 | 22 | | | |
| Central and Eastern Europe | | | | | | | | | | |
| Czech | 9.9 | 7.4 | 6.5 | 7.3 | 5.6 | 4.8 | 3.1 | | | |
| Hungary | -12.9 | -12.0 | -13.5 | -18.1 | -21.4 | -24.9 | -31.6 | | | |
| Poland | 8.1 | 3.8 | 4 | 0.3 | -2.2 | -5.3 | -9.8 | | | |
| Russia | -1.4 | 2.4 | 8 | 13.3 | 18.6 | 24.7 | 19.6 | | | |
| Turkey | -45.3 | -31.9 | -21.1 | -15.6 | -13.8 | -13.4 | -9.6 | | | |
| Bulgaria | 2.6 | 5.8 | 6.8 | 16.5 | 19.2 | 14.5 | -5.8 | | | |
| Romania | -13.8 | -14.7 | -12.2 | -12.1 | -15.6 | -30.8 | -30.9 | | | |
| Estonia | -3.2 | -20.6 | -17.1 | -14.6 | -27.0 | -40.6 | -37.6 | | | |
| Latvia | -0.1 | -6.9 | -19.0 | -36.5 | -66.4 | -104.6 | -114.5 | | | |
| Lithuania | -0.2 | -4.1 | -9.4 | -17.2 | -30.2 | -48.1 | -51.1 | | | |
| South Africa | 2.1 | 4 | 4 | 2.6 | 3.5 | 3.2 | 3.2 | | | |

Source: Goldstein and Turner (2004), updated. See Goldstein and Turner for the definition of AECM.

currency debt in much of Central and Eastern Europe—with Bulgaria, Hungary, Romania, Estonia, Latvia, and Lithuania all having foreign currency shares in the 54 to 93 percent range in 2008.³² By contrast (and with the exception of Peru, Argentina, and Venezuela), shares of foreign currency debt are low in Latin America and are particularly low in emerging Asia, with only Thailand having a share above 30 percent. As for export openness, the main contrast is between the still low (but increasing) export openness in Latin America and the greater export openness in both emerging Asia and in emerging Europe.³³

Regarding maturity mismatches and rollover risks, Chart 3 shows the end of December 2008 international reserves as a percentage of estimated 2009

CHART 3
Foreign Reserves over External Financing Requirements, 2009
 (in percent)



Sources: IMF *Regional Economic Outlook: Asia and Pacific*, May 2009.

Note: Gross international reserves (December 2008) in percent of external debt maturing in 2009 (projected) plus projected current account deficit for 2009 (zero, if current account is in surplus).

external financing requirements (where such requirements are defined as the 2009 estimated current account deficit plus external debt maturing in 2009). Again, what is striking is the low rollover risk in emerging Asia (particularly in China, Malaysia, and Thailand) relative to the higher risk in emerging CIS and emerging European economies (along with Iceland).³⁴

To sum up, because the combustible mix of large currency depreciations and large currency mismatches was largely avoided in emerging Asia, this crisis proved less injurious to economic growth there than it could have been.³⁵ Recent experience in emerging Europe underscores the risks when currency and maturity mismatches are not controlled.³⁶

3.2. Foreign Trade Links

When considering how this financial crisis was transmitted from one part of the world to another, it makes sense to consider foreign trade links for at least three reasons; first, it is intuitive that a drop in growth and import demand in the advanced countries hurts emerging economies that export heavily to those

countries; second, as noted in Section 2, all four emerging economy regions have increased their export exposure to the advanced economies (relative to GDP) over the past two decades; and third, empirical studies showing that bilateral trade links are one of the main avenues by which cross-country contagion of crises occurs (e.g., see Eichengreen and Rose 1999, Glick and Rose 1999, and Forbes and Chinn 2003).³⁷ In this subsection, we discuss three aspects of emerging Asia's foreign trade often cited as affecting that region's vulnerability to crisis transmission: the high share of manufactures in total exports, the high share of interregional trade in total trade, and the "export-led" nature of their economic growth.

3.2.1. Primary Commodities versus Manufactures

It is traditional to think of recessions in industrial countries as harmful to (the balance of payments position of) emerging economies reliant on exports of primary commodities, as declines in global demand lower commodity prices.³⁸ This factor suggests that emerging Asian economies would be better shielded from the financial crisis and recessions in industrial countries because, as shown in Table 6, emerging Asia—particularly East Asia—has a higher share of manufactures (and a lower share of primary commodities) in total exports than any other group or region.³⁹ Also evident from Table 6 is the fact that East Asia (but not South Asia) has the highest share of medium- and high-tech exports in total exports.⁴⁰

Recall from Section 2 that, while emerging Asia experienced a small improvement in its terms of trade during this crisis, it also experienced huge peak-to-trough declines in the value of its exports comparable to export declines in other emerging economies. Recent research suggests that two factors may have been responsible for this outcome. First, as suggested by Reinhart and Reinhart (2001), manufactured exports have much higher income elasticities than primary commodities and, hence, the demand for the former can fall sharply during recessions in their major export markets. The cyclical sensitivity of U.S. import demand, for example, is known to be very high and the products exported by emerging Asian economies carry a large weight in U.S. imports.⁴¹ The Asian Development Bank (ADB, 2009b) notes that the electronics industry is more dependent on G-3 markets than other industries, that intra-Asian trade in parts and components in this industry is perhaps larger than in any other industry, and that electronics products display a high world income elasticity.⁴² Second, the medium- and high-tech product composition of emerging Asia's manufactured exports—especially electronics, motor vehicles, and capital goods, makes these exports (because of their big-ticket nature) highly

TABLE 6
**The Product Composition of Exports in Emerging Economies,
 2005–2006 (in percent)**

| Area | Economy | Primary commodities in mdse. exports, 2006 | Mfd. exports as % of GDP, 2006 | | Mfd. exports in total exports, 2005 | Med/high-tech exports in total exports, 2005 |
|-----------------------------|--------------------|--|--------------------------------|--|-------------------------------------|--|
| <i>Emerging Asia, avg.</i> | | 15.5 | 57.7 | <i>Latin America and the Caribbean</i> | 63.4 | 35.4 |
| <i>Non-Asian OEMs, avg.</i> | | 37.2 | 13.8 | <i>excluding Mexico</i> | 51.9 | 19.1 |
| Asia | Singapore | 14.8 | 156.8 | <i>East Asia and the Pacific</i> | 91.9 | 58.9 |
| Asia | Hong Kong | 4.6 | 117.6 | <i>excluding China</i> | 89.9 | 61.7 |
| Asia | Malaysia | 17.8 | 75.4 | <i>South Asia</i> | 86.3 | 17.4 |
| CEE | Hungary | 4.9 | 55.8 | <i>excluding India</i> | 84.6 | 6.8 |
| Asia | Thailand | 11.7 | 47.7 | <i>Countries w/economies in transition</i> | 50.9 | 15.8 |
| Asia | Philippines | 7.3 | 34.7 | <i>Middle East and North Africa</i> | 31.7 | 8.8 |
| Asia | China | 4.5 | 33.7 | <i>excluding Turkey</i> | 22.7 | 4.5 |
| Asia | Korea | 9.6 | 32.7 | | | |
| CEE | Poland | 10.8 | 25.5 | Memo: | | |
| CEE | Romania | 17.6 | 20.9 | <i>World</i> | 81 | 50.5 |
| LatAm | Mexico | 18.2 | 19.9 | <i>Industrialized economies</i> | 85.7 | 56.6 |
| CEE | Turkey | 8 | 13 | | | |
| Asia | Indonesia | 43.7 | 12.5 | | | |
| Africa | South Africa | 40.3 | 11.8 | | | |
| Asia | India | 25.3 | 8.6 | | | |
| LatAm | Argentina | 20.8 | 6.9 | | | |
| LatAm | Brazil | 23 | 6.4 | | | |
| LatAm | Colombia | 45.2 | 5.3 | | | |
| CEE | Russia | 72.9 | 5.2 | | | |
| LatAm | Chile | 71 | 4.3 | | | |
| LatAm | Peru | 56.8 | 3 | | | |
| LatAm | Venezuela | 94.7 | 1.8 | | | |

Source: UNIDO database and UNIDO Industrial Development Report (2009); World Bank WDI.

sensitive to the very uncertainties and disruptions in finance prevalent during this crisis.⁴³ Mussa (2009) notes that the most credit-intensive components of GDP have suffered large declines, and the same reasoning would suggest that the crisis would fall hardest on exports for which the demand is credit intensive. Unteroberdoerster and Zebregs (2009) report that syndicated loans for trade finance in emerging Asia have contracted at the fastest pace on record. Cardarelli et al. (2009) point out that those emerging Asian economies with higher shares of advanced manufacturing value-added in their GDP suffered sharper output declines in the fourth quarter of 2008.

None of this implies of course that emerging Asia ought to change the product mix of its exports in light of the experience of this financial crisis; there are,

after all, longer-term considerations of comparative advantage and economic growth to take into account. But it does suggest that the sharp distinction in crisis vulnerability between exporters of primary products and exporters of certain kinds of manufactures may be less than advertised, at least for crises aggravated by disruptions in financing.

3.2.2. *Intraregional Trade*

Intraregional exports constitute a higher share of GDP in emerging Asia than in any other emerging market region; in 2001–05, emerging Asia's intraregional exports accounted for 16 percent of its GDP (and 29 percent of GDP for NIEs and the ASEAN-4); the comparable GDP shares for the intraregional exports of other EM regions were 3 percent for Latin America, 9 percent for emerging Europe and the CIS, and 3 percent for sub-Saharan Africa.⁴⁴ In 2006, the intraregional shares of emerging Asia's exports and imports were 40 and almost 50 percent, respectively.⁴⁵ It has sometimes been argued that such a large share of trade with regional neighbors would cushion emerging Asia's exports against a downturn in the advanced economies. The experience of this crisis, along with relevant research, suggests otherwise.

By now, much has (rightly) been made of the huge expansion of intraregional trade in propelling the increase in emerging Asia's share of world trade, the key role of China as a regional assembly hub and export platform in driving this increase in intraregional trade, and the wider efficiency gains for the global economy from an expanded system of "trade in tasks" with increased imported intermediate inputs in all regions.⁴⁶ But prior to this crisis, perhaps not enough has been made of the sensitivity of such global vertical integration networks to a collapse in final demand. Studies by Hori (2007), Cardarelli et al. (2009), and Athukorala and Kohpaiboon (2009) highlight this point, along with the implications for emerging Asia. Hori (2007) notes that a critical distinction between the rise of intra-industry trade in advanced economies and that in emerging Asia is that the former reflects a demand for product variety in the context of large domestic markets, while the latter reflects greater vertical specialization in production targeting foreign markets. Hori's (2007) main point is that intermediate goods are increasingly flowing *into* China, whereas final products are going from China *out of* the region.⁴⁷ Moreover, both Cardarelli et al. (2009) and Hori (2007) show that not only do advanced countries remain the main destination for *final goods* exported by emerging Asia but also that total trade exposure to the advanced economies has increased over time and that the correlation between U.S. import growth and Asian intraregional exports has become stronger. Hence, when final demand in the advanced countries fell during this global

financial crisis, the effects reverberated along the entire vertical supply chain in emerging Asia (and beyond).⁴⁸

3.2.3. (Net) Export-Led Growth

Because the ratio of exports to GDP in emerging Asia is higher than elsewhere in the emerging world, because the Asian export ratio has been rising, and because some emerging Asian economies have engaged in large and prolonged intervention in exchange markets to limit the real effective appreciation of their currencies and to protect their export competitiveness, it is sometimes concluded that economic growth in emerging Asia must be predominantly export-led. We say, not so fast.

The proper way to define (net) export-led growth is to calculate the contribution of *net* exports to GDP growth and then to compare this contribution to that of the domestic components of growth (that is, to consumption and investment).⁴⁹ The contribution of net exports depends in turn on the share of net exports in GDP and on the percentage change in net exports. If, for example, the share of net exports in GDP is small (say, 5 to 10 percent), then even a quite large expansion in net exports may make only a small contribution to growth. Similarly, even when the share of net exports in GDP is relatively high, either an expansion of exports matched by an expansion of imports or a leveling off of a large trade surplus will produce little change in net exports and hence only a small contribution to GDP growth.

Table 7, adapted from Prasad (2009), helps to bring perspective to notions about net export-led growth in emerging Asia over the 2000–08 period. Two observations stand out. First, as shown in column 7, the median contribution of net exports to growth across the nine emerging Asian economies shown in Table 7 was less than 11 percent—and about 15 percent if China is excluded. The dominant contributions to growth were overwhelmingly “domestic”—mostly (total) consumption (61 percent) and investment (27 percent). The economy in Table 7 that could best be described as having net export-led growth during this period was Germany, where almost two-thirds (64 percent) of growth was accounted for by net exports. Japan’s growth over this period was also more (34 percent) net export-led than most of emerging Asia. Second, considerable variation exists across emerging Asia in the contribution of net exports to growth during this period, with Hong Kong (34 percent) and Korea (29 percent) topping the list, and India having a negative contribution (just as in the United States); China is right in the middle for the region (at just below 11 percent). The share of net exports in GDP in China—at 8 percent in 2008, is far below the net export share in Singapore (20 percent), Taiwan (17 percent), Thailand (15 percent), and

TABLE 7
Contributions to Economic Growth, 2000–2008

| GDP Economy | Average GDP Growth (1) | GDP Growth Contributions | | | | | Net Exports' Share of Contribution to Growth (7) = (6)/(1) | Net Exports as % of GDP, 2008 (8) |
|-----------------------------------|------------------------|--------------------------|-------------|----------------|----------------|-----------------|--|-----------------------------------|
| | | Consumption | | | Investment (5) | Net Exports (6) | | |
| | | Total (2) | Private (3) | Government (4) | | | | |
| China | 10.2 | 4.1 | 2.8 | 1.3 | 5.0 | 1.1 | 10.8 | 7.9 |
| Hong Kong | 5.0 | 2.3 | 2.1 | 0.2 | 1.3 | 1.7 | 34.0 | 12.2 |
| India | 7.2 | 4.1 | 3.5 | 0.5 | 3.6 | -0.3 | -4.2 | -4.3 |
| Indonesia | 5.2 | 3.1 | 2.5 | 0.6 | 1.4 | 0.4 | 7.7 | 9.6 |
| Korea | 4.9 | 2.5 | 1.9 | 0.6 | 1.0 | 1.4 | 28.6 | 4.4 |
| Malaysia | 5.1 | 4.6 | 3.5 | 1.1 | 0.4 | 0.1 | 2.0 | 13.1 |
| Philippines | 5.0 | 3.9 | 3.8 | 0.2 | 0.7 | 1.0 | 20.0 | 1.4 |
| Singapore | 5.5 | 2.8 | 2.1 | 0.6 | 1.5 | 1.5 | 27.3 | 20.4 |
| Thailand | 4.8 | 2.7 | 2.4 | 0.4 | 1.5 | 0.5 | 10.4 | 15.4 |
| Median: | | | | | | | | |
| All Countries | 5.1 | 3.1 | 2.5 | 0.6 | 1.4 | 1 | 10.8 | 9.6 |
| All excl. China | 5.1 | 3.0 | 2.5 | 0.6 | 1.4 | 0.8 | 15.2 | 10.9 |
| International Comparisons: | | | | | | | | |
| Germany | 1.4 | 0.5 | 0.3 | 0.2 | 0.1 | 0.9 | 64.3 | 6.8 |
| Japan | 1.5 | 1.0 | 0.6 | 0.4 | 0.2 | 0.5 | 33.3 | 4.9 |
| U.S. | 2.3 | 2.3 | 2.0 | 0.3 | 0.1 | -0.1 | -4.3 | -3.3 |

Source: Prasad (2009); CEIC, IMF's WEO, ADB, and authors' calculations.

Malaysia (13 percent). Most remarkable, the GDP share of private consumption in China, at 35 percent in 2008 (down from 45 percent in 1995) is the lowest in emerging Asia (and probably the world), while its investment share (43 percent in 2008) is the highest in the region. This suggests that the desirable “rebalancing” of economic growth in China will involve a substantial reshuffling among the domestic sources of growth (increasing the share of private consumption in GDP and reducing the share of investment), not just changes in the contribution of net exports to growth.⁵⁰

Three caveats are in order.

First, period averages can conceal considerable variation within the period, and that is the case here—in emerging Asia and China in particular. Recall that between 2003 and 2007, China's global current account surplus rose consistently and sharply from 3 to 11 percent of GDP, and that net exports increasingly became a major factor in China's growth. Whereas net exports accounted for only 5 percent of growth in 2001–04, they constituted 20 percent of growth in 2005–07; this latter development has been instrumental in rising international calls for China to rebalance its growth away from net exports.⁵¹ For our nine Asian emerging economies, the (unweighted) average contribution of net

exports to growth during the 2003–07 period was also significantly higher than for the 2000–08 period. Compared to other EM regions, we calculate that emerging Asia’s growth in 2003–07 was more net export-led than in Africa or emerging Europe but about the same as in Latin America.⁵² Moving to the most recent crisis period, the IMF (2009d) reports that during the fourth quarter of 2008, the decline in net exports subtracted about 250 basis points from growth in emerging Asia (excluding China) versus a decline of about 150 basis points for fixed capital formation. And by the first quarter of 2009, net exports were making a sizeable negative contribution (of roughly 300 basis points) to China’s growth.⁵³

Caveat number two is that, although one can separate the individual contributions to growth in an accounting sense, the various components interact, as rapid falls in Asian exports prompted Asian producers to cut production and slash inventories (thereby inducing declines in investment).⁵⁴ Similarly, significant externalities associated with an export orientation can improve competition and productivity growth more broadly. So too with interaction of policy instruments aimed at rebalancing growth. For example, Goldstein and Lardy (2009) have argued that real effective appreciation of the renminbi would help rebalance China’s economic growth not only by reducing exports and expanding imports but also by facilitating interest rate reform and thereby increasing household income and consumption. Similarly, greater social “safety net” expenditures by the government on education, health, and social security should curtail high levels of precautionary saving and thereby reduce China’s still large external balance.⁵⁵

The third caveat applies to the very exceptional case of a massive, contractionary, global demand and funding shock—as in the fall of 2008. Such a shock will induce a huge fall in both exports and imports worldwide, with large knock-on effects to domestic demand as well. Even if the change in net exports during such an episode is relatively small, this does not imply that the influence of foreign demand on economic growth was minimal. Indeed, in this circumstance, the foreign demand and funding shock can be driving all the components of economic growth, so that trying to allocate the sources of growth as between the domestic and foreign sources of growth becomes a mug’s game.

This issue of “rebalancing” economic growth in (current account) deficit and surplus countries alike is front and center in the ongoing G-20 discussions about sustaining the global economic recovery.⁵⁶ Indeed, if the United States reduces its role as the consumer and importer of last resort, shifts demand from the public to the private sector, and leans more on net exports to support U.S. growth, then U.S. trading partners must simultaneously increase domestic

demand growth in their economies—and particularly so in the larger surplus economies of emerging Asia.⁵⁷ As hinted at earlier, this will not only involve getting real exchange rates to facilitate the shifts in demand across countries but will also call for implementation of a set of policies to increase consumption in the emerging economies.⁵⁸ The challenges and opportunities involved in producing a significant rebalancing of growth in emerging economies should not be underestimated. As highlighted by the Bank for International Settlements (2009), aggregate saving in emerging economies rose more than threefold between 2001 and 2007, with the marginal propensity to save hitting an astonishing 43 percent and with the rise in saving rates especially marked in China and in the Middle East.⁵⁹

To sum up, there is little doubt that foreign trade helped transmit this crisis across borders—especially after the failure of Lehman Brothers froze global credit markets and exacerbated already declining economic activity, along with the demand for imports and supply of exports. But such foreign trade links are a two-edged sword: now that the recovery is under way in an increasingly wide share of the world economy and now that credit markets are functioning better, those same forces should act to reinforce the expansion. In emerging Asia, too much weight was placed on the high shares of manufactures (in total exports) and of intraregional trade (in total trade) as factors that would promote decoupling from shocks in the advanced economies. Going in the other direction, there has been a tendency to confuse high export openness with high net export-led growth in emerging Asia and to overestimate the latter—even though the immediate pre-crisis period (2003–07) was one of increasing net export-led growth in some Asian emerging economies (e.g., China, Singapore, and Malaysia) and even though net exports made a large negative contribution to growth in emerging Asia in the fourth quarter of 2008.

3.3. Financial Integration

As with foreign trade links, any round-up of the most likely suspects for cross-country transmission of crises would have to include financial integration—for at least three reasons.

First, it is easy to tell plausible stories about how high financial integration can help to transmit crises from advanced economies to emerging ones. For example, if advanced country financial firms face large losses at home along with increasing redemption calls, they may liquidate positions in emerging economies or reduce new claims on these economies. Likewise, nationals of emerging economies—anticipating both losses at domestic financial institutions and (local) currency depreciation—may engage in capital flight to avoid

these losses. Large losses on claims of emerging economies against advanced economies may be seen as a threat to the solvency of emerging market financial institutions, prompting “runs” on these institutions. Or domestic banks relying heavily on international borrowing may lose such access during a crisis and cut back on loans to domestic firms, inducing a credit crunch at home.

Second, standard measures of financial integration—whether “de facto” (the sum of foreign assets and foreign liabilities as a share of GDP) or “de jure” (indices based on disaggregated descriptions of national restrictions on financial account transactions)—show increases in advanced and emerging economies since 1970; emerging Asia is no exception to this trend.⁶⁰ Based on the measures put together by Lane and Milesi-Ferretti (2007), seven Asian emerging economies (we exclude Hong Kong and Singapore because of their role as regional financial centers) had about twice the (average) level of de facto financial integration in 2007 as they did in 1985. The Edwards (2007) de jure measure of capital account openness goes in the same direction but shows a slower rate of increase in East Asia and particularly in South Asia. De facto measures also suggest that (average) financial integration in our seven emerging Asian economies just prior to the crisis in 2007 was similar to the average in twelve OEMs.⁶¹

Reason number three is that there is a sizeable and rapidly growing empirical literature concluding that crisis transmission between advanced and emerging economies is greater, other things held equal, when the economies in question have higher levels of financial exposure or integration with one another.⁶²

In this subsection, we review three aspects of the financial integration of emerging Asian economies that seem relevant to this crisis, namely (1) the exposure of emerging Asian economies to the United States and Canada versus the European Union, (2) the implications of the composition of international capital flows for crisis vulnerability, and (3) asset exposure to subprime mortgages and securities as well as troubled Eastern European economies.

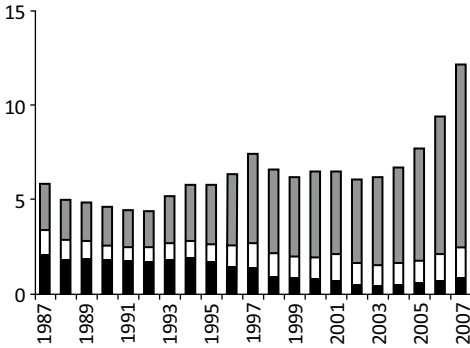
3.3.1. Exposure to North America versus the European Union

Chart 4, taken from Balakrishnan et al. (2009), highlights several characteristics of financial linkages between advanced and emerging economies, as follows: (1) as shown in the top two panels, Western European banks have increasingly dominated cross-border bank lending to emerging and developing countries, whereas portfolio investments come mainly from investors in North America; (2) as shown in the bottom two panels, emerging Asia reflects this general pattern, that is, it does its bank borrowing mainly from Western European banks, while its portfolio exposure (to advanced economies) is predominantly with

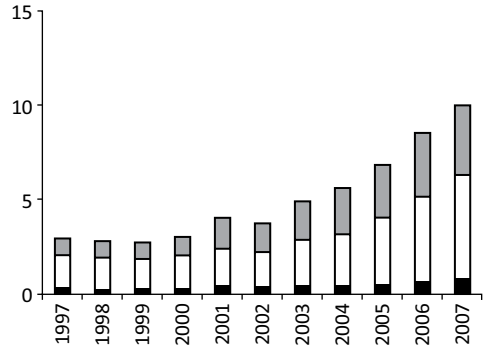
CHART 4

Financial Linkages between Advanced and Emerging Economies

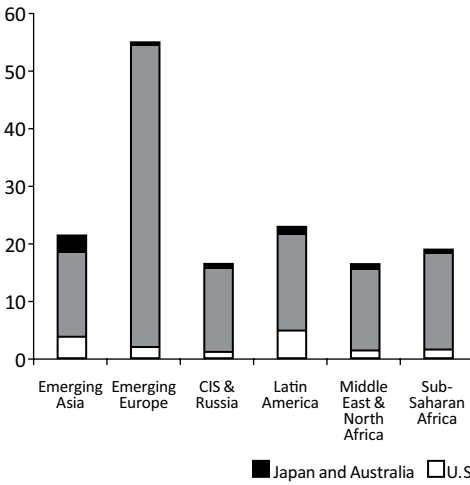
A Assets of advanced economy banks in emerging and developing economies, percent of advanced economies' GDP



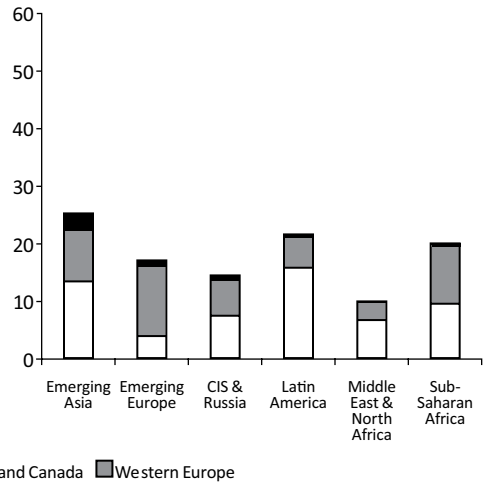
B Portfolio exposures of advanced to emerging and developing economies, percent of advanced economies' GDP^a



C Liabilities to advanced economy banks as of 2007, percent of emerging and developing economies' GDP



D Portfolio exposures to advanced economies as of 2007, percent of emerging and developing economies' GDP



■ Japan and Australia □ U.S. and Canada ■ Western Europe

Sources: Balakrishnan, Danninger, Elekdag, and Tytell (2009); BIS; IMF, Coordinated Portfolio Investment Survey.

Notes: CIS = Commonwealth of Independent States. Bank linkages are measured excluding Australia, Denmark, and Norway. Portfolio linkages exclude Finland, and also Germany and Switzerland prior to 2001.

a Including liabilities and non-reserve assets. The data for 1998, 1999, and 2000 are based on interpolations.

North America; (3) emerging Asia has higher exposure to Japan and Australia than any of the other EM regions, although that Japanese exposure is dwarfed by its exposures to Western Europe or North America; and (4) relative to GDP, emerging Asia's bank borrowing and portfolio exposure in 2007 were roughly

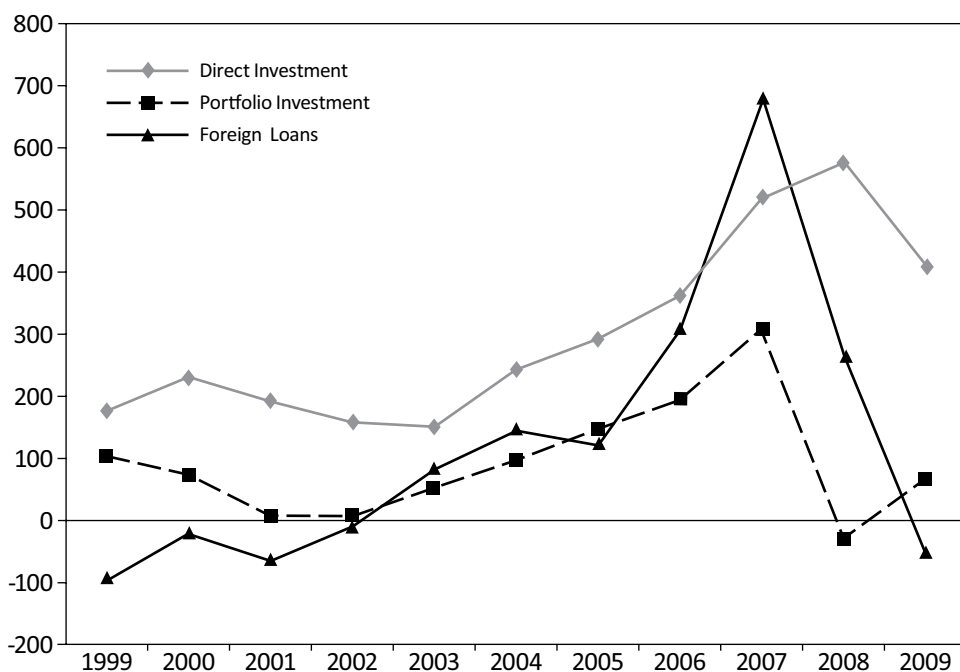
similar to that of other emerging market groups—with the exception of the extremely high level of bank borrowing in emerging Europe. In the 1997–2007 period, emerging Asia has reduced (relative to GDP) its liabilities to advanced economy banks while increasing its portfolio exposure to the advanced economies. A more detailed breakdown of emerging Asia’s external portfolio assets and liabilities reveals that exposure to the United States on both sides of the balance sheet is higher than its exposure to any other advanced country region.⁶³ The largest percentage decline in emerging Asia’s net private capital flows during this crisis period (the percentage change between the 2005–07 average and the estimated level in 2009) occurred in private portfolio flows.

Thus, despite the smaller role played by net private portfolios relative to other components of net private capital flows and despite the fact that North America is not a close neighbor, the gross exposures are large enough that emerging Asia’s financial stability is relatively sensitive to security market developments in North America. At the same time, the fact that emerging Asia is not as dependent on foreign bank loans (from advanced economies) as say, emerging Europe (20 percent of GDP versus 50 percent of GDP, respectively) and has (again in contrast to emerging Europe) reduced that exposure somewhat over the past decade, has proved to be helpful: judging from recent research (Balakrishnan et al. 2009), it was the emerging economies that were most dependent on foreign bank loans that suffered the most contagion of financial stress (from the advanced economies) during this crisis.⁶⁴

3.3.2. *Composition of Private Capital Flows*

A long-running debate centers on whether different types of capital flows imply different levels of vulnerability to balance of payments crises. Some studies find that foreign direct investment (FDI) is more stable (e.g., Berg et al. 2004) or more difficult to liquidate than other types of capital flows (portfolio financial flows and bank loans), while others either find little difference in persistence and procyclicality (Levchenko and Mauro 2007) or are skeptical that (when perceived crisis vulnerability increases) FDI investors will not be able to hedge their exposure in ways that are economically equivalent to other creditors—even if that hedging is not reflected in the behavior of the FDI series itself (Claessens et al. 1995). Recently, Tong and Wei (2009) have offered a new test of the effect of capital flow composition, using data on 3,823 firms in 24 emerging economies during the 2007–09 crisis. They report that for the 24 emerging economies in their sample, the rise and fall of international bank loans during the 1999–2009 period was sharper than for portfolio investment and much sharper than that for flows of FDI; see Chart 5 on gross capital inflows. After

CHART 5
Capital Flows to Emerging Economies, 1999–2009



Source: Tong and Wei (2009); IMF's World Economic Outlook database. The sample includes 24 emerging economies.

controlling for other factors, Tong and Wei (2009) find that a higher pre-crisis share of non-FDI capital inflows worsens the credit crunch faced by these firms; a higher share of foreign bank loans in total capital inflows seems to be particularly troublesome.

We looked at IMF data on net private capital inflows for the 2005–09 period for groups of emerging economies—also broken down into private direct investment, private portfolio flows, and other private capital flows (of which the largest component is bank loans). The highlights are (1) emerging Europe had both the largest net capital inflow in the pre-crisis period (2005–07) and sustained by far the largest percentage sudden stop in total net private flows (11 percent of GDP) between 2005–07 average and estimated 2009; (2) emerging Asia is next in line, with a sudden stop of almost 2 percent of GDP; (3) the sudden stop in emerging Asia this time is considerably smaller than during the Asian financial crisis of 1997–98 (2 percent of GDP now versus 5 percent then); (4) in emerging

Europe, the largest percentage sudden stop during this crisis was in other private capital flows; (5) in contrast, in both emerging Asia and in Latin America, the component dropping the most was private portfolio flows; and (6) emerging Asia and Latin America had the highest shares of FDI in total net private flows during the pre-crisis period, while emerging Europe had by far the lowest FDI share.

It therefore looks like emerging Asia had another clear advantage relative to emerging Europe in the run-up to this crisis—not only was Asia more moderate in the scale of net private capital inflows but also it relied more heavily on more stable forms of private net capital flows—especially FDI. The debt-equity mix of foreign finance may also be at play here and this too would be in emerging Asia’s favor. In this connection, Rogoff (1999) has argued that crisis vulnerability in emerging economies would be reduced if capital flows to these economies took the form of equity and direct investment: there would be an automatic device for risk sharing, country runs would lead to sharp falls in local stock markets but there would be no liquidity effects, and there would be less need for a crisis manager or lender of last resort.

3.3.3. Subprime Exposure and Lending to Troubled Economies in Emerging Europe

Two prominent characteristics of this financial crisis have been large estimated credit losses on U.S. originated subprime loans and securities, and large potential credit losses on loans to certain troubled economies in emerging Europe. The IMF’s *Global Financial Stability Report* (IMF 2009c), for example, has estimated that global credit losses on U.S. originated subprime loans and securities alone could exceed \$800 billion. Meanwhile, Deo (2009) has estimated that Austria has 67 percent of GDP in financial systems claims on emerging Europe, including over 25 percent of GDP in claims on what is regarded as the “high risk” group within emerging Europe (assumed to be Bulgaria, Estonia, Hungary, Latvia, Lithuania, Romania, and the Ukraine); the overall (emerging European) exposures of Belgium and Sweden were also estimated to be high (27 and 22 percent of GDP, respectively).

The ADB (2009a) has estimated that non-Japan Asia has accounted for less than 3 percent of global credit losses in this crisis. Kawai et al. (2008) figure that Asia’s (including Japan) subprime losses amounted to less than 2 percent of the region’s bank capital; the comparable ratios for China, Korea, and Malaysia were 1, 0.5, and 0.3 percent, respectively. The IMF (2009d) places exposure in Asia (excluding Japan) to subprime and related assets (collateralized debt obligations and structured investment vehicles) at \$20–30 billion (or 5 to 10 percent

of bank capital) and estimates the likely losses on these assets at \$2–5 billion.⁶⁵ The IMF (2009d) goes on to argue that limited reported exposure to subprime related products in emerging Asia reflects several factors: an early stage of involvement in the overall securitization process, less pressure to search for yield because of the continued profitability of bank lending (including consumer lending), less emphasis on trading activities, and a more proactive stance of regulators (at least in Hong Kong, Singapore, and the Philippines) in insisting that local banks had sufficient risk-management capacity before investing in complex structured products.

Judging from lists of the creditor economies most exposed via bank loans to troubled economies in emerging Europe (inclusive of the CIS economies), the emerging Asian economies appear to have little creditor presence in this region; whether this reflects an unfamiliarity with Eastern Europe's borrowers, or the lack of a perceived comparative advantage vis-à-vis European lenders or a more conservative assessment of risk, or some combination of all of these is unclear.

To sum up, international capital flows and asset price changes were another important link transmitting this crisis from the advanced economies to emerging Asia. Relative to most other emerging market regions, emerging Asia is sensitive to falls in equity and bond prices in the United States and to knock-on effects of such losses (and of broader increases in risk aversion) by North American investors in Asia. At the same time, emerging Asia (in contrast to emerging Europe) benefited from not having increased its exposure to G-3 banks (at least relative to GDP) in the decade preceding this crisis, from relying more heavily than other EM regions on (relatively stable) FDI inflows, and from having avoided large credit exposures to U.S. originated subprime loans and securities and to the troubled emerging Europe.⁶⁶

3.4. Scope for Implementing Countercyclical Policy Responses

The impact of a crisis in the advanced economies on emerging economies does not depend solely on the size of the external shock and on the structural parameters or exposures that help determine how that shock works its way through the economy. The ability to implement countercyclical monetary and fiscal policies also matters. Indeed, recall that there was considerable controversy during the Asian financial crisis about whether the crisis economies should or could have acted sooner or more aggressively to implement programs of monetary and fiscal stimulus even though their currencies and external borrowing costs were under strong adverse market pressure.⁶⁷ Some empirical studies also find that most emerging economies have typically not used monetary and fiscal policy in

a countercyclical manner during earlier financial crises.⁶⁸ This time, the picture looks different. Because an analysis of policy responses in Asia during this crisis is the main focus of at least one other paper presented at this conference, we restrict ourselves to some summary observations.

All nine Asian emerging economies in our sample reduced policy interest rates during the June 2008 to June 2009 period, with the (unweighted) average reduction being 200 basis points; India, Korea, and Hong Kong had the largest interest rate cuts, while Singapore and the Philippines made the smallest ones.⁶⁹ In sharp contrast, during the Asian financial crisis (June 1997 to July 1998), the average change in policy interest rates for these same nine Asian emerging economies was an increase of 740 basis points. Reflecting the global nature of this crisis, the twelve OEMs also aggressively reduced policy interest rates during this crisis; in fact, the average interest rate reduction in this non-Asian group was 100 basis points larger than for our nine Asian economies.⁷⁰

Fiscal policy stimulus has also been a prominent feature of the crisis policy response—both inside and outside emerging Asia. The World Bank (2009) concludes the following: (1) within emerging Asia, the fiscal stimulus package in 2009–10 is largest in China, Malaysia, Singapore, and Korea, and smallest in Thailand, Indonesia, and the Philippines;⁷¹ (2) most of these stimulus packages are heavily biased in terms of expenditure packages (with only a sixth of the overall regional stimulus accounted for by tax cuts);⁷² (3) in most Asian economies, the effects of the fiscal stimulus will only partially offset the impact of the crisis on GDP (leaving still sizeable output gaps, particularly in Thailand, Malaysia, and Korea); and (4) for 2009, the emerging Asian stimulus packages are (on average) larger than those in the United States, the euro zone, and Japan. Despite the fact that most of China's fiscal stimulus package was directed at infrastructure spending, Lardy (2009) reports that household consumption growth in China during the first quarter of 2009 was higher than anywhere else in the emerging market world.

As noted in Section 2, private credit and bank lending growth have held up better in emerging Asia during this crisis than in other EM regions. Within emerging Asia, bank lending growth has been particularly rapid in China, India, and Indonesia, while slowing (from moderately to sharply) in most of the region's other economies. In China, bank lending growth in the first six months of 2009 was greater than for all of 2008. While such rapid lending growth in China was clearly part of the recovery strategy of the Chinese authorities, there are concerns that if the pace of that lending is not brought down to more sustainable levels in the second half of the year, the adverse consequences in terms of deteriorating asset quality and future credit losses could be considerable.

A number of analysts have looked at the factors enabling emerging Asia to implement countercyclical macroeconomic stimulus during this crisis. Some conclusions warrant mention.

On the monetary policy side, as noted in Section 2, headline and core inflation rates in emerging Asia have been declining at or below pre-crisis levels. The crisis has also generated sizeable output gaps which should limit inflationary pressures. Not only are there fewer hard pegs in the region than a decade ago but also the global nature of the crisis has meant that other countries—including the reserve currency economies—have been reducing their interest rates, thereby reducing potential monetary policy conflicts for those Asian economies with heavily managed exchange rates. Moreover, most Asian economies have enough international reserves to fund significant intervention operations in the event of problematic currency pressures.

As for fiscal policy stimulus, aggressive action was possible because the factors that typically raise concerns about longer-term debt sustainability—whether for public debt or external debt—were not operative for most Asian emerging economies.⁷³

As indicated in Section 2, Asian emerging economies have not needed during this crisis to provide government financial support for troubled financial institutions on anywhere near the scale (relative to GDP) applicable to the major industrial countries. The IMF (2009c) has calculated the primary surplus in the budget needed either to stabilize the ratio of debt to GDP or to bring that ratio to the pre-crisis benchmark. For the six Asian emerging economies examined, the needed primary surplus was below 1 percent in three of them (China, Indonesia, and the Philippines), and just above 1 percent in two others (Korea and Malaysia); only in India (which had a projected 2014 public debt ratio of 70 percent before the crisis and a revised 2014 projection of 77 percent now) is the required primary surplus—at 3 percent of GDP—quite challenging.⁷⁴ Among the six larger Asian emerging economies, only India and the Philippines have net public debt ratios above 50 percent. The (unweighted) average ratio of total external debt to GDP for our nine Asian emerging economies is also low—at 28 percent (versus an unweighted average of 35 percent for the twelve OEMs), and only the Philippines had a pre-crisis ratio of above 40 percent. As indicated in Section 2, emerging Asia's current account balance going into this crisis was a surplus of 6 percent of GDP.⁷⁵

Anderson (2008a) has constructed systemic risk indices for nearly 50 emerging economies. He combines an external risk index (encompassing the export-GDP ratio, the current account balance as a share of GDP, gross external debt as a share of GDP, and official foreign exchange reserves as a share of gross

external debt) with a financial risk index (encompassing the loan-to-deposit ratio in the banking system, the increase in the loan-to-deposit ratio over the past five years, the increase in the credit-to-GDP ratio over the past five years, and gross public debt as a share of GDP). The results underline the fragility of the emerging European economies, as nine of the ten most risky economies are from that region (led by the three Baltic economies). The Asian economy with the highest risk rating was Korea, which ranked 14th; the other eight Asian emerging economies were all rated in the low-risk category, with China getting the lowest risk rating in the entire emerging market sample. Lardy (2009) lends further support for the low risk assessment for China by noting the following: in 2007 public sector debt, household debt, and financial sector debt—each expressed as a share of GDP—were much lower in China than in the United States; foreign direct investment was financing less than 4 percent of China's fixed asset investment in 2007; foreign portfolio investment in China's stock market represented only 20 percent of market capitalization in 2007; and about 40 to 50 percent of new medium- and long-term bank loans during the 2006–09(Q2) period were for infrastructure (which is less speculative than property lending and less prone to excess capacity problems than bank lending going to manufacturing).

Turner (2007) found that income and balance sheet data had improved substantially in most Asian banking systems in the decade after the 1997–98 crisis but also that share prices, operating costs, and credit ratings had fared less well.⁷⁶ More recently, both the ADB (2009a) and Pomerleano (2009) have evaluated Asian banking performance—comparing conditions in the early part of this decade with those for the recent crisis period. The ADB (2009a) finds across-the-board improvements in nonperforming loan ratios, provisioning ratios, profitability, and risk-weighted capital ratios. Pomerleano (2009) also sees marked improvements in asset quality and in capital adequacy, along with relatively low reliance on wholesale funding (with the notable exception of Korea). But Pomerleano (2009) also points out that “stand alone” credit ratings (e.g., Moody's bank financial strength ratings) continue to award low ratings to most of the region's banking system (with the exception of Hong Kong and Singapore) and that these poor ratings probably reflect concerns that there will be substantial pressure on loan quality going forward in this crisis.⁷⁷ Jain-Chandra et al. (2009) emphasize that the collapse of global demand in this crisis has decimated corporate revenues in Asia and that financing has proven hard to find outside of the highest rated and most established companies. They find that (1) the risk of corporate defaults is unusually high but much smaller than at the time of the Asian financial crisis; (2) the risks are manageable because the corporate sector entered this crisis

with low leverage ratios and high profitability; and (3) losses to creditors (excluding shareholders) from defaults in Asia as a whole could amount to about 2 percent of GDP, while bank losses could total roughly 1 percent of their assets.

To sum up, emerging Asia had more room for maneuvering in the conduct of countercyclical monetary and fiscal policy during this crisis because its macro and balance sheet fundamentals were more robust when the crisis struck—both relative to some earlier crises and relative to most other emerging market groups (especially emerging Europe).

4. Concluding Remarks

This paper has examined various dimensions of the impact of the global credit crisis on emerging Asia. If we had to choose two adjectives to provide a shorthand description of this impact, we would opt for “mixed” and “unexpected.”

As detailed in Section 2, the (estimated) growth declines in emerging Asia during this crisis have not been as severe as those experienced either by the CIS economies or by the five most affected Asian emerging economies during Asia’s own financial crisis of 1997–98. At the same time, Singapore, Hong Kong, Malaysia, and Korea have suffered very large growth declines during this crisis, and even China and India saw their economic growth rates plunge to about half their pre-crisis peaks. At the height of this crisis, emerging Asia looked a lot like other emerging market groups in terms of peak-to-trough changes in exports and in equity prices, or spikes in indices of financial stress. Estimates of the cross-country spillover effects of crises in advanced economies on emerging economies typically place emerging Asia in the middle of the pack. On the other hand, emerging Asia has not had to commit anywhere near the government financial support to troubled financial institutions that was committed in some of the largest advanced economies, and its international reserves, exchange rates, and domestic credit flows have been less severely affected than most emerging market counterparts. Just as important, there are some initial indications that emerging Asia may rebound from this crisis earlier and more strongly than most other emerging market groups.

Those who thought that emerging Asia would decouple from the crises in the advanced economies, and particularly from the crisis in the United States, have been surprised and disappointed. Perhaps they underestimated the extent of trade and financial market exposure and integration between emerging Asia on the one hand and the United States and the European Union on the other. Perhaps they overestimated the cushioning that emerging Asia would receive from its relatively high share of intraregional in total trade or its relatively low share of primary commodities in total exports. And perhaps they underappreciated

the degree to which the failure of Lehman Brothers—coming on top of the earlier troubles at some large U.S. financial institutions—would induce a watershed increase worldwide in uncertainty about the creditworthiness of counterparties and the implicit rules of the game in crisis management and how that in turn would paralyze private financial flows.

By the same token, those who despaired at the worst of this crisis that emerging Asia's improved economic fundamentals (from a decade earlier) would not limit the size of the downturn and that the region would experience a prolonged slump have also been surprised—this time by the vigorous rebound of the past six months. Perhaps they overestimated the degree to which economic growth in emerging Asia has been (net) export-led. Perhaps they failed to appreciate that emerging Asia's strong external position, its control of currency and maturity mismatches, and its lower reliance on wholesale international funding would dampen the balance sheet effects of the crisis. Perhaps they underestimated the helpful role played by control of inflation, relatively good debt dynamics, and improved banking system fundamentals in permitting emerging Asia to implement a more aggressive fiscal and monetary policy response to the crisis. And perhaps they didn't pay enough attention to *Mussa's* (2009) business cycle guideposts that deep recessions are almost always followed by steep recoveries, and that in a highly synchronized global business cycle (like this one) foreign trade multipliers are mutually reinforcing—as much in the upturn as in the downturn.

And perhaps a year or two from now, when much more will be known about the strength and durability of the recovery, we will be in a better position to judge whether the whole crisis episode is best regarded as a demonstration of emerging Asia's vulnerability, or its resilience, or both.

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NOTES

1 See, for example, Bernanke (2007).

2 See IMF (2009f).

3 IMF (2009c).

4 See Mussa (2009).

5 For example, the Blue Chip International Consensus forecast of August 21, 2009, estimates that China's 2009 growth will be 7½ percent—the same figure as given in the IMF's July 2007 WEO update. More recent forecasts are higher still.

6 Our Asian emerging market group can be described as China and India plus the ASEAN-5 (Association of Southeast Asian Nations) and newly industrialized Asian economies, except that we have excluded Vietnam.

7 As a share of the total for our nine emerging Asian economies, China accounts for 48 percent of the group's GDP, 42 percent of its exports, 54 percent of its stock market capitalization, 92 percent of net capital inflows, and 60 percent of its international reserves.

8 There are, of course, alternative ways of calculating the growth decline. For example, another approach is to use the difference in growth rates between 2009 and 2007 expressed as a percentage of the 2007 growth rate. One disadvantage of this approach is that it produces very large growth declines for economies that had low growth rates in 2007. For example, consider the cases of Hungary and Singapore. Hungary's real GDP growth declined from 1.1 percent in 2007 to (a projected) -3.3 percent in 2009, while Singapore's growth fell from 7.8 percent in 2007 to (a projected) -10.0 percent in 2009. Using the percentage decline in growth rates, Hungary would show up as having experienced a much larger growth decline (-412 percent) than Singapore (-229 percent). In contrast, using the absolute difference in growth rates, Singapore shows by far the larger growth decline (-17.8 percent versus -4.4 percent for Hungary). We think the absolute difference approach is a better choice in this context. Admittedly, using forecast growth rates for 2009 (made in June/August 2009) introduces an error to the extent that these forecasts subsequently get revised significantly or miss the mark; on the other hand, measuring the growth decline using data on reported GDP, say, just during 2008 or through only early 2009 runs the risk of missing important information in 2009—when one is still unsure about the timing and durability of the recovery.

9 Yellen (2007) and Ito (2007) provide a comparison between conditions in the Asian crisis countries in 1997-98 and conditions a decade later.

10 Although we do not show the components of growth in Table 1, most of the decline in growth in Asian emerging economies during the fourth quarter of 2008 reflected a fall in net exports, followed by declines in private investment, and consumption; for the crisis period as a whole, it has been declines in net private investment that have made the largest negative contribution to growth; see IMF (2009d) and Anderson (2009).

11 Using the projections from the IMF's July 2009 update of the WEO (IMF 2009a), the projected 2009 average (unweighted) inflation rate is 2.5 percent for the (nine) Asian emerging economies shown in Table 2 versus 8 percent for the (twelve) non-Asian OEMs. It should

be noted, however, that the regional average hides considerable variation within emerging Asia; for example, the projected 2009 (headline) inflation rates for Thailand and Indonesia are above 6 and 5 percent, respectively, while Singapore, Korea, and Hong Kong are expected to have inflation rates below 2 percent. Recall too that India and Indonesia had (headline) inflation rates in 2008 that were about 10 and 11 percent, respectively.

12 Preliminary figures suggest that China's current account surplus for the first half of 2009 was in the neighborhood of 6 percent of GDP.

13 The April 2009 WEO (IMF 2009e) expects the current account surplus of the Middle Eastern economies to fall from 18 percent of GDP in 2007 to -0.6 percent in 2009; moreover, all the other EM regions are expected to run current account deficits in 2009, with the largest deficits appearing in Africa (-6.1 percent of GDP) and in Central and Eastern Europe (-4.1 percent of GDP).

14 See IMF (2009e).

15 During the Asian financial crisis, the average decline in equity markets for eight Asian emerging economies over the June 1997–May 1998 period was 32 percent; see Goldstein (1998).

16 Between June 1997 and July 1998, the (unweighted) average depreciation for nine Asian currencies vis-à-vis the U.S. dollar was 28 percent versus 5 percent for the July 2007 to June 2009 period; the difference between the two periods is equally marked if we use real effective exchange rates or if we look at peak-to-trough declines.

17 See BIS (2009). The regional differences are even more marked if one looks at holdings of international reserves relative to GDP.

18 See Committee on the Global Financial System (2009).

19 See, for example, Calvo and Talvi (2005).

20 We provide further discussion of the sudden stop in net private capital inflows—including the composition of such flows, in Section 3.

21 As an example of how “other” factors can influence bottom-line outcomes, the run-up in inflation rates in emerging economies between the middle of 2007 and the middle of 2008 had its origins primarily in global commodity price developments and in strong aggregate demand pressures—not in the outbreak of the financial crisis itself. This rise in inflation induced monetary tightening in many emerging economies, including those in emerging Asia, and this in turn affected real GDP growth. Attributing all the fall in real GDP growth between, say, the middle of 2007 and middle of 2009 to the financial crisis would thus overestimate the influence of the crisis on economic growth.

22 In addition to these studies, there have been a few recent attempts to relate indices of crisis severity or economic growth slowdowns during this crisis to a wide set of indicator variables, where these indicators are meant to capture either causes of the crisis or crisis vulnerability, country by country. In this regard, Rose and Spiegel (2009) consider over 60 such causal variables and report that hardly any of them are statistically significant. In a similar vein, Goldstein and Xie (2009) look at growth slowdowns over the 2007–09 period within emerging Asia and attempt to link these to averages for 66 indicators of vulnerability. We,

too, find that hardly any of the individual indicators are statistically significant, although one does somewhat better when considering averages of indicators across the whole set of crisis transmission and policy response channels. A problem, however, with using just an emerging Asian sample is that one has very few observations.

23 We ignore for expositional purposes lags of the dependent and independent variables.

24 A very similar exercise was undertaken earlier by Forbes and Chinn (2003) but looking at cross-country transmission of bond and stock market returns, not financial stress. For the nine emerging economies taken as a group, the transmission effect (that is, the estimated $B2$ in equation 1), was lower than that for emerging Europe but higher than that for Latin America.

25 One reason for Korea's high sensitivity is the increased dependence of Korean banks on international wholesale funding. According to the BIS, the external debt of Korean banks (including the Korean branches of foreign banks) rose from \$75 billion at the end of 2004 to \$210 billion at the end of June 2008; see Committee on Global Financial System (2009). Truman (2009) finds that Korea also had a relatively large economic growth shortfall during the global recession of the early 1980s.

26 Although the emphasis in this paper is on how emerging market regions differ in ways that matter for crisis vulnerability, we do not want to underplay the role of common risk factors in this crisis or in earlier ones. Eichengreen et al. (2009), examining the evidence from credit default swap spreads for the 45 largest financial institutions in the advanced economies, conclude that the influence of common risk factors rose to exceptional levels from the outbreak of the subprime crisis to past the rescue of Bear Stearns and then rose further after the failure of Lehman Brothers. Goldstein (1998), in analyzing contagion during the Asian financial crisis of 1997–98, argues that the crisis in Thailand acted as a “wake-up call” to investors about long-standing problems in the financial sector and that there followed a sharp write-down in all those Asian economies where financial sector fragilities were likewise judged to be serious.

27 Cline and Williamson (2008) found that only one of our eight Asian emerging economies—namely, Korea—had an overvalued real effective exchange rate (as of February 2008) and the estimated overvaluation was small.

28 The argument here is that countries with large banking systems need to hold large reserves since liability holders may decide to “run” from these claims into foreign currency during a crisis.

29 One reason why the average for OEMs is so high is that some economies like Russia have large reserve holdings but a relatively small banking system (i.e., low M2).

30 The AECM covers net foreign assets of the monetary authorities and the deposit money banks; the foreign currency assets and liabilities of nonbanks vis-à-vis BIS reporting banks; international debt securities outstanding, denominated in foreign currency; the foreign currency share of total debt; and exports of goods and services. The adjective “modified” denotes that the foreign currency share of domestic bonds is also included in the calculation. See Goldstein and Turner (2004) for a detailed definition and discussion of the AECM and its behavior during earlier currency crises in emerging economies.

31 The ratios of short-term external debt to international reserves in 2007–08 are also way lower for the Asian crisis economies than they were during the Asian financial crisis.

32 These currency mismatches would go even higher, of course, if those economies with exchange rate pegs opted in the end to abandon them.

33 When export openness is high, it takes (*ceteris paribus*) a smaller currency depreciation to earn the foreign exchange needed to service foreign currency debt.

34 We also examined ratios of short-term external debt to GDP. Here we found that (with the exception of Korea) the crisis economies during the Asian financial crisis have reduced significantly their reliance on short-term external debt vis-à-vis 1996–97. On the other hand, the 2007 (unweighted) average of short-term external debt to GDP in emerging Asia was slightly higher than the (unweighted) average for non-Asian emerging economies.

35 We would make a distinction between currency mismatches and a global shortage of dollar and euro liquidity; it was the latter that was a major problem for most emerging economies after the failure of Lehman Brothers. Emerging Europe suffered from both those problems. Banks and corporations in some emerging economies (e.g., Korea) also exacerbated the global liquidity problem by taking actions in the run-up to the crisis that left them short of dollar-euro liquidity.

36 The risks in emerging Europe—and especially in some of the CIS economies—have been well known for some time; see, for example, Goldstein (2007).

37 Between 1981–85 and 2001–05, the ratio of exports to sum of the United States, the euro area, and Japan (expressed as a share of the exporting area's GDP) has increased from 10 to 15 percent for emerging Asia, 20 to 22 percent for Latin America, 7 to 16 percent for emerging Europe and the CIS, and 9 to 13 percent for sub-Saharan Africa; see Helbling et al. (2007). It should be recognized that the ratio of exports to region i (X_i) to GDP (Y) can be written as: $(X_i/GDP) = (X_i/XT)(XT)/GDP$, where XT is total exports. Put in other words, the ratio of exports to the advanced countries to GDP can go up over time even if the share of exports to advanced countries to total exports is falling so long as overall export openness (XT/GDP) is increasing by more. In the case of emerging Asia, the share of exports to the U.S., euro area, and Japan to total exports has actually fallen as between 1986–90 and 2001–05, but the share of those exports in GDP has gone up due to rises in overall export openness.

38 See, for example, Dornbusch (1985).

39 Within emerging Asia, Singapore and Hong Kong have the highest ratios of manufactured exports to GDP, while India and Indonesia have the lowest ones. The BIS (2009) notes that primary commodities account for approximately 40 percent of total exports in Latin America.

40 There is also a literature on “growth accelerations” (e.g., Johnson, Ostry, and Subramanian 2007) that suggests that increasing the share of manufactures in total exports is one of the main elements of such an acceleration. UNIDO (2009) documents that most regions have increased both the share of manufactured exports in total exports and the share of complex exports between 2000 and 2005. The same report indicates that East Asia and the

Pacific, especially China, dominate developing-country manufacturing—accounting for 61 percent of manufacturing value-added of developing countries in 2005 and for 74 percent of the 2000–05 increase in the value of manufacturing exports of all developing countries.

41 Helbling et al. (2007) report that the share of consumer durables and capital goods in total U.S. imports during 2005 was almost 49 percent (versus a share of these goods in domestic final demand of only 8 percent) and that industrial raw materials took up another 31 percent of U.S. imports; they characterize the import demand for these goods as cyclically sensitive.

42 The electronics industry is highly important in Korea, Malaysia, the Philippines, Singapore, and Taiwan; see ADB (2009a). Recall also that the IT sector was largely responsible for the economic slowdown in East Asia during the 2001 U.S. recession.

43 See Cardarelli et al. (2009). They note that Japanese auto exports fell by nearly 70 percent between September 2008 and March 2009. The BIS (2009) reports that the automobile sector accounts for 8 percent of GDP in Korea and Thailand, and that the inventory-to-sales ratio for Korean information technology products went up sharply between September and December 2008. Unterroberdoerster and Zebregs (2009) conclude that syndicated loans for trade finance in emerging Asia as a whole have contracted during this crisis at the fastest pace on record and by more than the world average.

44 See IMF (2007b). The GDP share of emerging Asia's exports going to the U.S., euro area, and Japan combined during the 2001–05 period was 15.5 percent—slightly lower than the share going to intraregional exports.

45 Hori (2007) shows that the interregional share of total exports in emerging Asia is now approaching the interregional shares in the North American Free Trade Agreement and the European Union.

46 Hori (2007) observes that during the 1990 to 2006 period the share of emerging Asia in world trade flows increased from 21 percent to 34 percent, that intraregional trade within emerging Asia expanded by 8.5 times (versus 3 times for trade flows outside emerging Asia and 5 times for interregional trade involving emerging Asia), and that China-related trade flows increased by 12 times. UNIDO (2009) reports that the growth of trade in tasks (proxied by the growth of imported intermediate inputs as a share of both inputs and output) has been impressive between 1986–90 and 2000.

47 Anderson (2008a, b) puts forward a similar view. If one looks at the value of final shipments to advanced economies as a share of emerging market GDP, this ratio increases at a much slower pace over the past decade than headline figures of exports to GDP. He also observes that headline ratios of exports to GDP for Asian emerging economies are much higher than ratios of value-added in exports to GDP and that a comparison of the standard deviation of net exports to the standard deviation of GDP is not kind to the conclusion that China's export is "export-led."

48 The BIS (2009) notes that China's import demand accounts for roughly 20 percent of the exports of other Asian emerging economies.

49 We make a distinction between *net* export-led growth and export-led growth for two reasons: first, in the development literature, export-led growth is usually not associated with a rising trade surplus, and second, all our calculations relate to the contribution of net exports to economic growth.

50 See Lardy (2007).

51 See Goldstein and Lardy (2009). Some would argue that over a period as long as a decade, the appropriate benchmark for the contribution of net exports to growth is zero.

52 Within emerging Asia during 2003–07, we find that Singapore, Malaysia, and China had the most net export-led growth, while the contribution of net exports to growth was negative in India and Indonesia.

53 See Lardy (2009).

54 More broadly, investment may be partly driven by exports. An increase in export-oriented investment will in the short run lead to increased imports of capital goods (or raw materials for construction); hence, it will reduce net exports but, by raising productive capacity for exportables, it will increase net exports in the long run.

55 Goldstein and Lardy (2009) note that such social expenditures in 2008 were well over twice the level of 2004.

56 See, for example, Bergsten and Subramanian (2009).

57 See Blanchard (2009).

58 See Prasad (2009) and Goldstein and Lardy (2009) for the kinds of policy measures in emerging Asia and in China, in particular, that would support such a rebalancing of growth. Goldstein (2009) also spells out a “grand bargain” that would offer the emerging economies more “insurance” and more significant governance gains at the IFIs in exchange for emerging economies’ greater adherence to the international “rules of the game” on exchange rate policy, trade policy, and external adjustment.

59 The BIS (2009) calculates that the aggregate saving rate (relative to GDP) in China was almost 58 percent in 2007.

60 See IMF (2007b) and Obstfeld (2009).

61 Within emerging Asia, the highest levels of de facto financial integration—again, excluding Hong Kong and Singapore—were in Malaysia and Korea, and the lowest were in Indonesia and India.

62 See, for example, Kose et al. (2009), Balakrishnan et al. (2009), Helbling et al. (2007), and Tong and Wei (2009). There are also, of course, benefits of greater financial integration (see, for example, the surveys by Kose et al. 2009 and Obstfeld 2009 that have to be weighed against the costs). We focus here on the crisis transmission aspects because that is the main subject matter for this paper.

63 See Helbling et al. (2007).

64 As hinted at in Section 2, one important feature of this financial crisis has been the greater difficulty that banks worldwide faced in funding themselves in international markets. Banks in much of emerging Asia—and especially in China and India—were at an

advantage because they experienced strong growth in domestic bank deposits during the 2001–07 period. As such, they had less need to borrow abroad to finance the rapid expansion in domestic credit and they were less affected by the interruption to international wholesale funding markets during the crisis. Interesting enough, the BIS (2009) also found that cross-border loans seemed to have been temporarily more stable in some smaller emerging economies with a larger foreign bank presence; at the same time, they found that the record on local currency loans of foreign-owned banks was more mixed, showing resilience in some emerging economies (Brazil, China, Poland, and Turkey) during the fourth quarter of 2008, while decreasing in some others (Korea and South Africa). Indonesia and Malaysia have the most significant foreign bank presence (share of banking assets held by foreign banks with majority foreign ownership) in emerging Asia, while China, India, and the Philippines have very low foreign bank presence; see Pomerleano (2009).

65 Their small exposure to U.S. subprime assets notwithstanding, Asian economies, as emphasized by Forbes (2008), are now the largest foreign holders of U.S. financial assets. Using data compiled by Brad Setser for June 2008 covering eight Asian emerging economies and expressing holdings as a share of the Asian economy's GDP, Singapore had the largest exposure to U.S. corporate debt, followed by Malaysia. For U.S. Treasuries, Hong Kong had the largest exposure, followed by Singapore and China. For U.S. agency securities, China topped the list, followed by Malaysia. Singapore and Hong Kong had the largest exposure to U.S. equities and U.S. bonds (as a group). These Asian exposures are sizeable—in some cases reaching 15 to 60 percent of the creditor economy's GDP; see Goldstein and Xie (2009). In addition, the sovereign wealth funds of some Asian economies made significant investments in some U.S. private financial institutions—particularly during the recent period when equity prices for these U.S. financial institutions were under strong downward pressure and when the firms were seeking to rebuild their capital. We have not seen estimates of the mark-to-market losses sustained by individual emerging Asian economies on their broader exposure to U.S. financial assets. All of this suggests that losses in financial wealth in Asian emerging economies during this crisis are overwhelmingly domestic—and primarily reflect losses in stock market capitalization.

66 The qualifiers on cross-border bank borrowing—to *advanced-country banks, relative to GDP, and relative to emerging Europe*—are important; there have been large absolute increases in borrowing by Asian economies from international banks in the June 2006 to June 2008 period, as well as large corporate borrowing on international bond markets; indeed, the reversal of those excesses are part of the current financing problems in emerging Asia.

67 See the discussion in Ito (2007) and Goldstein (1998).

68 See, for example, Kaminsky et al. (2004).

69 The IMF (2009d) maintains that since inflation expectations have fallen significantly during this crisis, real interest rates have either remained relatively constant or have increased in some countries. This is part of their argument for further nominal interest rate cuts. The World Bank (2009) reports that between December 2008 and February 2009 interbank rates declined in the larger emerging Asian economies, with the notable exception of Indonesia.

70 Lardy (2009) also notes that China has been reducing required reserve ratios for banks since November 2008.

71 The IMF (2009c) offers its tally of the estimated cost of discretionary fiscal measures for 2008–10 (relative to a 2007 baseline), albeit only for G-20 countries. On that metric, China's stimulus comes in at 6.2 percent of GDP; the corresponding figures for other Asian G-20 members are: Japan (4.5 percent), Korea (6.0 percent), India (1.8 percent), and Indonesia (2.0 percent); the (PPP-weighted) average for all G-20 members was 4.1 percent.

72 The IMF (2009c) reports that for G-20 countries, almost two-thirds of the fiscal stimuli have been represented by expenditure measures, with a heavy emphasis on increased spending for infrastructure.

73 The standard equation for the change in the public debt ratio is: $D(t) - D(t - 1) = [(r - g)/(1 + g)]/D(t - 1)$, where $D(t)$ is the ratio of public debt to GDP in year t , r is the nominal interest rate, g is the nominal growth rate of GDP, and pb is the ratio of the primary fiscal balance to GDP. The debt ratio is constant when $pb = [(D/Y)(r - g)]/(1 + g)$. The equation for the change in the external debt ratio is symmetrical—but with the ratio of the (noninterest) current account balance to GDP replacing the primary fiscal balance ratio.

74 The corresponding required primary balance ratios for the United States and the United Kingdom were 3.9 and 2.6 percent, respectively. The IMF's (2009c) forecast for 2009 was that India, Indonesia, Korea, and the Philippines would run primary surpluses (of between 0.1 and 2.2 percent of GDP) in 2009, while China and Malaysia would run small primary deficits.

75 In contrast, recall that Thailand, Indonesia, and Korea all had current account deficits in the period immediately preceding the Asian financial crisis; see Goldstein (1998) and Ito (2007).

76 Turner (2009) also warns that massive accumulation of international reserves and its domestic financing counterpart have led to very rapid credit expansion which itself carries significant risks. He cautions further that excess liquidity in banks can disguise underlying problems.

77 "Stand alone" credit ratings seek to evaluate the intrinsic strength of the financial institution—without regard to the probability of government support should the institution need it.