

August 2004

The US Current Account Deficit: Collateral for a Total Return Swap

Table of Contents

The US Current Account Deficit: Collateral for a Total Return Swap.....	2
The Swap Analogy	3
Conclusions	6
Certifications	6

- *Asia's continuing success supports the sustainability of the US current account deficit.*
- **We argue that there is a strong link between a successful international monetary system and net flows of savings from periphery (poor) countries to center (rich) countries.**
- **It is enlightening to compare the implicit economic contract between the center and the periphery to a standard total return equity swap.**
- In such contracts, the less creditworthy party to the contract is required to post collateral for actual and potential mark to market losses.
- In an important sense, the goods and services already delivered to the US support the stock of US claims on the periphery. **It is the collateral generated by US current account deficits that supports the entire periphery development strategy.**
- More generally, seemingly balanced shifts within a country's capital account actually drive the current account through a need to collateralize resulting risk imbalances.
- Remarkably, **the reserve accumulation of China is almost exactly the magnitude that center country banks would require as collateral on total return equity swaps whose notional value equaled cumulated FDI.**

Michael Dooley
Special Advisor

David Folkerts-Landau
Managing Director, Head of
Global Markets Research

Peter Garber
Global Strategist
(212) 250-5466

David Folkerts-Landau
Managing Director, Head of
Global Markets Research

IMPORTANT: PLEASE SEE CONFLICT DISCLOSURES AND ANALYST CERTIFICATION IMMEDIATELY AT THE END OF THE TEXT OF THIS REPORT. DEUTSCHE BANK DOES AND SEEKS TO DO BUSINESS WITH ISSUERS COVERED IN ITS REPORTS. AS A RESULT INVESTORS SHOULD BE AWARE THAT DEUTSCHE BANK MAY HAVE A CONFLICT OF INTEREST THAT COULD ADVERSELY AFFECT THE OBJECTIVITY OF ITS REPORTS. INVESTORS SHOULD CONSIDER THIS REPORT ONLY AS A SINGLE FACTOR IN MAKING THEIR INVESTMENT DECISION.

The US Current Account Deficit: Collateral for a Total Return Swap

Introduction

In a series of papers we have argued that a revived Bretton Woods system provides an explanation for periphery governments' willingness to finance the US current account deficit. However, we have not argued that a chronic current account deficit for the center country is a logical consequence of the system. In this paper we extend the analysis and provide a strong link between a successful international monetary system and net flows of savings from periphery (poor) countries to center (rich) countries, that is, for current account deficits for the center and current account surpluses for the periphery.

The underlying political economy that motivates periphery governments is set out in Dooley, Folkerts-Landau and Garber (2004).¹ The development strategy of fixed exchange rate "trade account" countries requires rapid export growth and large inflows of direct investment in order to absorb rapidly an initial stock of underemployed labor. The primary policy tool is a real exchange rate that is undervalued by conventional measures and accumulation of international reserves. This undervaluation can be quite large depending on the initial stock of labor to be absorbed by the industrial sector.

We have argued that *if* the exchange rate policy that generates the absorption of excess labor at an optimal rate also generates a current account deficit for the center, periphery governments will, within limits, finance the center's deficit through reserve accumulation rather than sacrifice their development strategy.

It might seem natural to assume that the "undervalued" exchange would tend to generate a trade surplus in the periphery and trade deficits in the center. But on closer inspection it is also clear that the expected rate of appreciation of the real exchange rate can be quite small because adjustment may last for decades. Since traded goods are almost as cheap today as they will be tomorrow for the center country, and almost as expensive today as they will be tomorrow in the periphery, there is no reason to believe that an absorption relative to output will be tilted to produce deficits in the center and surpluses in the periphery. Surpluses and deficits cannot be explained by inter-temporal substitution.

Put another way, the development strategy we have set out has strong predictions for patterns and magnitudes of gross international trade in goods and capital markets but, as it stands, has little to say about the pattern of current account imbalances between the center and the periphery. But it is exactly the large net imbalances that have generated the most heat in international policy debates.

In this paper we extend our basic analytical framework in a direction that provides a link between successful development strategies in the periphery and net flows of savings from the periphery to the center. In contrast to the usual assumption that capital "should" flow from capital rich countries to capital poor countries to equalize rates of return, we reach the opposite conclusion.² Our framework suggests that a

¹ "A Map to the revived Bretton Woods End Game," Deutsche Bank Global Research, June 2004.

² This is actually more than an assumption. It is the result of the dominant academic theories on net international capital flows. But it also feels right. A country that is going to grow rapidly should smooth out consumption by borrowing now as long as the growth is somehow locked in. This last proviso is

successful development strategy generates net capital flows from poor to rich countries. Net capital inflows to the center provide collateral to center country investors. Without this collateral the development strategy of the periphery is derailed by a lack of international financial intermediation. Indeed, stripped down to basics, this is what it means to be the “center country” or the provider of the “reserve currency”—it is simply the country that is the best depository and manager of collateral.

The basic idea is that financial intermediation by the center that facilitates growth in the periphery also generates asymmetric risks for the center. Such international financial intermediation facilitates periphery growth because it channels domestic savings in the periphery through superior financial markets in the center. A simple example would be the accumulation of direct investment claims by the center matched one for one with the periphery’s accumulation of Treasury securities. Balanced gross capital flows imply a balanced current account, in this case an exchange of equity claims for low-yield fixed income claims.

The main point of this paper is that the accounting balance described above does not balance the economic risks faced by participants in international capital markets. We argue below that if current accounts are balanced the periphery’s development strategy generates a net exposure for direct investors that will strangle intermediation and limit growth in the periphery. To relax this constraint, *the periphery must post collateral* and, in fact, must post more collateral the more successful is its development strategy. In our view, *the only effective collateral available to facilitate international intermediation is a net export of goods and services from less creditworthy countries*. It follows in the current environment that the US must be willing to run a current account deficit in order to fulfill its role as the center country in the system.

The Swap Analogy

We find it useful to compare the implicit economic contract between the center and the periphery to a standard derivative contract: a total return swap. A total return swap is a promise by one party to pay the total return (capital gains plus dividends) on the notional amount of an asset such as an equity or equity index for some future interval in exchange for receipt of fixed income on notional principle over the same interval. In a typical private contract, a floating reference interest rate is set by the market at LIBOR adjusted by 20-30 basis points so that the contract initially has about zero market value.³ The interesting aspect of such contracts for our argument is that the less creditworthy party to the contract is required to post collateral for actual and potential mark to market losses. Failure to provide the collateral terminates the contract, effectively a cancellation of principal on both sides and a taking of collateral to cover at least the current market value.

The application of this contractual arrangement to the international monetary system is straightforward. The periphery promises to pay the US the total return on US direct equity investment in the periphery. The US promises to pay a fixed interest rate on reserve assets. An important difference between a private total return swap and the

where the feeling that the dominant model is correct goes off the tracks; if a growing country decides to party too early, the “locked-in” growth does not materialize and its debt does not get paid.

³ Suppose for example, that a AA bank agrees to pay the total return on \$100 million notional value of a corporate share and will receive Libor plus. It can hedge this by borrowing \$100 million at Libor and buying \$100 million of the corporate shares. This is why the swap starts at zero market value. In practice, there will be some markup on the Libor it receives to provide for its costs, risks, and a profit margin.

international contract is that most of the time in the latter there is no direct contact between the counterparties. It is only in a default situation that the two governments would consolidate their national claims and then net liabilities against claims. But conceptually, the creditworthy (center) country should demand collateral from the less creditworthy (periphery) country on a mark to market basis. Since international default is a fairly common event, private investors have to consider the value of their claims in the event that all foreign gross claims and liabilities are nationalized and they are paid a part of the net result. Clearly, the more negative the net investment position of the US the better is the value of gross claims on the periphery and the more willing would investors be to acquire such claims.

There are two additional complications. First, what is the mark to market value of the international contract? Second, how does the periphery post collateral? For the implicit international contract, we have shown elsewhere that there is a subsidy element to the foreign direct investor on initiation of the contract. That is, effectively, the equity leg of the deal is provided at below market value; so the swap starts already in the money. Also, the interest rate on the fixed income leg is determined by the risk free treasury rate. It follows that the initial expected present value of the contract is positive for the US and negative for the periphery. For simplicity, it not a stretch to assume that the "original sin" of the periphery is that it is born being a credit risk and that the entire expected present value of the swap will have to be matched by collateral, as well as some additional coverage for future valuation risk.

In typical total return swaps, collateral is determined by multiplying potential volatility of the underlying asset over the next ten days by a factor dependent on the credit risk of the counterparty. For example, a more creditworthy counterparty might pay 15% collateral on an asset based swap whose underlying 10-day volatility is 10%, while a lesser credit might have to deliver 30%. An additional factor might be added to cover foreign exchange risk and country risk for foreign or emerging market underlying assets. Some examples of the range of collateral actually required are: for a total return swap on a highly liquid US equity, a hedge fund (less creditworthy) would be asked for 15%, for the S+P index 10% collateral would be required, for Gazprom in Russia 50% initial margin would be required. Swaps in listed China equities draw a similar haircut.

But this is only the initial collateral required for new investment. If, as seems likely, the total return on direct investment exceeds the return on the fixed interest leg, one hundred percent of the mark to market gain on private contracts must be collateralized every day. The implication is that, in addition to the collateral required for the new flow of direct investment, the mark to market gain on the stock of direct investment requires additional variation margin.

The mechanical but important implication is that a successful development strategy—where investment pays off with large returns—generates capital gains on direct investment and therefore rapid growth of collateral balances. Recent empirical research suggests that rapid growth in emerging markets is correlated with net lending from those successful economies to the rest of the world. Aizenmann et al. (2004) conclude:

There is no evidence of any growth bonus associated with increasing the financing share of foreign savings. In fact, the evidence suggests the opposite: throughout the 1990s, countries with higher self-financing ratios grew significantly faster than

countries with low self-financing ratios. This result persists even after controlling growth for the quality of institutions.⁴

This empirical result is clearly at odds with the conventional wisdom that net capital inflows to emerging markets are necessary to augment domestic savings and promote rapid growth of the domestic capital stock. The evidence is, however, consistent with our analysis. In effect, net capital outflows are required to support efficient domestic capital formation. What is really at stake in economic development is the quality rather than the quantity of domestic investment.⁵

Table 1. Direct Investment and Collateral, USDbn

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Direct Investment	3.5	10.6	33.7	65.5	99.4	137.4	179.1	220.2	257.2	294.7	332.0	378.8	425.7
50% Collateral Initial Contract	1.7	3.6	11.6	15.9	16.9	19.0	20.8	20.6	18.5	18.7	18.7	23.4	23.5
100% Collateral Capital Gain	0.3	1.1	3.4	6.6	9.9	13.7	17.9	22.0	25.7	29.5	33.2	37.9	42.6
Total Stock Collateral	2.1	6.7	21.6	44.1	70.9	103.7	142.5	185.0	229.3	277.5	329.3	390.6	456.7
Stock of Reserve Assets	21.7	20.6	22.4	52.9	75.4	107.0	142.8	149.2	157.7	168.3	215.6	290.8	408.3
Cumulated Current Account	13.3	19.7	8.1	15.0	16.6	23.8	60.8	92.3	113.4	133.9	151.3	186.7	232.6
Private Claims on Nonresidents	1.3	29.6	58.8	82.5	116.2	153.9	219.4	278.4	326.4	384.5	389.8	399.1	397.4

Source: IIF

We can get a feel for the economic importance of these effects by estimating what collateral would be required by private investors for direct investment in China. Table 1 applies the general concepts developed above to recent data for China. The first row of the table shows annual data for the cumulated flow of foreign direct investment into China from 1991 – 2003. At the end of 2003 the book value of the stock of direct investment was about \$426 billion.

Row 2 shows the new initial collateral that would be required for the flow of direct investment in each year assuming that the aggregate implicit contract carries the 50% collateral required for private total return swaps with China. Row 3 shows the new variation margin required each year for the net capital gain on the stock of direct investment. This assumes that there is 100% collateral required against mark to market gains and that net capital gains each year equal 10% of the book value of direct investment. The implied cumulated stock of collateral is shown in row 4. In 2003 the stock of collateral would be about \$457 billion, an amount slightly larger than the book value of direct investment because of capital gains.

The stock of international reserves is shown in row 5. In 2003 the stock was about \$408 billion, clearly the right order of magnitude if we interpret the government's reserve assets as the primary measure of collateral.⁶

Rows 6 and 7 round out the balance of payments identity. Row 6 shows the cumulated current account surplus over the period. The cumulated balance from 1991-2003 was about \$233 billion, suggesting that net trade in goods and services

⁴ Joshua Aizenman, Brian Pinto, and Artur Radziwill, "Sources for Financing Domestic Capital - is Foreign Saving a Viable Option for Developing Countries?" NBER Working Paper 10624, July 2004. Similar econometric results are reported in Pierre-Olivier Gourinchas and Olivier Jeanne, "Capital Flows, Capital Scarcity and Economic Development," mimeo December 2003.

⁶See "A Model of Crises in Emerging Markets," *The Economic Journal* (January, 2000) for a discussion of alternative measures of collateral against investments in emerging markets and the role of collateral in financial crises. An additional source of collateral is lines of credit from international organizations.

accounted for about half of the collateral accumulated. The other half of the collateral and all the direct investment inflow is matched by private capital outflows from China. The cumulative stock of private Chinese claims on nonresidents, \$397 billion in 2003, is shown in row 7.

The interesting conclusion is that private direct investment in China has been roughly matched by private Chinese investments in the rest of the world. We do not know much about the nature of these outflows since they are largely unrecorded in official statistics. The social collateral needed to support this international financial intermediation has been concentrated by accumulation of reserve assets.

Delivering goods and services up front is a crude form of collateral. But there is no credible alternative. Market participants individually could pledge financial assets in the center country, but the only way that the aggregate of the periphery can acquire assets in the US is to run a current account surplus. In an important sense, the goods and services already delivered to the US support the stock of US claims on the periphery; **it is *the* collateral that powers the entire development strategy.**

The nature of the social collateral is so obvious it is hard to see. If the center cannot seize goods or assets *after* a default, it has to import the goods and services *before* the default and create a net liability. If the periphery then defaults on its half of the implicit contract, the center can simply default on its gross liability and keep the collateral. *The periphery's current account surplus provides the collateral to support the financial intermediation that is at the heart of Asian development strategies.* The interest paid on the net position is nothing more than the usual risk free interest paid on collateral.

Conclusions

The mechanism of modern large scale development is quite straightforward. Rapid industrialization requires a large inflow of direct investment; and, in turn, a large current account surplus for the periphery is required to provide the collateral.

Contrary to almost universal opinion, successful economic development is powered by net savings flows from poor to rich countries. The current account imbalances of the rich countries do not pull the periphery by providing global aggregate demand; they push the periphery by securing efficient capital formation. Seemingly balanced shifts within a country's capital account actually drive its current account through a need to collateralize resulting risk imbalances. The US current account deficit is an integral and sustainable result of its role as the center country in the revived Bretton Woods system.

Certifications

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst(s). In addition, the undersigned lead analyst(s) has not and will not receive any compensation for providing a specific recommendation or view in this report. [Peter Garber, Michael Dooley, David Folkerts-Landau]

Global Markets Research Directory

David Folkerts-Landau

Managing Director, Global Head of Research
+44 20 7545 5502

Stuart Parkinson, Chief Operating Officer, +44 20 7545 7303

Peter Garber, Global Strategist, +1 212 250 5466

Americas

Karen Weaver

Head of Global Markets
Research
+1 212 250 3125

Asia-Pacific

Michael Spencer

Head of Global Markets
Research
+852 2203 8305

Regional Management

Australia/New Zealand

David Plank

Head of Global Markets
Research
+61 2 9258 1475

Europe

Jamil Baz

Head of Global Markets
Research
+49 20 7545 4017

Germany

Ulrich Beckmann

Head of Global Markets
Research
+49 69 9103 1729

High Yield Americas

David Bitterman

Co-head of US High Yield Credit Research
+1 212 250 2599

Andrew W. Van Houten

Co-head of US High Yield
Credit Research
+1 212 250 2777

Credit Research

Global High Grade

Marion Boucher Soper

Global Head
+1 212 250 0908

Anne Milne

Head of Latin America
Corporates
+1 212 250 7568

Nuj Chiaranusati

Head of Asian
Credit Research
+65 6423 5930

Yoshio Shima

Head of Japan
Credit Research
+81 3 5156 6333

Quantitative Credit Strategy

Jean-Paul Calamaro, Global Head, +44 20 7545 1555

Economic Research

Ciaran Barr

Chief UK Economist, +44 20 7545 2088

Thomas Mayer

Chief European Economist, +44 20 7547 2884

Peter Hooper

Chief US Economist, +1 212 250 7352

Tony Meer

Chief Australian Economist, +61 2 9258 1688

Mikihiro Matsuoka

Chief Economist, Japan, +81 3 5156 6768

Ulf Schoefisch

Chief New Zealand Economist, +64 9 351 1375

Emerging Markets Research

Marcel Cassard, Global Head, +44 20 7545 5507

Fixed Income and Relative Value Research

Jamil Baz, Global Head, +44 20 7545 4017

Foreign Exchange Strategy Research

Bilal Hafeez, Global Head, +1 44 20 7547 0354

Index Development

Fergus Lynch, Global Head, +44 20 7545 8765

Securitization Research

Karen Weaver, Global Head, +1 212 250 3125

Anthony Thompson, Head of CDO Research, +1 212 250 2087

Commodities Research

Michael Lewis, Global Head, +44 20 7545 2166

Main Offices

London

Winchester House
1 Great Winchester
Street
London EC2N 2DB
United Kingdom
+44 20 7545 8000

Frankfurt

Grosse
Gallusstrasse 10-14
60311 Frankfurt
Germany
+49 69 9100-0

New York

60 Wall Street
New York, NY 10005
United States of
America
+1 212 250 2500

Hong Kong

55/F, Cheung Kong
Center
2 Queen's Road,
Central
Hong Kong
+852 2203 8888

Sydney

Grosvenor Place
Level 18,225 George
Street
Sydney NSW 2000
Australia
+61 2 9258 1661

Singapore

5 Temasek Boulevard
#08-01 Suntec Tower Five
Singapore 038985
+65 6423 8001

Tokyo

Sanno Park Tower
2-11-1, Nagatacho,
Chiyoda-ku, Tokyo
100-6171
Japan
+81 3 5156 6000

Subscribers to research via email receive their electronic publication on average 1-2 working days earlier than the printed version.

If you would like to receive this or any other product via email please contact your usual Deutsche Bank representative.

Publication Address:

Deutsche Bank Securities, Inc.
60 Wall Street
New York, NY 10005
United States of America

Internet:

<http://gmr.db.com>

Ask your usual contact for a username and password.

The information and opinions in this report were prepared by Deutsche Bank AG or one of its affiliates (collectively "Deutsche Bank"). The information herein is believed by Deutsche Bank to be reliable, but Deutsche Bank makes no representation as to the accuracy or completeness of such information.

Important Information Regarding Our Independence. The research analyst principally responsible for the preparation of this report receives compensation that is based upon, among other factors, Deutsche Bank's overall investment banking and/or trading revenues. Deutsche Bank may engage in securities transactions in a manner inconsistent with this research report, and with respect to securities covered by this report, will sell to or buy from customers on a principal basis. Disclosures of conflicts of interest, if any, are discussed at the end of the text of this report or on the Deutsche Bank website at <https://gm.db.com/DisclosureList>

Opinions, estimates and projections in this report constitute the current judgement of the author as of the date of this report. They do not necessarily reflect the opinions of Deutsche Bank and are subject to change without notice. Deutsche Bank has no obligation to update, modify or amend this report or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate, or if research on the subject company is withdrawn. Prices and availability of financial instruments also are subject to change without notice. This report is provided for informational purposes only. It is not to be construed as an offer to buy or sell or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy in any jurisdiction. The financial instruments discussed in this report may not be suitable for all investors and investors must make their own investment decisions using their own independent advisors as they believe necessary and based upon their specific financial situations and investment objectives. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the price or value of, or the income derived from, the financial instrument, and such investor effectively assumes currency risk. In addition, income from an investment may fluctuate and the price or value of financial instruments described in this report, either directly or indirectly, may rise or fall. Furthermore, past performance is not necessarily indicative of future results.

Unless governing law provides otherwise, all transactions should be executed through the Deutsche Bank entity in the investor's home jurisdiction. In the U.S. this report is approved and/or distributed by Deutsche Bank Securities Inc., a member of the NYSE, the NASD, NFA and SIPC. In the United Kingdom this report is approved and/or communicated by Deutsche Bank AG London, a member of the London Stock Exchange. This report is distributed in Hong Kong by Deutsche Bank AG, Hong Kong Branch, in Singapore by Deutsche Bank AG, Singapore Branch, and in Japan by Deutsche Bank AG Tokyo. **Additional information relative to securities, other financial products or issuers discussed in this report is available upon request.** This report may not be reproduced, distributed or published by any person for any purpose without Deutsche Bank's prior written consent. Please cite source when quoting. Copyright© 2004 Deutsche Bank AG REV080204