What Might the Next Emerging-Market Financial Crisis Look Like?

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with the assistance of Anna Wong

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Abstract

This paper addresses the following question: If a financial crisis affecting a group of emerging economies were to take place sometime over the next three years, where would the crisis likely originate, how could it be transmitted to other economies, and which economies would be most affected by particular transmission or contagion mechanisms? A set of indicators is presented to gauge the vulnerability of individual emerging economies to various shocks, including a slowdown in import demand in both China and the United States, a fall in primary commodity prices, increased costs and lower availability of external financing, alternative patterns of exchange rate changes, and pressures operating on monetary and fiscal policies in emerging economies.

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I. INTRODUCTION

This paper is a speculative exercise in thinking about what the next emerging-economy financial crisis might look like. By a financial crisis, I mean a currency crisis, or a banking crisis, or a debt crisis, or some combination of the three.¹ The aim of the paper is neither to identify the one or two emerging economies most vulnerable to a crisis today nor to offer a probability assessment on the likelihood of a crisis this year. The paper instead offers some thoughts on the following question: If a crisis affecting a group of emerging economies were to take place sometime, say, over the next three years, where would the crisis likely originate, how could it be transmitted to other economies, and which economies would likely be most affected by particular transmission or contagion mechanisms? I call the paper a speculative exercise because it strings together a series of “what if” conjectures without much of a handle on the conditional probabilities. Still, even speculative exercises can be useful if they throw light on policies that can improve crisis prevention and resolution.

Some might regard this an odd time to be analyzing the make-up of the next emerging-market crisis. After all, not only was last year’s 6 percent (weighted average) growth rate for emerging economies the best performance in 20 years, but this improvement was widely shared across regions and came on the heels of a strong growth outcome (5 percent plus) in 2003 as well (see figure 1 and table 1).² Equally noteworthy, most analysts see this strong growth performance of emerging economies, as well as that of developing countries more broadly, continuing at only a modestly reduced pace (5 percent plus) in 2005–06, and this despite anticipations of both some growth slowdown in the Organization for Economic Cooperation and Development (OECD) area and the continuation of high world oil prices; see the World Bank’s (2005b) most recent forecasts in table 2.

¹ In the literature, a currency crisis is typically defined as a large deviation in an index of currency market pressure, where such pressure is a weighted average of changes in nominal exchange rates and changes in international reserves. An advantage of defining a currency crisis this way is that it permits crises to occur under both fixed and floating exchange rates. Consensus on what constitutes a banking crisis is somewhat weaker than for currency crises, but a popular treatment of the former is to regard a systemic banking crisis as having occurred if emergency measures were adopted to assist the banking system (e.g., bank holidays, deposit freezes, and blanket guarantees to depositors or creditors), or if nonperforming loans (NPLs) reached at least 10 percent of total bank assets at the peak of the crisis, or if the cost of rescue operations was at least 2 percent of GDP; see Lindgren, Garcia, and Saal (1996) and Caprio and Klingebiel (1996). For a debt crisis, definitions also differ across studies. Manasse, Roubini, and Schimmelpfennig (2003) regard a debt crisis as having taken place if the country is classified by Standard and Poor’s as being in default on any of its obligations or if the country had access to nonconcessional finance from the IMF in excess of a 100 percent of its quota. Episodes where two or more types of crises occur simultaneously are not uncommon and are often referred to as twin crises; see, for example, Kaminsky and Reinhart (1999), who coined the term for the simultaneous occurrence of currency and banking crises.

² Even excluding China and India, the World Bank (2005b) estimates that economic growth in developing countries would have been 5.8 percent in 2004; also, all developing-country regions recorded higher growth rates in 2004 than in 2002, with particularly large increases taking place in Latin America and the Caribbean, Europe and Central Asia, and South Asia.

World trade growth in 2004 (9 to 10 percent) was considerably above the average of the past 20 years (6½ percent), and it too is expected to remain buoyant over the next two years, albeit at a slightly reduced level.³ According to some popular indices, global commodity prices are at their highest level since 1981 (see, for example, Deutsche Bank 2005).

Other positive developments also merit mention.⁴ The average interest spread on benchmark emerging-market global bonds, as captured by the EMBIG (Emerging Markets Bond Index Global) index, has recently been hovering around 300 basis points over US treasuries—a record low and about a third of the level prevailing in the summer and fall of 2002 (figure 2).⁵ Such low risk premia, in concert with near very low interest rates in the major financial centers, have translated into low external financing costs and reduced debt-servicing burdens for most emerging economies. As the share of external financing has moved from bank loans to bonds, so too has the share of fixed rate instruments in that financing.⁶ Although slightly below the peak years of 1996–97, net private capital flows to emerging economies in 2003–04 were about double the average of the two preceding years, and the Institute of International Finance (IIF 2005) expects them to be high this year as well (table 3). Some emerging economies have used this window of unusually favorable external financing conditions to reduce the proportion of debt linked to foreign currency and to prefinance their obligations for this year (Bank of England 2004b). 2004 was the sixth year in a row that emerging economies as a group have run a current account surplus, and the aggregate surplus in 2004 was more than twice as high as the average of the four preceding years. And emerging economies, particularly in Asia, have built up a much larger cushion against adverse external shocks by increasing significantly their holdings of international reserves; indeed, as a group, developing countries hold 70 percent more reserves than they did at end-2002.

Continuing the inventory of positive developments, more emerging economies have moved (often not entirely voluntarily) from fragile publicly announced exchange rate targets to less fragile currency regimes of managed floating (IMF 2004b). Currency mismatches—which have been at the heart of practically all prominent emerging-market crises of the past decade and which have been

³ Terms of trade of developing countries improved in 2003–04 (by 2 percent on average)—again much better than the average over the past two decades—but this improvement is not expected to continue in 2005; see IMF (2004b).

⁴ The focus of my attention in this paper is the group of 20 or so larger emerging economies that have relatively heavy involvement with private capital markets: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hong Kong, Hungary, India, Indonesia, Malaysia, Mexico, the Philippines, Poland, Russia, Singapore, South Africa, South Korea, Taiwan, Thailand, Turkey, and Venezuela. In this introductory section, however, I often refer as well to “developing countries”—a group that includes the aforementioned emerging economies but also a much larger, more heterogeneous, and lower-income group of other economies outside the industrial countries.

⁵ The EMBIG spread has been affected by Argentina’s debt restructuring; excluding Argentina, the EMBIG would not quite be at an all-time low.

⁶ Borensztein et al. (2004) report that floating rate bonds now make up only about 5 percent of the bonds in the EMBIG.

identified as a key conditioning factor in the size of the ensuing real output losses—have been much reduced on the whole over the past seven or eight years, particularly in the former Asian-crisis countries.⁷ The domestically issued part of total public debt in emerging economies—which is denominated in local currency to a much higher degree than the international component and which can act as a spare tire in case of external disruptions—has grown faster than the foreign component over the past dozen years or so (Goldstein and Turner 2004, Borensztein et al. 2004). The largest sovereign bond default in history (Argentina) took place with little spillover to other emerging markets (outside Uruguay).

No large emerging economy went into crisis in 2004, and three of those that were in crisis in the preceding five or six years (Brazil, Turkey, and Russia) continued to make progress in building market confidence, in improving fiscal policies and debt profiles, and in achieving healthy rates of economic growth. Argentina and Uruguay too are recovering from the depth of their recent crises. During the latter half of 2004, 13 countries in the EMBIG index obtained ratings upgrades, while none received downgrades (IIF 2005).

According to the International Monetary Fund's *Global Financial Stability Report* of September 2004 (IMF 2004c), the global financial system is more resilient now than at anytime since the bursting of the equity bubble in 2001. The report goes on to argue that banks and nonbanks have strengthened their balance sheets to the point where they could, if need be, absorb considerable shocks; that short of a major and devastating geopolitical incident or major terrorist attack, it is hard to see where systemic threats could come from in the short run; and that market players are relatively well prepared to deal with the expected tightening cycle in monetary policy.

Others are less persuaded that the risks of an emerging-market crisis over the next two to three years are quite so low. They point out that study of earlier financial crises reveals that frequently it is excesses during the expansion phase of the business cycle that plant the seeds of the subsequent collapse. Such excesses have been no less present in this expansion—ranging from excessively rapid investment growth in China, to excessive foreign borrowing to essentially finance consumption and housing in the United States, to an excessive compression of spreads on high-risk investments, including emerging-market bonds. Yes, the consensus baseline forecast for OECD growth in 2005–06 is benign, but if the unwinding of China's investment boom and the financing of the US current account deficit prove to be more difficult than typically assumed, large-country growth could come in

⁷ This is true if one looks either at simple indicators of aggregate currency mismatch, like the ratio of short-term external debt to reserves, or more comprehensive measures, like the aggregate effective currency mismatch (AECM) index constructed by Goldstein and Turner (2004); the latter both employs a broad definition of net foreign currency assets and adjusts this for differences across countries and over time in export openness and in the domestic-currency share of the total (domestic and international) debt market; see section III.

considerably below expectations—to say nothing of the recent write-downs of 2005 growth forecasts for the European Union and Japan.⁸ Slower growth in China and the OECD, in turn, is apt to weaken both commodity prices and emerging-market export receipts. Perhaps most troublesome, if the inevitable correction of the unsustainable US current account deficit is resolved in a disorderly way, interest rate and exchange rate developments could be considerably more adverse for emerging economies than assumed in the baseline—and these in turn could feed through to affect private capital flows, risk premia, and debt-servicing costs.

True, the average interest spread on emerging-market debt is now very low, but much of that decline has been driven mainly, so the pessimists say, by the greater availability of global liquidity and by strong risk appetites—and these could change abruptly if the path of monetary tightening in the United States becomes much steeper than now anticipated and if tensions associated with the correction of global payments imbalances worsen investor confidence. Then, not only would spreads on emerging-market borrowing rise but also private capital flows could once again experience a sudden stop. A Bank of England (2004b) study estimates that each 100 basis point increase in US policy interest rates tends, other things equal, to be associated with an 80 basis point increase in the average emerging-market bond spread; likewise, episodes of rapid rises in US long-term interest rates (e.g., April–May 2004) have been associated with significant increases in emerging-market spreads, especially for the most risky credits (IMF 2004c). A rise in US long-term interest rates is likely to also be accompanied by rises in long-term interest rates in other G-7 countries. Illustrative of the impact of sharp increases in uncertainty, the Russian default in 1998 was followed by a near four-fold increase in spreads for Latin American countries, along with a decline in their capital inflows from 5½ percent of GDP just before the Russian crisis to less than 2 percent of GDP one year later (Calvo and Talvi 2005).

The average maturity of emerging-market external debt has declined in recent years (adding to the rollover problem), and the safety cushion provided by much higher levels of international reserves does not look quite as impressive when net reserves substitute for gross reserves and when reserves are measured against total external debt rather than short-term external debt alone.⁹ All this, in turn, could place some emerging markets in liquidity difficulties and under currency pressure, and this could feed back into both higher risk premia and further increases in their still-considerable

⁸ The latest IMF *World Economic Outlook* (IMF 2005b) reduced (relative to the September 2004 *World Economic Outlook*) the projection for 2005 real GDP growth in the European Union and Japan by 0.6 and 1.5 percent, respectively.

⁹ Borensztein et al. (2004) show that the share of emerging-market debt in the EMBIG with remaining maturity of less than five years was higher in 2001–03 than in 1994–96 and that the share with remaining maturity of 20 years or more has experienced a much larger deterioration. Various liquidity indicators are analyzed in table 8 in section III.

public debt.¹⁰ In principle, fiscal and monetary policies could be used to counter the effect of adverse external shocks on economic growth, but recent empirical work has shown that in contrast to industrial countries, macroeconomic policies have tended to be procyclical in emerging markets.¹¹ Since net private capital flows to emerging economies have also been shown to be procyclical, the capital flow and macroeconomic cycles reinforce one another, leading to a “when it rains, it pours” outcome.¹² Also, with slower growth and higher interest rates, the inclination to maintain or increase fiscal discipline could erode, and mounting risk premia on government bonds could incite concerns in those emerging-market banking systems that hold high shares of government bonds in their portfolios. And weak banking systems could limit the scope to use higher interest rates to defend emerging-market currencies that are under attack.

Developing-country aggregates and averages also conceal considerable cross-country variations. Although the group’s aggregate current account position is in surplus, the World Bank (2005a) reports that last year over 50 developing countries had current account deficits equal to 5 percent or more of GDP, including the Czech Republic, Hungary, Turkey, the three Baltic countries, and six Central American economies. Similarly, high aggregate reserve holdings and recent favorable terms-of-trade developments can be misleading because much of it has been concentrated in a relatively small number of emerging economies and in a relatively narrow range of commodities (metals and oil). Developing Asia accounted for over half of the 2002–04 reserve gain for developing countries.

Yes, the risks in emerging economies of overvalued fixed exchange rates being blown out of the water in capital account crises are less now than they used to be. But these risks are being replaced, so the argument goes, by growing problems with heavily managed—some would even say “manipulated”—floating exchange rates, especially in parts of emerging Asia. When real exchange rates are significantly undervalued, they contribute to large trade surpluses and large portfolio capital inflows (chasing expected gains from projected exchange rate appreciation). If the capital inflows are very large, it becomes increasingly costly to “sterilize” them so that they do not spillover into excess growth of credit and monetary aggregates, lest they increase both inflationary pressures and future nonperforming loans (NPLs) in the banking system. Credit booms have preceded the lion’s share of earlier currency and banking crises in emerging economies, and over half of these credit booms, in turn, have been linked with large capital inflows (IMF 2004a). If undervalued exchange rates are

¹⁰ The IMF (2003) estimates that the average ratio of public debt to GDP in developing countries rose from roughly 60 percent in the mid-1990s to 70 percent by 2002; even if that ratio has fallen a little over the past two years, it would still be above the ratio prevailing at the beginning of the 1990s.

¹¹ See Kaminsky, Reinhart, and Vegh (2004), who find that both fiscal and monetary policies in emerging economies have been procyclical over the past several decades; see also the discussion in section III.

¹² See Kaminsky, Reinhart, and Vegh (2004) on the procyclicality of capital flows to emerging economies; the “when it rains, it pours” characterization comes from the title of their paper.

maintained by use of large-scale, prolonged exchange-market intervention in one direction, they can also induce a protectionist trade response in major industrial-country markets. Both of these risks are particularly relevant in the current context where there is an ongoing contentious debate about who is responsible for the unhealthy pattern of global payment imbalances and, in particular, about what role Asian currency appreciation ought to play in the needed further depreciation of the real, trade-weighted US dollar. And when emerging economies with large reserve holdings do permit a large appreciation of their currencies vis-à-vis the dollar and other major reserve currencies, they face a sizeable capital loss (expressed in domestic currency) on these reserve positions (World Bank 2005b).

If conflicts over exchange rate and trade policy did become more frequent and severe and if emerging-market export growth slowed in response to slower GDP growth in the industrial countries, more emerging economies might be inclined down the road to pursue ambitious programs of domestic financial liberalization to accelerate domestic demand growth. Financial liberalization—at least when implemented without an earlier upgrading of financial supervision—has also been shown to be a leading indicator of financial crises in emerging economies, as well as a factor associated with credit booms (Kaminsky, Lizondo, and Reinhart 1998; IMF 2004a). These are not abstract concerns. During the past two years, real credit to the private sector has grown faster than 20 percent a year in some East Asian and Eastern European economies (IMF 2004b). A number of emerging economies (including Hungary, Poland, Latvia, Indonesia, and Thailand) have also experienced rapid growth in consumer and/or mortgage credit over the past four or five years—some of it driven by the competitive forces of increased foreign-bank presence in these economies (BIS 2004). How does one know that recent and/or future rapid expansions of bank credit and/or of credit to households will not end in tears, as they did during the unwinding of earlier credit booms and in the 2002–03 collapse of South Korea’s credit card boom?

True, Brazil, Turkey, and Russia have all made considerable progress in recent years. But Brazil and Turkey still have both very high real interest rates and relatively high levels of public debt, and it remains to be seen how resilient primary surpluses and broader reform efforts would be to a more generalized pullback of international capital from emerging economies.¹³ Similarly, the performance of the Russian economy in a scenario of much lower world oil prices is far from certain. Little comfort should be gotten from today’s high sovereign credit ratings since empirical work has shown that (unlike in industrial countries) such ratings are reduced when growth falls in emerging economies (Kaminsky, Reinhart, and Vegh 2004); in addition, empirical work indicates that sovereign credit ratings have done a poor job of anticipating currency and banking crises in emerging

¹³ See Stracke (2005) for a pessimistic assessment of Brazil’s medium-term prospects, emphasizing the high value of the real exchange rate, the currency risk attached to the still large public-sector external debt, the increased amortization burden on the domestic public debt, and the interest rate sensitivity of the domestic public debt.

economies (Goldstein, Kaminsky, and Reinhart 2000; Berg, Borenstein, and Pattillo 2004). The international spillover effects of the Argentinian debt default have so far been minimal, but who is to say how the favorable terms Argentina obtained from its private creditors will tilt both the incentives for imposing fiscal discipline and the market behavior of private creditors the next time an emerging economy is in the midst of debt-servicing difficulties? Won't the president of the next emerging market that comes under debt-servicing pressure be pressed by domestic political forces to deliver a "haircut" to investors as large as that achieved by Argentina? And won't the possibility of that event induce crossover investors to run early to avoid winding up with the losing hand in debt negotiations?¹⁴ Will the role model for emerging-market debtors be President Lula or President Kirchner?

Even if many banks and nonbanks have strengthened their risk-management systems and even if there isn't another player out there with the leverage and exposure of a 1998 Long Term Capital Management fund, couldn't a group of medium-sized market participants initiate a major market disruption if they all took sizeable, like-minded positions in less liquid financial instruments and then simultaneously sought to liquidate their positions—including those in emerging markets—after the receipt of bad news? Hedge funds have continued to attract large investor inflows in recent years, and the transparency of their operations remains limited. It has been reported that international investment banks obtained as much as \$25 billion last year from their hedge fund clients—about an eighth of these banks' total revenues and more than what banks earned from such traditional activities as mergers and acquisitions.¹⁵ In an environment where flows into hedge funds are strong, where banks face strong competition from other suppliers of services to hedge funds, and where hedge funds are very important clients of banks, how heavily can we count on a regulatory model where banks are the agents primarily responsible for exercising oversight over the risk-management practices of hedge funds? Even if the main players in international financial markets have expanded their use of stress tests against market risk, what if these stress tests don't incorporate adequately the potential feedback effects of many market actors simultaneously reducing their exposure?¹⁶ What if one of the big losers in a particular trade or the offending party in a serious abuse of market-integrity guidelines turns out to be one of the 10 large commercial or investment

¹⁴ See Desmond Lachman, "Not in Tango," *Financial Times*, March 28, 2005.

¹⁵ See "Banks Earned up to \$25 Billion from Hedge Funds Last Year," *Financial Times*, March 2004.

¹⁶ A recent report on stress testing at major financial institutions by the Committee on the Global Financial System (2005) discussed the results of a survey that covered 64 banks and securities firms in 16 countries. One of its findings was summarized as follows: "The treatment of market liquidity in stress tests varies across firms. Although firms recognize the potential for feedback effects—which measure the second-round impact of firms' own activities on prices—these effects are rarely incorporated in stress tests because they are difficult to measure" (p. 1).

banks that together dominate the market for derivatives;¹⁷ could that big commercial or investment bank unwind its exposure without initiating wider market disruptions that would spill over to emerging markets?

Just as the unexpected outcome of the Danish referendum in 1992 upset a large volume of “convergence plays” predicated on a smooth path to European Monetary Union (EMU), is there not a danger that bad news on ratification of the European constitution or on timetables for some transition economies (or Turkey) to qualify for euro-area membership could eventually lead to chaotic unwinding of current convergence trades in Europe?¹⁸ In this connection, a recent IMF study (Bulir and Smidkova 2005) not only found that the currencies of three new EU accession countries (Czech Republic, Hungary, and Poland) were significantly overvalued but also suggested that under current policies these currencies would be unlikely to stay within the ERM2 stability corridor.¹⁹ What would be the outlook for reducing fiscal deficits in these economies if EMU-related incentives were weakened substantially? Or what would happen if the large recent investment in energy funds based on a forecast of continued strong upward movement in energy and other primary commodity prices were undermined by a sharp (downward) revision in the future prices of these commodities?

So much for motivating the issues at hand, for proposing that there is more than one kind of risk currently facing emerging economies, and for defending the view that now is not such a bad time to look a bit deeper into sources of vulnerability for a new emerging-market financial crisis.

It would be beyond the manageable scope of this paper to try to analyze all the potentially relevant scenarios that could give rise to an emerging-market financial crisis.²⁰ I have therefore decided to focus on the crisis scenario that I think is the most likely, namely, an overlapping and

¹⁷ According to a recent *Bank Derivatives Report* (2004Q4) compiled by the US Office of the Comptroller of the Currency, five commercial banks accounted for 96 percent of the total notional amount of derivatives in the commercial banking system; in addition, for four of the top five, credit exposure to derivatives accounted for 230 percent or more of their risk-based capital. And in the bank with the largest derivative exposure, such exposure represented almost six times its risk-based capital. New York Federal Reserve President Timothy Geithner also highlighted some of the implications of very large, systemically important private financial institutions in a recent speech on key challenges in risk management (Geithner 2005). He noted that not only would the failure or perceived risk of failure of one of these institutions have large negative implications for the financial system but also that. . . their greater relative size limits their ability to take actions that would reduce their exposure in the event of a shock without creating the risk of magnifying the shock.”

¹⁸ The French and Dutch “no” votes in referenda on the European constitution (in late May and early June, respectively) have not yet produced any widening in the spread on Turkish benchmark global bonds (in fact, the spread has declined some), but the implications of those no votes may take some time for markets to assess fully.

¹⁹ Truman (2005) concludes that one should not be confident that Hungary or Poland will avoid an external financial crisis during the next five years.

²⁰ To take perhaps the most obvious exclusion, I have not analyzed a scenario in which a large supply shock leads to much higher world oil prices than currently envisaged by either futures markets or most analysts. This would, of course, have the short-term effect of reducing growth in the United States and China beyond what I have assumed in my scenario. But lower growth in China and the United States should act, over the medium-term, to put downward pressure on world oil prices. See the most recent IMF *World Economic Outlook* (IMF 2005b) for an analysis of the implications of sustained higher world oil prices.

greater-than-expected growth slowdown in China and the United States—made more troublesome for emerging economies by a rise in long-term US interest rates linked to a disorderly correction of global payments imbalances. In Section II, I speculate on what factors might bring about such a growth slowdown in those two countries. The main culprit in China is the unsustainably high share of fixed asset investment in GDP, while in the United States it is the unsustainable US current account deficit. I explain how a “long” unwinding of China’s investment boom could produce a “long landing” for the Chinese economy. For the US case, I tell a story about how various obstacles to achieving the right pattern of exchange rate adjustment and domestic demand growth across the United States, the European Union, and emerging Asia could degenerate into a “blame game” and a loss of confidence—marked, *inter alia*, by a sharp rise in long-term interest rates in the United States (and to a lesser degree, in other G-7 countries). Section III considers the transmission channels by which this growth slowdown in China and the United States—cum higher long-term interest rates—could affect emerging economies. The emphasis here is on bilateral trade links and global commodity prices, the costs and availability of external financing, the effects of exchange rate changes, and the likely pressures operating on fiscal and monetary policies in emerging markets. In each case, I present a set of indicators to infer which emerging economies are likely to be most and least affected by these various transmission channels. In the tables presenting these indicators, economies most (least) vulnerable to that particular transmission channel appear at the top (bottom) of the column. Finally, Section IV offers some brief concluding remarks about what the preceding crisis scenario implies for crisis prevention efforts in both the major industrial countries and emerging markets.

Two themes run through much of the subsequent analysis. Theme number one is that if a growth slowdown in China and the United States did materialize, it matters a great deal to emerging economies *how* this slowdown occurs; more specifically, a growth slowdown that is linked to a disorderly correction of global payments imbalances is apt to be considerably more damaging to emerging economies—because of its effects on global financing conditions—than one that is more orderly and affects emerging economies primarily via their bilateral export links to China and the United States. A slowing of emerging-market economic growth would be one thing; an emerging-market financial crisis would be another. Theme number two is that there are *multiple channels* by which a slowdown in China and the United States could be transmitted to emerging economies, and each of these transmission channels implies a somewhat different ordering of vulnerability to crises among individual emerging economies; for example, the economies most likely to be adversely affected by a large decline in China’s imports are on the whole not the same ones apt to be most affected by either a sharp decline in private capital flows to emerging economies or by a fall in local currencies that is greater than the assumed fall in the US dollar. Since one doesn’t know in advance

what the transmission process will look like, it is sensible to examine a wide enough set of vulnerability indicators to cover the main possibilities.

II. HOW COULD ECONOMIC GROWTH IN CHINA AND THE UNITED STATES SLOW DOWN?

Using purchasing power parity (PPP) exchange rates, the IMF (2004b) calculates that the United States and China presently account, respectively, for 21 and 12½ percent of world GDP. Given 2003 and 2004 growth rates, this implies that the United States was responsible for roughly 16 percent of global growth in 2003 and 17 percent in 2004. The same kind of calculation for China reveals a higher contribution: 30 percent of global GDP growth in 2003 and 24 percent last year. Together, these two locomotives made up over 40 percent of the 2003–04 global expansion. Their joint contribution to global growth in 2003–04 is similar if we were to use market exchange rates as weights, but their relative contributions would be reversed; the US contribution would then be on the order of a third, while China's contribution would fall to roughly a tenth. This reflects the facts that the US share of world GDP is somewhat higher with market exchange rates than with PPP exchange rates (29 percent versus 21 percent), while China's share is much lower with market exchange rates than with PPP exchange rates (4 percent versus 12½ percent). If the relevant measuring rod is taken to be domestic demand growth (at market exchange rates), the US contribution to global (domestic demand) growth would still be slightly higher and China's contribution would be slightly lower, since the United States has been running an increasing trade deficit whereas China has been running an increasing trade surplus. Turning to world trade, in 2004 the US share of world trade was 12½ percent, while China's share was 6 percent (10 times the share China had in 1977). China alone accounted for more than 10 percent of global trade expansion in 2003–04, while the US contribution was 8 percent. Together, China and the United States supplied about one-fifth of global trade expansion during the past two years.

These back-of-the-envelope estimates suggest that if China and the United States were to grow considerably slower over the next three years than they did during the last two, emerging economies would, *ceteris paribus*, face a less supportive global environment. Hence, we turn next to explanations of why and how growth slowdowns might occur in these two large economies.

The Long Landing in China: Unwinding of the Investment Boom

In 2003 and 2004, the Chinese economy grew by 9.3 and 9.5 percent, respectively—the highest rates of growth since 1997 (figure 3). This upsurge in growth was driven primarily by very rapid growth of real fixed asset investment and by a boom in bank lending.

Most analysts characterized the Chinese economy as “overheated” from the last quarter of 2002 through at least the first half of 2004.²¹ This overheating had a number of dimensions, including (1) the emergence of bottlenecks in coal, oil, electric power, and transport; (2) real fixed asset investment increasing at such a breakneck pace (25 percent in 2003 and 19 percent in 2004) that the investment share of GDP hit an all-time high (44 percent of GDP in 2004), with strong indications of overinvestment in steel, aluminum, cement, and real estate;²² (3) upward pressure on prices, with a switch from deflation in 2002 to peak inflation rates of 5 percent for consumer prices and 9 percent for corporate goods prices in the summer/fall of last year; (4) a rapidly declining “real” rate of interest on bank loans—reaching a level of negative 4 percent in the fall of 2004 (figure 4); (5) unsustainably high rates of credit and monetary expansion, with the increase in bank loans relative to GDP reaching a historic high of 24 percent in 2003 (figure 5) and with the growth of both bank lending and of broad monetary aggregates (figure 6) attaining peak annual rates near 20 percent; (6) buyers turning increasingly to imports to supplement domestic sources of supply, with the total value of imports rising by 40 and 36 percent in 2003 and 2004, respectively, and with dramatic effects on global prices of some critical raw materials and basic industrial goods;²³ (7) a depreciating, real trade-weighted exchange rate for China’s currency, the renminbi, with the level at May 2005 being approximately 8 percent below that in February 2002 (figure 7); and (8) a large and rising external imbalance—marked by rapidly increasing exports (up about 35 percent in both 2003 and 2004), a growing current account surplus (3.3 and 4.2 percent of GDP in 2003 and 2004, respectively), huge capital inflows (much of it chasing an expected appreciation of the renminbi), and unprecedented increases in China’s international reserves (\$162 billion in 2003 and \$206 billion more in 2004—representing an astonishing 11 to 13 percent of GDP; see figure 8).

The Chinese authorities’ initial response to signs of overheating in the economy was one of denial. This may have reflected the new leadership’s desire for strong growth to bolster their standing with the Chinese public, as well as concerns about the slowing effects of the SARS outbreak in the second quarter of 2003. But as evidence of overheating accumulated, economic officials were

²¹ Some would argue that the overheating is still ongoing.

²² Figures based on GDP expenditure accounts indicate lower real investment growth in both 2003 and 2004, but the qualitative conclusions for the long-landing hypotheses are similar.

²³ Lardy (2005) notes that China is now the world’s largest consumer of copper, tin, zinc, platinum, steel, and iron ore; the second largest consumer of oil, aluminum, lead, and petroleum; and the third largest consumer of nickel. China’s steel imports soared in 2002–03, as China became the world’s largest importer, driving up global steel prices. It is also a major importer of iron ore to feed the world’s largest steel industry. China alone accounted for 45 percent of the increase in global oil demand in 2002–03, again with strong upward effects on the world price.

gradually authorized to implement restraining measures: The 2004 official targets for economic growth, bank lending, and monetary expansion were all lowered, albeit modestly; reserve and capital requirements for banks were increased; most important, strong administrative controls were put in place over bank lending, approval for new investment projects, and land use; and “sterilization” of reserve inflows continued on a large scale to diminish the impact of reserve accumulation on credit aggregates. Increases in interest rates have been small and few and far between.²⁴

There are at least three schools of thought on how well the Chinese economy has responded to these restraining measures and on the economy’s medium-term growth prospects. The first view—held by the Chinese authorities and most China watchers—is that administrative controls and other measures have been quite effective in controlling overheating and that the economy is well on its way to achieving the desired *soft landing*.

In support of the soft landing view, they point out that (i) the growth of bank lending and of the monetary aggregates have slowed from an unsustainable annual pace of 20 percent to a more comfortable 13 to 15 percent (glance back at figures 5 and 6); (ii) consumer price inflation has fallen sharply from the peak rates recorded last summer, and other producer and raw materials price indices are showing moderation as well;²⁵ (iii) the fall in inflation has, in turn, begun to reverse the fall in the real interest rate on bank loans, at least bringing it into positive territory; (iv) the growth of real fixed asset investment has started to decline, with last year’s 19 percent growth down markedly from 2003’s 25 percent climb; (v) there has been a change in the composition of investment away from sectors with overcapacity toward bottleneck sectors; (vi) growth of real private consumption has stayed buoyant; (vii) to judge from the interest rates on bonds used for sterilization, there is little evidence of sterilization fatigue; and (viii) the economy has been able to accomplish all this while still growing at a healthy 9 percent plus pace. Their expectation is that this progress can be maintained in 2005 while the economy grows at between say, 8 and 9 percent.

The second school of thought might be called the *no landing/hard landing* view. It sees the Chinese economy as still in a state of overheating, but one masked by administrative controls and poor price statistics. Xie (2005), for example, argues that the demand effects of rapidly rising investment initially put upward pressure on prices and profitability, drawing large amounts of resources into particular sectors—especially property, automobiles, steel, chemicals, and electronics. But this overinvestment is unsustainable because the demand effects of investment eventually give

²⁴ Interest rates on bank loans and bank deposits were increased by roughly 30 basis points last fall; at the same time, the legal ceiling on the interest rate that banks could charge for loans was eliminated. In March 2005, a small upward adjustment was made in the interest rate for consumer housing loans, and the minimum downpayment for such loans was increased.

²⁵ On a year-over-year basis, consumer price index (CPI) inflation fell to 1.9 percent in January 2005 but then jumped up to 3.9 percent in February.

way to the supply (overcapacity) effects. The hard landing comes when interest rates rise to keep inflation down and when there is no longer enough demand to take up overcapacity. Makin (2004) also sees an early hard landing ahead for China—but one driven by the contractionary effect of administrative controls and of capital outflows on credit flows. Yet another variant of the hard landing view is that with the real interest rate close to zero and a significantly undervalued exchange rate, there is latent excess demand in the system. Provinces and ministries will continue to press for relaxation of administrative controls on bank lending, on project approvals, and conversion of land use. China's central bank is far from having operational independence, and with capital inflows still booming, it could easily once again (as in 2003 and the first part of 2004) get behind the curve on monetary policy. That, in turn, would require large increases in interest rates or a more draconian reactivation of administrative controls—either of which would push the economy into a hard landing this year or next. It needs to be acknowledged however that thus far there is scant evidence of a significant reacceleration of key credit and monetary aggregates.

Yet a third view—put forward in Goldstein and Lardy (2004a, 2004b)—is the “long landing” hypothesis. We argue that at the heart of imbalances in the Chinese economy is an unsustainable investment boom that has been in the making for at least four years and that will probably take at least several years to undo. To judge from the unwinding of China's last investment boom, the most likely outcome is that economic growth will decline during this unwinding period—perhaps as much as 4 to 5 percentage points from its current rate. The growth decline may be more gradual than in the hard landing view, but its cumulative magnitude may not be any less.

Figure 9 shows China's capital investment as a share of GDP. Last year, capital's share hit 44 percent—an all-time high, exceeding even the peak share (43 percent) reached during the top of the last investment boom in 1993. Figure 9 shows that nothing in the last 25 years of China's economic growth experience indicates that an investment share above 38 to 40 percent of GDP is sustainable: Whenever it gets into that territory, the investment share subsequently falls. Because real fixed asset investment in China is still growing faster than real GDP, the investment share is still in its rising phase.

Figure 10 presents the time pattern of real fixed asset investment in China over the past dozen years. Figure 10 says that creating and unwinding investment booms in China has been a multiyear phenomenon—not a matter of a few quarters. It took four to five years of rising investment growth to reach the overextended levels of 2003–04; likewise, from the peak of the last investment cycle in 1993, it took four to six years to complete the slowdown, and real investment growth slowed markedly during the process. Last year was but the first year (in the last four) that the growth rate of real fixed asset investment declined.

A decline in investment growth does not, of course, require economic growth to fall since other components of GDP could grow faster to offset an investment slowdown. But figure 11 indicates that the only other component of GDP with a weight equal or close to that of investment is private consumption. But when investment growth was declining from its peak in 1993, we did not observe a sustained, large, upward offsetting movement in private consumption (figure 12). Indeed, the data indicate that (over the past decade and longer) growth of real fixed investment and real household consumption have been positively—not negatively—correlated, and the same result holds even for samples restricted to years when investment growth slowed. Since government consumption has less than one-third the weight of investment, even doubling the growth of government consumption from its recent pattern would add less than 0.75 percentage points to China's GDP growth. Also, China has been quite conservative in its budgetary policy, demonstrating a reluctance to run budget deficits beyond a few percent of GDP.

Net exports have by far the smallest weight in GDP (about 2 percent), but they probably have the most potential for large change among the noninvestment components of GDP. During the unwinding of the last investment boom, net exports of goods and services strengthened by 6 percentage points of GDP—making a substantial contribution to growth. I would expect net exports to strengthen this time too, as the Chinese economy slows and import growth declines faster than export growth; in fact, that process has been under way over the past two quarters, and one prominent specialist on the Chinese economy, Jon Anderson of UBS, has recently suggested that China's trade balance this year could climb to as high as 8 percent of GDP (Anderson 2005a). One difference, however, between this investment cycle and the previous one is that this time China is starting from a sizeable current account surplus (4 percent of GDP in 2004)—not from a modest deficit (in 1993). As explained later in this section, it is hard to believe that the rest of the world would sit passively by while China's current account surplus mushroomed—particularly if China refused to take any meaningful action on its undervalued exchange rate.

Looking back at figure 3, it can be seen that the growth of China's real GDP declined cumulatively by about 5 to 6 percentage points from the peak of the last investment cycle in 1993 to its troughs in 1997 and 1999. This was a long landing. The landing can of course be made shorter by accelerating the fall in the growth rate of real investment—but then the decline in the growth rate of GDP will be sharper each year to eliminate the investment-share overhang in fewer years.

Critics of the long landing view argue that things are likely to be different this time. They maintain that the sustainable rate of investment in China is now much higher than it used to be, reflecting, *inter alia*, the positive effects of rising urbanization and industrialization on investment. But urbanization and industrialization were also well underway during the unwinding of the last

investment boom and they did not prevent it.²⁶ Trends in the efficiency of investment do not point to a higher sustainable investment rate either, and the 2003 behavior of bank credit, along with investment excesses in steel, aluminum, cement, and real estate, hardly suggest that banking reform has progressed to the point where an investment share of 44 percent of GDP can be invested profitably.

In sum, Goldstein and Lardy (2004a, 2004b) conclude that the investment share in China will have to fall markedly from its present high levels. This means investment will need to grow more slowly than real GDP for several years and that China's growth rate—notwithstanding perhaps some offset from other components of spending—will fall as well from last year's lofty pace (9½ percent). The Chinese authorities have indicated that some slowdown in growth this year—perhaps to between 8 and 9 percent—would be desirable; similarly, they concede that there is a need to deal with excessive, wasteful, and inefficient investment. But they have not suggested for how long and how far the growth rate of investment should fall or what they would be prepared to do about it if the growth rate of GDP declined markedly as a result of falling investment. Note that the long landing view and the soft landing view are observationally equivalent for 2005 (both predict some fall in growth). Where they differ is on what happens in 2006 and 2007; the long landing view predicts that growth will decline in those years as well, whereas the soft landing view sees growth returning quickly to its long-term path. If the long landing view is right, China's growth in 2006–07 is apt to be on the order of 3 to 4 percentage points lower than in 2004.

A Disorderly Adjustment of the US Current-Account Deficit

By most yardsticks, the US economy still looks strong. Real GDP growth was 3 percent in 2003 and almost 4½ percent (4.4 percent) last year. The recent (June) Blue Chip consensus is that growth will moderate this year and next (3.5 and 3.3 percent, respectively) and will be roughly equal to long-run potential growth (often calculated to be, say, 3¼ percent). Anticipating that the Federal Reserve will continue to move up the federal funds rate toward a neutral stance, the consensus forecast is also that inflation will remain under control (about 2.7 percent on consumer prices for 2005–06). Meanwhile, the labor market is firming, and productivity growth remains broadly encouraging. The fly in the ointment is the large US current account deficit.

²⁶ Some have argued that the sustainable rate of investment in residential housing is now higher than before because it is increasingly private. But as noted in Goldstein and Lardy (2004b), real estate investment as a share of GDP has risen sharply for six consecutive years and by 2003 was already half again as high as the previous peak in 1993—suggesting that over the next few years, adjustment is more likely to be on the downside rather than the upside.

The US current account deficit hit an all-time high last year of \$660 billion, or 5.7 percent of GDP; if the outturn in the fourth quarter of 2004 were put on an annual basis, the current account deficit would be over \$730 billion. Reflecting several decades of current account deficits, the ratio of US net external liabilities to GDP is now about 25 percent—an enormous turnabout from the world’s largest net creditor position, with net external assets equal to 25 percent of GDP in the mid-1970s.

Many analysts (Mann 2004, Cline 2005, Roubini and Setser 2005) see the US current account shortfall rising to 6 to 9 percent of GDP in 2005–07.²⁷ But even if the current account deficit were maintained at 5 percent of GDP while US GDP grew in nominal terms at 5 percent per year, the US net external liability position would reach 50 percent in eight years and 100 percent of GDP within 25 years (Mussa 2005). Given this unfavorable trajectory, there is a consensus that US current account deficits of recent magnitude are unsustainable. The “unsustainability” results primarily not from the retarding effect of rising net interest payments (on the increasingly negative US international investment) on US consumption and investment, but rather from the assumed increasing reluctance of foreign investors to accept a steadily rising share of US assets in their portfolios.²⁸ Once these foreign investors reach the point of saying “no mas,” there will be inevitable adjustments in asset prices and exchange rates to restore portfolio equilibrium.

A popular view is that a sustainable US current account deficit would be a little less than half as large as the present deficit—say, 2½ to 3 percent of GDP; under reasonable assumptions about US GDP growth, this would stabilize US net external debt at somewhere between 45 and 50 percent of GDP.

The key issue at hand is whether this correction of the US current account deficit to a more sustainable level is likely to be accomplished in an orderly way—without recourse to high US interest rates, falling US asset prices, much reduced US growth (maybe even a recession), and adverse spillovers to other economies, including emerging markets.

Those who champion the “orderly” adjustment view emphasize that whatever the track record for developing countries, earlier episodes of large current account adjustments in industrial countries present little evidence of sustained depreciation of exchange rates, increases in real interest rates, or declines in real stock prices; there were some episodes that showed significant falls in GDP growth after the onset of current account adjustment, but substantial exchange rate depreciations

²⁷ These forecasts of a rising US current account deficit in the medium term typically assume that US growth is faster than in partner countries, that the income elasticity of demand for US imports remains substantially higher than income elasticity of demand for US exports, and that rising US interest rates lead to larger income payments to foreigners on their investments in the United States.

²⁸ Because the rate of return on US investments abroad has been higher than the return on foreigners’ investments in the United States, net interest flows on the increasingly negative US international investment position have thus far been tiny relative to US GDP.

were usually expansionary—not contractionary.²⁹ They also point to the attractiveness of investment opportunities in the United States as an explanation for observed cross-country differences in saving/investment patterns and to the shared interest of Asian countries and the United States in continuing large-scale, official financing of the US current account deficit under a “revived Bretton Woods” system. In contrast, the disorderly adjustment view emphasizes the potential for delayed adjustment or “blame games” if each of the major players refuses to take painful but necessary policy actions. The disorderly adjustment view also highlights the disruptive role that undisciplined US fiscal policy can and has recently played in thwarting correction of saving-investment imbalances, as well as fragilities and contradictions in the long-term maintenance of any revived Bretton Woods system.

As my IIE colleague Mike Mussa (2005) has recently pointed out, the inevitable correction of the US external imbalance will necessarily involve three broad and related macroeconomic developments: (1) a real depreciation of the US dollar against the currencies of most other countries; (2) domestic demand growing more slowly than domestic output in the United States to make room for the expansion of US net exports; and (3) domestic demand growing faster than domestic output in the rest of the world so as to reduce their net exports. The first development is the expenditure-*switching* channel of adjustment; the next two developments represent the expenditure-*changing* channel of adjustment. Both channels are needed. If only the expenditure-reducing channel is activated, adjustment can be too costly in terms of economic growth for the deficit country; if only the expenditure-switching channel is activated, the result can be excessive inflation in the deficit country and undue contractionary pressure in the surplus countries.

One can also think about the adjustment of the US current account deficit in a saving-investment framework. Here, the inevitable adjustment will involve a decline in the current savings shortfall in the United States and a corresponding diminution of the savings glut (or investment shortage) in the rest of the world.

Suppose we employ a rule of thumb that each 1 percent depreciation in the real trade-weighted value of the dollar improves the US current account deficit by approximately \$10 billion. This then generates the conclusion that the real value of the dollar needed to fall about 30 to 35 percent from its peak in February 2002 to reduce the US current account deficit to 2½ to 3 percent of GDP. As shown in table 4, there have indeed been some sizeable appreciations in the currencies

²⁹ This conclusion comes from a recent Federal Reserve study by Croke, Kamin, and Leduc (2005); they looked at 23 episodes of current account adjustments in industrial countries since 1980. The BIS (2004) also studied episodes of lasting and substantial current account adjustments in industrial countries since 1973. The BIS (2004) found that (1) on average, current account deficits tended to be reversed when deficits approached levels around 4 to 5 percent of GDP; (2) the adjustment process was generally associated with both a depreciation of the domestic currency and a marked slowdown of growth; (3) the more volatile types of flows generally adjusted the most; (4) the adjustment was driven mainly by the behavior of nonresidents; (5) changes in financing were largely in private flows; and (6) in most cases, the changes in the composition of flows were orderly. On the whole, their conclusions are not quite as optimistic as in the Federal Reserve study.

of *some* US trading partners since February 2002. More specifically, the euro has appreciated by 23 percent, the Canadian dollar has gone up by 10 percent, and the Australian dollar by 27 percent. Most of the currencies that have shown significant appreciation are those whose value is set mainly by market forces. In contrast, with the notable and largely recent exceptions of the Korean won (up over 18 percent since February 2002) and the Singapore dollar (up 10 percent), there has been very little real exchange rate appreciation in the Asian countries—despite the large current account surpluses in most of these economies. As noted earlier, the Chinese renminbi has depreciated in real effective terms by about 7 percent since February 2002; the Malaysian ringgit has depreciated by 15 percent; and the Japanese yen and the Taiwanese dollar have shown small depreciations over this period.³⁰ It has not escaped attention that some of these Asian economies have been engaging in large-scale, protracted, one-way intervention in exchange markets to hold down the value of their currencies.³¹ Since Japan plus emerging Asia have a combined weight of approximately 40 percent in the Federal Reserve's trade-weighted index for the dollar, this lack of sizeable real appreciation in Asian currencies has weakened the operation of the expenditure-switching channel of adjustment: Without Asia's participation, either the overall depreciation of the dollar will be too small to bring the US current account deficit under control or the dollar depreciation will be so skewed toward a few currencies that the adjustment burden on them (especially the effect on their GDP growth rates) will become intolerable. The same line of thinking also explains why revaluation of the Chinese renminbi is typically given such prominence in any discussion of wider Asian currency policy. If China doesn't appreciate its exchange rate, other countries in the region will be reluctant to allow theirs to do so, lest they lose competitiveness vis-à-vis China. But if none or few of the Asian economies take exchange rate action, then the overall depreciation of the dollar will be too small.

As Mussa (2005) argues, there are also obstacles in getting the cross-country pattern of domestic demand growth to accord in a timely way with what theory says needs to happen. In the European Union, a recent string of budget deficits has left the larger countries with little scope for expansionary fiscal policy and the European Central Bank (ECB) is reluctant (given its mandate for pursuing price stability and prevailing monetary and inflation conditions) to lower policy interest rates below their already low level. Ongoing changes in structural policies may improve European economic growth in the longer term but not right away. Hence, the best that can be expected (as regards raising domestic demand) in the near term is that the ECB is cautious in raising interest rates and that fiscal consolidation doesn't occur too rapidly. Meanwhile, Japan has accumulated a very high ratio of public debt to GDP, ran a fiscal deficit of nearly 7 percent of GDP last year, has already

³⁰ These figures use JP Morgan's indices of real, trade-weighted exchange rates. According to the same data series, the US dollar has fallen by almost 19 percent since February 2002.

³¹ See Goldstein (2004, 2005) on why this behavior should be regarded as currency "manipulation."

reduced policy interest rates effectively to zero, and is struggling with a lingering deflationary threat and a still fragile recovery. Thus, beyond pledging to refrain from resuming large-scale exchange market intervention to hold down the value of the yen, not much should be anticipated from the Japanese contribution to external adjustment. But all this generates the prospect that domestic demand growth and overall GDP growth in the euro area and in Japan will remain slower than in the United States this year (and maybe next year as well). This explains why US officials sometimes argue that the US current account deficit reflects a “growth deficit” in some of our main trading partners.

What about the analysis of current account adjustment as viewed from a saving-investment perspective? Here, the dominant development has been the continuing decline in the US net national saving rate (the resources that Americans are saving net of the amount that the US federal government is borrowing)—from about 12 percent of GDP in the early 1960s, to about 5 to 6 percent in the mid-1980s, to roughly 3 percent last year—the lowest level since the postwar period.³² As many observers (e.g., Summers 2004) have highlighted, while US net national investment has also weakened over the 2000–04 period, more than 100 percent of the widening of the US current account deficit over this period has been accounted for by a drop in the level of US national saving, and within the national saving rate, the one component that has shown the most dramatic deterioration is federal government (dis)saving (figure 13).³³ Between 2000 and 2004, the actual federal budget deficit worsened by 6 percentage points of GDP.³⁴ In fiscal 2004, the US federal budget deficit was just over \$400 billion—or 3.6 percent of GDP.

Almost everyone, including the current US administration, views a federal budget deficit of this size as too large; indeed, President Bush has pledged to cut the budget deficit in half (relative to GDP) in four years. But this is far from a foregone conclusion. A reasonable forecast is the budget deficit will decline only marginally as a share of GDP to 2010 and then will likely deteriorate further, as the retirement of the baby boom generation and rising entitlement payments (especially healthcare costs) make their influence felt.³⁵ This can be seen in figure 14, which uses the Congressional Budget Office’s January 2005 baseline projection for the federal budget and then adjusts it for likely fiscal

³² Bernanke (2005) similarly discusses a decline in the US gross national saving rate—from 18 percent of GDP in 1985, to 16 percent in 1995, to less than 14 percent in 2004.

³³ Since US net investment has been falling over most of the 2000–04 period and is just now regaining the 2000 level, it is difficult to argue that foreign savings are merely funding investment opportunities in the United States.

³⁴ The IMF (2004b) estimates that the deterioration in the structural US federal budget deficit over the 2000–04 period was about 5 percentage points.

³⁵ See Mussa (2005), who reports that the budget deficit in 2010 would then be 3.1 percent of GDP and that the ratio of US public debt to GDP would then be 44 percent—up from 37 percent now. In February 2005, the Bush administration projected a fiscal deficit of 3.5 percent of GDP for fiscal 2005 but recently moved that projection down to 2.7 percent of GDP, due primarily to much larger than anticipated tax receipts. It remains to be seen how long-lasting those higher tax receipts will be; see “Revenue Surge Shrinks Deficit,” *Washington Post*, July 14, 2005.

policy developments—that is, the extension of expiring tax cuts, reform of the alternative minimum tax, growth of discretionary spending roughly equal to the growth rate of nominal GDP, and a phase-down of activities in Iraq and Afghanistan plus continued spending for the global war on terrorism. I agree with Mussa (2005) that a more ambitious program of fiscal consolidation in the United States (i.e., reducing the structural US budget deficit to less than 1 percent of GDP by 2010) would be much better—both for putting US fiscal policy on a sounder long-term footing and for any favorable spillover effects it would have on the US current account deficit.³⁶ It is because the US administration is not currently proposing a credible fiscal program of this type that US trading partners in Asia and Europe can claim that not only is the US current account deficit “made in America” but also that the United States should put its own house in order before it gives policy advice to others.

Turning to saving-investment imbalances in other countries, Bernanke (2005) has pointed out that the big swing in current account surpluses in the 1996–2003 period took place not in other industrial countries but rather in developing countries, as these countries moved from their traditional role as net capital importers to net capital exporters. He goes on to argue that financial crises in Asian emerging economies and a sharp rise in world oil prices contributed strongly to this turnaround and that the United States became the natural destination for excess savings of developing countries. The large capital inflow into the United States, in turn, helped to drive up both US equity prices and the dollar, and higher equity prices made US households feel rich enough to increase their consumption. After the stock market decline in 2000, global investment demand fell, pushing down world real interest rates, and these low interest rates then provided the impetus for large increases in US residential investment and housing prices—further decreasing the household saving rate. Bernanke’s (2005) bottom line is that events in the developing countries had a lot to do with the recent evolution of the US current account position and therefore that purely inward-looking policies are not likely to resolve the US imbalance. Instead, one will have to wait until developing countries improve their domestic investment climates sufficiently and accumulate enough reserves such that they feel comfortable once again returning to their natural position as net capital importers. But this will take time—so the United States needs to be patient.

Quite apart from the issue of whether Bernanke (2005) has it right or wrong on the role that external versus internal influences played in the evolution of the US current account over the past decade, a key question is whether markets and countries have the incentives to allow the US current

³⁶ Erceg, Guerrieri, and Gust (2005) estimate that each \$1 reduction in the federal budget deficit reduces the US current account deficit by less than 20 cents.

account to be in large and increasing deficit for a further extended period while developing countries are improving their domestic investment opportunities³⁷

A recent set of papers by three Deutsche Bank economists (Dooley, Garber, and Folkerts-Landau 2003, 2004a-c) answers that question in the affirmative by postulating that the United States and the Asian economies have entered into an implicit contract—the so-called revived Bretton Woods system (hereafter, BW2) that can comfortably carry on for another decade or two, with significant net benefits to both parties. The United States gets a stable and low-cost source of finance for its large current account deficit as well as access (via a welcoming attitude in Asia toward incoming foreign direct investment) to a low-cost and productive Asian workforce. For their part, the Asian creditor economies are permitted to engage in prolonged, large-scale exchange market intervention that limits or prevents their currencies from rising in value against the US dollar. This, in turn, underpins a strategy of export-led development, which produces economic and employment growth high enough to keep a lid on social pressures emanating from large pools of surplus labor. And incoming FDI in the export industries is alleged to contribute toward the building of a world-class capital stock, which would be unattainable due to weaknesses in the domestic financial system.

Others—especially Eichengreen (2004), Goldstein and Lardy (2005b), Roubini and Setser (2005), and Truman (2005a)—are not persuaded that BW2 can last anywhere near as long as a decade. Their objections span a wide range, including the following points: (1) More than three-quarters of US current account deficits in 2003–04 were financed by foreign central bank purchases of US Treasury securities and most of that by just a handful of Asian central banks; (2) as the size of US current account deficits rises in the future, these few Asian central banks will have to undertake larger and larger intervention operations, but the risks they will encounter will not be adequately compensated by the interest rate on those securities;³⁸ (3) unlike the original BW system (which required the United States to maintain the dollar's parity to gold), BW2 does not impose adequate constraints on the anchor country (i.e., the United States) to induce it to act responsibly; (4) similarly, there is much less cohesion among Asian creditor countries today than there was among creditor countries in the original BW system (hence, it will be harder to limit free-riding by smaller central

³⁷ One problem with the Bernanke (2005) diagnosis is that real exchange rates play little role in the correction of payments imbalances. Setser (2005) criticizes the Bernanke thesis for getting the timing of Asian reserve accumulation wrong, for underplaying the fall in investment in emerging Asia, and for not giving enough attention to China's exchange rate policies.

³⁸ The World Bank (2005b) reports that the Reserve Bank of India now faces a dilemma because its inventory of government securities is falling rapidly, but it is not allowed to issue its own securities or sell rupee assets on international markets; as a result of open-market operations, the Bank of Korea came up against the annual limit set by its legislature on sales of government securities; and the People's Bank of China accumulated nearly \$100 billion of foreign exchange reserves in the fourth quarter alone and had (as of November 2004) sold the equivalent of nearly \$80 billion of central bank bonds domestically, more than tripling the total stock of bonds outstanding.

banks or to allocate the burden of adjustment on financing the United States; Korea already seems to have thrown in the towel, judging by the recent appreciation of the won); (5) Europe will be unlikely to join the Asian coalition and private foreign investors will stay in the game only as long as foreign central banks are intervening to limit the currency risk; (6) undervalued real exchange rates attract huge capital inflows chasing expected currency revaluation in some large Asian creditor countries and the difficulty of sterilizing these inflows exposes them to serious bouts of domestic financial stability (China had just such a bank credit blow-out in 2003 and early 2004); (7) the costs of sterilization of reserve inflows are not well captured by domestic interest rates in Asian economies with financial repression; (8) when the game ends and Asian creditor countries have to revalue their currencies relative to the dollar and other reserve currencies, they will suffer a large capital loss—which in some cases could run to 10 percent of GDP (realizing this, they will not want to play too long); (9) focusing exclusively on undervaluing the exchange rate against the dollar doesn't make sense for those Asian economies (like China) where most exports go to markets other than the United States or to countries with currencies not pegged to the dollar; (10) the contention that Asian creditor countries always prefer undervalued exchange rates for employment reasons doesn't stand up to closer scrutiny (China allowed its real trade-weighted exchange rate to appreciate by nearly 30 percent between 1994 and early 2002—and this during a period when there were large employment losses in state-owned industries); (11) FDI cannot easily substitute for a weak domestic banking system (e.g., in China's case, FDI has financed less than 5 percent of fixed asset investment over the past few years); (12) the benefits of accumulating a large war chest of reserves (to cushion shocks to eliminate the need for turning to the IMF in extremis) are subject to diminishing returns, and several Asian countries are rapidly approaching that point if they haven't reached it already; (13) as US bilateral deficits with Asian creditor countries grow in size, pressures for a protectionist response in the United States will also grow (in fact, there are already bills before the US Congress that would place an import surcharge on China's exports to the United States if it doesn't end its alleged currency manipulation); (14) the average maturity of US government bonds has fallen sharply in recent years—increasing rollover risk and vulnerability to sudden shifts in US interest rates; and (15) as US investors become increasingly concerned about a large prospective fall in the dollar, they will shift more of their portfolio to foreign stocks and foreign-currency-denominated assets, further increasing US external financing needs. After all, sending money overseas is not like changing your citizenship: You can send the money back after the dollar depreciation scare is over, and there are plenty of places with decent financial markets (e.g., the United Kingdom, Euroland) to park the funds in the interim.

Bringing together the factors affecting the sustainability of a growing US current account deficit, the picture that emerges is a mixed one. On the plus side and unlike in emerging markets,

orderly adjustment of large current account imbalances in industrial countries tends to be more the rule than the exception; the first wave of dollar depreciation—running from February 2002 to the present—has fit into that mold. The United States also has practically no foreign currency-denominated public debt, nor is its banking system so fragile that an interest rate defense of the dollar—if needed—would induce a crisis. And it may be that the lagged effects of the past three years of dollar depreciation will ultimately make more of a dent in the current account deficit than has been observed thus far.

But there is also the more worrisome, negative side of the US current account imbalance. As noted, each of the main players often suggests that the present pattern of global payments imbalances is primarily the fault of the other players. Thus, the United States argues that if Asian countries would only adopt more flexible exchange rate policies, if the European Union would only grow faster, and if developing countries would only improve their domestic investment climates, the correction of the US current account deficit would soon follow. Under this interpretation, the US current account deficit is more a “badge of honor” bestowed upon America by the market than a reflection of inadequate US macroeconomic policies; the deficit will shrink once other countries do the right thing. Similarly, Asian economies maintain that the US current account deficit reflects primarily a low and declining US national saving rate—and since 2000, a switch toward large-scale dissaving by the US federal government. Why should Asia have to change its exchange rate policies to correct a US problem that is mainly of the United States’ own making—especially if such a change could be disruptive to their own economies? And Europe can charge that not only are US and Asian governments engaging in misguided fiscal and exchange rate policies, respectively but also that Europe has been the unlucky victim of those policies, with the blow delivered by a euro exchange rate that has appreciated massively against the dollar in the space of three years. Why should Europe therefore have to change a monetary policy viewed as appropriate for its domestic needs just to compensate for the policy failings of others?

A key reason why it has been convenient to play what IMF Managing Director Rodrigo de Rato (2005) has called “the blame game” is that making wholesale changes in economic policies in each of the three key regions would entail costs, and there has not as yet been enough external pressure—either from markets or other countries—to motivate such policy changes. The market has not signaled—via either a big run-up in long-term US interest rates or a rapid, disorderly fall in the dollar—that is deeply concerned about US macro policies, and canceling pledges to make tax cuts permanent would have political costs to the current US administration. Likewise, the G-7 countries have not given China and other Asian economies a deadline for moving to more flexible exchange rates. Nor has the United States or the IMF (both of which have legal mandates to monitor currency

manipulation) named any of these economies as currency manipulators or imposed other penalties.³⁹ Meanwhile, Chinese authorities appear to be worried that a large renminbi revaluation would be unduly contractionary for growth and employment. And Europe, while complaining about the effects of such a high euro, is expecting growth this year that is very close to its 10-year average.

The rub is that imbalances are growing and that once the markets decide that prospects for a smooth, cooperative resolution are dim, the resulting adjustment could be disorderly and difficult to control. As noted earlier, the US current account deficit this year will likely be bigger than last year and so too for 2006.⁴⁰ The Bush administration and the US Congress are debating social security reform, but no credible plan has yet been put on the table to bring the structural budget deficit close to balance in the next five years.⁴¹ Despite a sharp increase in the post-tax corporate profit share since the low of 2001, the S&P 500 price-earnings ratio—at about 21—remains above both its 25-year (19.5) and its 50-year (17.3) averages. China's current account surplus was 3.3 percent of GDP in 2003, over 4 percent last year, and is likely to be considerably higher this year, as a slowing Chinese economy reduces import demand. The rising share of China in the US trade deficit and the large increase in China's exports of apparel to the United States (now that the Multi-Fiber Agreement has expired) will add to the political pressure on US legislators to “do something”—but that something could be trade protection—not fiscal reform to increase US national saving. The euro has risen by over 20 percent in real effective terms during the past three years, and European politicians and legislators too will feel increasingly pressed if the euro continues to rise and if growth in the euro area remains weak. Foreign investors and governments now own almost half of the privately held stock of US Treasury securities, almost a third of both agency securities and corporate bonds and about a tenth of equities. And some foreign central banks have recently been discussing the advantages of greater “diversification” in their reserve holdings.

Suppose the revived Bretton Woods system manages to hold together until say, mid-2006, by which point (intermittent concerns about a near-term slowdown aside) US economic growth is running close to today's consensus forecast of 3¼ percent of GDP. Suppose too that any remaining

³⁹ In the US Treasury's (2005) latest report to Congress on international economic and exchange rate policies, the Treasury offered a considerably more critical evaluation of China's exchange rate policies than in previous reports, emphasizing that China's rigid currency regime has become highly distortionary and that it poses risks to the health of the Chinese economy and to China's neighbors. While the Treasury report did not name China as a currency manipulator, the report concluded that if current trends continued without substantial alteration, China would likely meet the technical requirements (of the relevant US statute) for designation as a currency manipulator.

⁴⁰ Data recently released on the US current account deficit in the first quarter of 2005 are consistent with this projection: the deficit climbed to 6.4 percent of GDP.

⁴¹ If one combines loose US fiscal policy with increasingly tighter US monetary policy (the so-called Reagan policy mix), there is the worry that the rise in US interest rates could temporarily suck in more capital flows to the United States and temporarily cause the dollar to appreciate—thereby removing the expenditure-switching channel from US external adjustment and setting the stage for an even larger and more disorderly dollar fall once concerns about the current account deficit overwhelm the incentives related to interest rate differentials.

slack in the US economy has been eliminated, that the federal funds rate is around 4 percent, and that 10-year US treasuries are yielding about 5 to 5¼ percent.⁴² Assume too that earlier G-7 meetings have failed to reach any meaningful consensus on how to accelerate the correction of global payments imbalances. Now imagine that several worse-than-expected US monthly trade reports, or a drop in US productivity growth, or a rising US-China trade dispute, or rumors about official reserve diversification out of the dollar, prompt both foreign private investors and some foreign central banks to slow sharply their acquisition of US treasuries, as well as to sell some other US dollar-denominated securities (e.g., equities, agency bonds, and corporate bonds).

In this kind of unwelcome scenario, one would expect “confidence effects” to put both strong downward pressure on the US dollar and sharp upward pressure on US interest rates. Faced with this situation, the US Federal Reserve might feel compelled to raise US short-term interest rates—to prevent the expenditure-switch toward US products (induced by a rapidly falling dollar) and the pass-through from higher import prices from unduly pushing up aggregate demand and inflation and to send a signal to nervous foreign investors that it does not have a “benign neglect” policy toward the dollar. A policy-induced increase in US interest rates might occur even though the Fed recognizes that personal consumption and residential investment might well suffer a sharp reversal after their rapid run-up in recent years. The US Commerce Department’s Bureau of Economic Analysis reported that the most interest rate-sensitive components of US GDP (namely, consumption of automobiles, furniture and household equipment, home improvements, and new home structures) recently accounted for over 15 percent of real GDP—up from 13 percent in 2000. In a similar vein, US personal consumption expenditure (as a share of GDP), cash refinancing and home equity loans spent as a share of total consumer spending, mortgage borrowing as a percent of residential investment, household interest payments as a percent of disposable income, and the ratio of house prices to income—are all at peak levels. True, home mortgages in the United States tend to be more of the fixed rate variety than in some European countries, but this alone would not be expected to prevent a sharp increase in short and long-term US interest rates from slowing the US economy.

Three related points. First, even if the Fed didn’t increase US policy interest rates, strong downward pressure on the dollar would make it difficult for the Fed to reduce them—thereby taking out of play one of the main policy instruments used to combat earlier slowdowns. Second, if there were a serious confidence problem about the orderly resolution of global payments imbalances, long-

⁴² The US Federal Reserve began raising the federal funds rate in June 2004 and has since raised it eight more times by 25 basis points, bringing the rate to 3¼ percent today. The markets seem to expect the federal funds rate to hit about 3¾ percent by the end of this year. Since January 2004, the yield on 10-year US treasuries has fluctuated between 3.7 and 4.7 percent; it now stands at 4.2 percent. Over the past 20 years, the yield on 10-year US treasuries has, on average, exceeded the federal funds rate by about 150 basis points.

term US interest rates would rise even in the absence of further Fed policy tightening; whether long rates would rise by more with a Fed tightening than without one is not entirely clear. And third, judging from past behavior, if US long-term interest rates rose, one would expect long-term rates to rise in other G-7 countries as well, although probably not as much as in the United States.⁴³

Just how sharp and how prolonged would be the rise in US interest rates and the fall in the dollar after a “run” out of dollar assets is a matter on which there is presently little consensus. Roubini and Setser (2005) have surveyed the range of estimated interest rate effects associated with a hypothesized large fall (say \$300 billion) in central bank demand (intervention) for long-term US treasury securities; the estimates range from 40 basis points to Roubini and Setser’s own estimate of 200 basis points (based on the argument that the current conjuncture is less favorable than that in the 1990s on which most estimates are based).⁴⁴ In addition to the wide range of estimates themselves, it is not clear how many of these estimates are merely estimates of portfolio effects rather than for the combined effect of portfolio shifts and a loss of confidence. My IIE colleague Martin Baily (2003) has reported some simulation results for the US economy of an assumed rapid decline in the dollar (20 percent over two years) using the macroeconomic model of Macroeconomic Advisors. I interpret his results as relating only to the demand-switching effects of such an exchange rate path rather than the combination of expenditure-switching effects and loss of confidence effects. In any case, he finds that (relative to a baseline scenario), the rapid dollar decline leads both the federal funds rate and the 10-year treasury note yield to be significantly higher (225 to 250 basis points) than the baseline; growth is not that much lower (just over 1 percent less) because higher net exports provide an import offset to lower consumption and investment.

If confidence effects do turn out to be important in a disorderly adjustment of the US current account deficit, it could be that 10-year yields on US treasuries would be 200 to 300 basis points higher than otherwise expected; that would put them in the 7 to 8 percent range. Recall that in the six-week period between April 1, 2004 (the day before the US nonfarm payrolls estimate of 308,000 new jobs was released) and May 13, the yield on 10-year US treasuries increased by 96 basis points. With 10-year treasuries paying 7 to 8 percent, 30-year, fixed rate mortgages might well be in the neighborhood of, say, 8 to 9½ percent. Residential investment and house prices would then be expected to take a tumble, and this would likely be followed by falls in consumption and eventually

⁴³ In this connection, it is worth recalling the large and generalized increase in yields on 10-year benchmark government bonds that took place between the beginning of February and the end of March 1994. During that two-month period, such yields increased by 50 to 70 basis points in Japan, Germany, Switzerland, and Belgium; 70 to 100 basis points in the United States, Netherlands, Italy, and France; and 130 to 167 basis points in the United Kingdom, Canada, Australia, and Sweden; see IMF (1994).

⁴⁴ Roubini and Setser (2005) argue that the combination of present US fiscal deficits and US growth rates “ought” to produce long-term US interest rates in the 6 percent range and that low real interest rates in the United States and Europe, along with enormous reserve accumulation in emerging economies, are anomalies that will not last.

business investment. In this scenario, US economic growth could fall in 2006 from, say, 3¼ to 1 percent—or even into a recession. Put in other words, the eagle would have joined the dragon in a slowdown.

Moreover, if the slowdown were mainly attributable to fears about the sustainability of the US current account deficit, it is not obvious that the slowdown would be over in a few months. Expansionary fiscal policy would not be available to counteract the slowdown because this would only add to concerns about the US budget deficit and about the low US national saving rate. Presumably, the decision to lower US interest rates would need to await progress in stabilizing expectations about further declines in the dollar. Concerted exchange market intervention by the G-3 in support of the dollar could buy some time but would likely be at best only of short-term effectiveness in the absence of progress on the underlying determinants of current account imbalances. And arranging a Plaza II or Bonn Summit type of policy coordination package would take time to negotiate.

III. IMPACT OF AN OVERLAPPING CHINA-US SLOWDOWN ON EMERGING ECONOMIES

If China and the United States did suffer slowdowns along the lines suggested above, the outlook for emerging economies in 2006 and 2007 would be considerably less favorable than it is today:

Prospects for emerging-market exports and for their real GDP growth would decline; their costs of external (and internal) financing would rise; private capital flows to many of them would fall off; and the challenges facing exchange rate, fiscal, and monetary policies would become more demanding. In this section, I outline some of the expected effects and indicate which countries would likely be more vulnerable under each of the main transmission channels.

Bilateral Export Links and Commodity-Price Effects

If growth in China and the United States slows, so too will their demand for imports.⁴⁵ A large depreciation of the US dollar would further decrease import demand in the United States. This means that economies that depend relatively heavily on the Chinese and US markets as destinations for their exports will, *ceteris paribus*, be most adversely affected. So too will emerging economies where exports make up a large share of GDP.

⁴⁵ Anderson (2005a) reports that the slowdown in China's import growth has probably already begun—with nominal and real import growth in January and February of 2005 considerably below the rates for 2004 (on a year-over-year basis); more recent data through May 2005 suggest that China's import slowdown is continuing.

Table 5 identifies the emerging economies that would fall under these criteria for 2004.⁴⁶ As shown in column (1), Hong Kong, Korea, and Taiwan head the list of economies whose total exports in 2004 were most dependent on China.⁴⁷ More interesting is the appearance in the top 10 of several commodity-producing economies, mostly from Latin America—namely, Chile, Peru, Argentina, and Brazil. Some of China’s Asian neighbors—the Philippines and Singapore—also make the top 10. Taken as a group, emerging economies in Eastern Europe have relatively small export exposures to China, as does the United States. The ordinal rankings for 2003 are broadly similar, with Hong Kong, Korea, and Taiwan occupying the top three spots. In column (2), I show the analogous ranking of dependence on exports to China (for 2004), but this time using GDP (rather than total exports) as the denominator. Because Asian emerging economies—particularly, Hong Kong and Singapore—have on average much higher degrees of export openness than economies in Latin America, the GDP-adjusted export ranking results in Asian emerging economies taking the top seven positions, with only Chile from Latin America slipping into the top 10.

Columns (3) and (4) of table 5 do the same kind of export-concentration calculations for emerging-market exports to the United States. Here, Latin American emerging economies, led by Mexico, show the highest shares of total exports going to the US market. But it is noteworthy that four Asian economies, led by China itself, make it into the top 11 for 2004, along with Saudi Arabia; the rankings using 2003 data are broadly similar.⁴⁸ Again, adjusting by the share of exports in GDP—as shown in column (4)—vaults the very open economies higher up on the list, with Hong Kong, Singapore, and Venezuela then being the three most dependent on the US market, with Mexico and Malaysia close behind and with China occupying the number seven spot. Finally, columns (5) and (6) of table 5 combine the results for China and the United States to show the economies that would be

⁴⁶ There are, of course, additional yardsticks one could use to draw inferences about the impact of a China-US import slowdown on emerging-economy exports, including the contribution of the Chinese and US markets to the growth of total exports in 2003–04. Anderson (2004b) reports that Taiwan, South Korea, and Singapore were the Asian emerging economies for whom China’s contribution to total export growth was largest in 2004. One could also take into account differences in income elasticities for the export products of different economies; for example, it is generally agreed that the income elasticity of demand for manufactures is higher than that for primary products. Some authors (e.g., Reinhart and Reinhart 2001, Frankel and Roubini 2000) interpret these differences as implying that Asian emerging economies (with a high share of manufactures in their exports) would, *ceteris paribus*, be more adversely affected by a growth slowdown in their export markets than would, say, Latin American countries (with a lower manufacturing share in their exports); others counter that Asian economies can more easily (than Latin American economies) switch either from slow-growing export markets to faster-growing ones or to the domestic market.

⁴⁷ Anderson (2004b) uses a different data source and reports that (excluding Hong Kong) Taiwan had the highest share of exports going to mainland China for the November 2003–November 2004 period.

⁴⁸ Adjusting for reexports from Hong Kong to the United States would probably raise the share of China’s exports going to the United States to about a third; see Goldstein and Lardy (2005b). The fact that China has a relatively high export dependence on the United States suggests that there is potential for interactions between a growth slowdown in China and one in the United States; because US dependence on exports to China is relatively low, the effect of economic developments in China on the US economy would have to operate mainly via other channels (e.g., the effect of exchange market intervention on US interest rates).

most affected by a joint import slowdown in the two locomotives. *The bottom line, shown in column (6), is that Hong Kong's exports would be most affected by an overlapping China-US import slowdown, followed by Singapore, Malaysia, Venezuela, and Mexico. European emerging economies congregate near the bottom of the list.*

By focusing on the destination of exports, calculations like those in table 5 underestimate the effect of China and the United States on emerging-economy export earnings. This is because some emerging economies—notwithstanding the longer-term switch away from primary products toward manufactures—depend to a nontrivial extent on exports of primary commodities whose prices are set by world supply and demand conditions, and because China and the United States are large enough consumers and/or producers of these goods to affect world demand/supply and hence, world prices. Since such primary-product exports also go to destinations other than China and the United States, a bilateral calculation underestimates the influence of those two large economies. Figures put together by the IMF (2004b) indicate that the United States and China together account for roughly a quarter of global consumption of wheat; a third or more of global consumption of petroleum, copper, steel, and aluminum; and two-fifths or more of global consumption of cotton and soybeans. In terms of the increase in global demand for such commodities in recent years, China's influence would be much greater than implied by its share of global consumption.⁴⁹ Lardy (2005) notes, for example, that China alone accounted for 45 percent of the increase in global oil demand in 2002–03. China's contribution to the 2003–04 increase in global demand for metals would be larger yet than for petroleum. Large changes in production of primary commodities in these two economies, particularly when they go in the opposite direction to that of consumption, can also result in large changes in imports, often again with potentially significant implications for global prices. China's steel imports increased by 42 percent in 2002 and by an additional 52 percent in 2003. But reflecting the effects of both diminished overheating and expansion of domestic steel production, steel imports fell by 21 percent last year, and the expectation is that China will be a net exporter of steel this year.

Reinhart and Reinhart (2001) surveyed a group of empirical studies that suggest that slower growth in industrial countries, especially the United States, has historically been associated with weakness in real commodity prices; more specifically, they report that a one percentage point drop in industrial production growth in the industrial countries results in a drop in real commodity prices of roughly 0.77 to 2 percent, depending on the study.

The upshot of joint US-China influence on global commodity prices is that an overlapping slowdown in the two economies could have a noticeable moderating effect on the path of

⁴⁹ Simpfendorfer (2004) estimates that in 2003, China accounted for 121 percent of the increase in global copper demand; the corresponding percentages for steel, iron ore, aluminum, and primary nickel were 90, 66, 51, and 44 percent, respectively.

commodity prices in 2005–07, with mixed results for emerging economies. Net exporters of those commodities would be adversely affected while net importers would gain.

The IMF (2004b) has estimated that a 30 percent decrease (increase) in average crude oil prices would reduce (increase) the import bill of emerging and developing countries by about one-half percent of GDP, while decreasing (increasing) the oil revenues of oil exporters by just over 3 percent of GDP. Estimates produced by the Bank of England (2004b) suggest that among a sample group of 12 net oil-importing emerging economies, those that would gain most from a large decrease in world oil prices would be (in descending order) Thailand, the Philippines, Pakistan, Korea, India, Turkey, Czech Republic, Poland, South Africa, China, Peru, and Brazil.

To get a rough picture of which emerging economies would be more vulnerable to a decline in primary commodity prices, we identified those economies that had 5 percent or more of their total exports during the 1990–99 period in any of 35 disaggregated product categories within the broader groups of beverages, energy, food, agricultural raw materials, and metals.⁵⁰ The highest export concentration seems to be in crude oil. Moving beyond oil exporters that are not in our emerging-economy group (e.g., Nigeria, Saudi Arabia, Iran, etc.), table 6 indicates that Venezuela obtained nearly four-fifths of its export revenues from crude oil; Russia, Colombia, Indonesia, Mexico, and Argentina were next in line—all with export concentrations in oil that were 10 percent or higher.⁵¹ The metals group is another category that has made a relatively large contribution to the export earnings of some emerging economies, with Chile having obtained about 40 percent of export earnings from copper and Brazil about 7 percent from iron ore.⁵² Other notable export concentrations occur in coffee (Colombia, 18 percent), natural gas (Russia, 17 percent, and Indonesia, 10 percent), coal (Colombia, 8 percent, South Africa and Poland, 6 percent each), iron ore (Brazil, 7 percent), soybean meal (Argentina, 8 percent), soybean oil (Argentina, 5 percent), wheat (Argentina, 5 percent), palm oil (Malaysia, 5 percent), and hides (Argentina, 5 percent).⁵³ A recent World Bank forecast (World Bank 2005a) suggests that coal, soybean meal, soybeans, wheat, and sawn wood are among the primary commodities expected to suffer price declines in 2005. *If one takes the share of nonmanufactured exports in GDP as a rough indicator of vulnerability to a decline in export earnings from primary commodities, then the emerging economies with the highest vulnerability in 2002 were (in descending order):*

⁵⁰ I am indebted to Kalpana Kochar of the IMF research department for sharing these data with me.

⁵¹ Refined oil is not regarded as a primary commodity in table 6.

⁵² A Bank of England (2004b) report indicates that in 2004 exports of metals accounted for roughly 11 percent of Chile's GDP; the corresponding figures for other metals exporters were as follows: South Africa (6 percent), Russia (5 percent), Czech Republic (4 percent), and Brazil (3 percent).

⁵³ If soybeans were regarded as a single commodity rather than a group of separate products (soybean meal, soybean oil, etc.), Argentina's degree of export concentration would be higher than suggested in table 6.

Venezuela (24 percent), Russia (24 percent), the Philippines (23 percent), and Chile (22 percent);⁵⁴ at the other end of the spectrum, Korea, India, China, Taiwan, and Turkey all have shares of nonmanufactured exports in GDP that are 3 percent or lower (table 7).⁵⁵

If a joint China-US growth slowdown led to a lower medium-term price path for primary commodities than currently priced into futures markets, there could also be repercussions in financial markets. An example: Over the past year, there has been a surge of funds flowing into securitized commodity assets, attracted by the large price rises for primary commodities. According to Verleger (2005), roughly \$50 billion to \$75 billion is now invested in this asset class, with the bulk of the funds being managed by major investment and commercial banks (e.g., Goldman Sachs, Morgan Stanley, Barclays, etc.). He estimates that as much as 90 percent of the money comes from pension funds. The implicit assumption is that strong demand for energy, combined with supply restraints (e.g., the influence of the Oil and Petroleum Exporting Countries or OPEC), will keep oil and other energy prices high. Verleger (2005) argues that swap and futures markets for oil are not large enough to handle a surge of speculative buying like the one that occurred last year without large price increases. But eventually profit margins will fall as more buyers enter the market, and inventories will increase in response to high prices. Negative shocks to demand or government action to lower prices could then burst the bubble.⁵⁶ Although the amount invested in such energy funds is small relative to assets of the world's largest pension funds (over \$6 trillion), it is not clear how positions in other financial markets would be affected by a pull-back from such commodity speculation.

To sum up, the available evidence supports the common-sense notion that slower growth in both China and the United States would on balance be adverse for emerging-market exports and, ceteris paribus, for emerging-market economic growth as well. Several recent studies have attempted to provide somewhat more specific estimates of such trade-induced growth effects.

The September 2004 IMF *World Economic Outlook* (IMF 2004b) considers the likely implications of a one-time 10-percentage point decline in the growth of China's imports for domestic use, arising from the further slowdown in domestic investment. Such a decline would be consistent with an initial drop of 5½ percentage points in China's real investment growth and would

⁵⁴ Singapore and Malaysia also appear in column (2) of table 7 with relatively high vulnerability, but the importance of reexports in those economies makes the interpretation of such data ambiguous. If the vulnerability indicator instead was the share of nonmanufactures in total exports, then Venezuela, Chile, Russia, Argentina, and Colombia head the list; see left-hand column of table 7.

⁵⁵ Preliminary indications are that the data on primary product concentration for 2004 would be quite similar to that for 2002.

⁵⁶ Verleger (2005) does not argue that increased investment in securitized energy assets was the primary factor pushing up global oil prices last year. Instead, he regards such investment as adding to the price pressure caused by "fundamentals." Among Verleger's (2005) fundamentals is the rapid growth of oil consumption in China and India (i.e., an average growth rate of 7 percent a year over the 1990–2003 period versus a growth rate of 0.8 percent a year for the rest of the world).

correspond to an initial drop of 2½ percentage points in GDP (and eventually a 4 percentage point decline if multiplier effects are taken into account). The impact (inclusive of multiplier effects) on the rest of Asia is estimated to be a 0.4 percentage point drop in growth, with the Asian newly industrialized economies being most adversely affected (slowing their GDP growth rate by 0.6 percentage points). These estimates do *not* include second-round growth effects, or effects on countries' terms of trade, or offsetting policy adjustments.

A recent scenario exercise conducted by the Asian Development Bank (ADB 2004) provides more country detail and also considers the effects of a simultaneous growth slowdown in China, the United States, and Japan. The simulations employ the ADB's multiregion, multisector, computable general equilibrium model. In the first scenario, there is a cut (relative to the baseline scenario) of 5 percentage points in China's real investment growth; this reduces China's real GDP growth by 2 percentage points (again relative to the baseline). They find that such a unilateral China slowdown would have the most pronounced effects on Hong Kong, whose growth falls by almost 1 percentage point; the next most-affected economies are Taiwan and Singapore (by just over 0.4 percentage points), with Indonesia, Malaysia, the Philippines, and Thailand next in line. Growth in Latin America is estimated to fall by only 0.2 percent. The sectors in China most affected by the investment fall would be motor vehicles, ferrous metals, and construction; the least affected sectors are clothing, electronics, and food. In another scenario, the ADB adds growth slowdowns in the United States (to 2 percent) and in Japan (to 1 percent) to the hypothesized growth slowdown in China. This reduces global economic growth by 1 percentage point and increases the growth slowdown in Asian emerging economies by about 40 percent from the estimated slowdowns in the only-China slowdown scenario (e.g., Hong Kong's growth slows by 1.4 percentage points instead of 1 percentage point). As the authors of the exercise acknowledge, one important limitation of their estimates is that they do not include some important transmission channels, such as private capital flows and contagion in financial markets.

On the whole, the message from the bilateral trade figures and from the simulation exercises is that an overlapping growth slowdown in China and the United States would, via the channel of trade interactions, reduce growth in Asian emerging economies by a moderate degree (perhaps on the order of a half to three-quarters of a percentage point). The induced effects of such a slowdown on global commodity prices are, I think, harder to pin down—although the direction of influence is certainly clear.

Slower growth in emerging economies would not by itself a crisis make. But there are other channels of crisis vulnerability to consider.

Increased Interest Costs and a Fall in Private Capital Flows to Emerging Economies

Between February and June 2005, most forecasters revised downward their expectations about the future path of short-term and long-term US interest rates.⁵⁷ Still, the market seems to expect the federal funds rate to rise to about 3¾ percent by the end of this year and to roughly 4 percent by mid-2006; this would be close to what is regarded a “neutral” level—often taken to be 4 to 4½ percent. According to the June 2005 Blue Chip consensus forecast, the yield on 10-year US treasuries is expected to average just under 5 percent (4.9 percent) in 2006.⁵⁸ On top of this expected increase in US interest rates, I have speculated that if there were a disorderly adjustment to the large US current account deficit (say, in mid-2006), then there could well be a further increase in US interest rates (less at the short than the long end of the yield curve). Longer-term interest rates in other G-7 economies would also be expected to reflect a risk premium associated with tensions over global adjustment.⁵⁹ The issue at hand is how would higher US interest rates affect the cost and availability of finance to emerging economies and which emerging economies would likely be the most affected?

Over the past dozen years, there has been quite a lot of empirical work analyzing the impact of financial conditions in industrial countries (or in global markets) on capital flows and on financing costs of emerging economies.⁶⁰ Much of that work has divided the factors affecting private capital flows to emerging economies into either “push” factors, reflecting conditions in creditor countries, or “pull” factors, reflecting conditions in the debtor countries. More recently, a complementary literature has also developed on the effects of “sudden stops” in private capital flows to emerging economies and on what features of these economies make such sudden stops more costly in some countries than in others.⁶¹

The recent empirical study by Ferrucci et al. (2004) provides a good recent example of the push-pull framework. They seek to explain first, industrial-country banks’ lending flows to 17 emerging economies over the 1986–2003 period and second, the interest rate spread on JP Morgan’s index of emerging-market bonds from 1991 to 2003. The borrower-specific “pull” factors are

⁵⁷ Real GDP forecasts for 2005 changed by less; for example, the Blue Chip consensus forecast for 2005 real GDP growth was 3.6 percent in February (10), 2005, versus 3.5 percent in June (10), 2005.

⁵⁸ In February 2005, the forecast for the 10-year yield was 5.3 percent.

⁵⁹ Short-term interest rates in other G-7 countries could be the same or could be lower after such a shock depending on whether countries with appreciating currencies vis-à-vis the dollar took monetary policy actions to offset the demand-shifting effects of more appreciated exchange rates. As suggested earlier, there has so far (since February 2002) not been much inclination to lower policy interest rates in Europe in the face of a depreciating dollar and a strongly appreciating euro.

⁶⁰ See Calvo, Leiderman, and Reinhart (1993), Eichengreen and Mody (1998), Reinhart and Reinhart (2000), Arora and Cerisola (2001), Ferrucci et al. (2004), IMF (2004c), and Goldman Sachs (2005b).

⁶¹ See Calvo and Talvi (2005) and the earlier literature reviewed therein.

intended to capture factors affecting either the demand for credit by an emerging economy or the risks involved in lending to it; these factors are proxied by variables like real GDP growth, the ratio of external debt to GDP, an index of local-currency equity returns, and bilateral exchange rate volatility.⁶² The “push” factors are meant to reflect the opportunity cost of lending to the creditor, the risk appetite of the creditor, and the financial position of the creditor. Ferrucci et al. (2004) attempt to capture those influences by including the global equity return, the yield spread between high- and low-rated US corporate bonds, and real GDP growth in creditor countries. A few other variables are added as controls for other influences.

Ferrucci et al. (2004) find that this combination of push and pull factors does a decent job of explaining bank lending flows, with all the estimated coefficients (except for creditor-country GDP growth) being statistically significant with the expected signs. They find that push factors were, on average, just as important as pull factors in motivating bank flows over this period. Risk attitudes in creditor countries and returns on alternative investments (here, global equity returns) turn out to have a large influence on the results. The latter finding is consistent with much of the earlier empirical literature on explaining total capital flows to emerging economies that found interest rates in creditor countries were a key explanatory factor—that is, the higher were real G-7 or US interest rates, the lower, other things equal, were private capital flows to emerging economies (see, for example, Reinhart and Reinhart 2000 and Frankel and Roubini 2000).

Turning to explaining emerging-market bond spreads, they employ a similar framework. Here, pull factors are intended to capture the debtor’s financial position and creditworthiness (represented by external debt/GDP, fiscal surplus/GDP), along with its ability to service its foreign debt (proxied by trade openness, amortization/reserves, and current account/GDP). The push variables are supposed to reflect the opportunity cost of purchasing emerging-market bonds (yields on short- and long-term US debt), investor risk appetite (spread on BB and BBB bonds), and the macroeconomic environment in which the investment community operates (US equity index). Ferrucci et al. (2004) argue that the expected sign on long-term creditor interest rates is ambiguous. Rising yields could be associated with increased borrowed costs to emerging markets and hence, wider spreads. On the other hand, higher long-term interest rates could be linked to a steeper yield curve if short-term rates do not rise, or rise by less, than long yields; a steeper yield curve, in turn, could induce carry trades where investors borrow short in domestic markets and invest in higher-yielding, long-term debt in emerging markets, thereby compressing spreads.

A key finding of Ferrucci et al. (2004) is that external push factors are highly significant, especially short-term US interest rates—which have a large, positive significant effect on emerging-

⁶² Some authors also include the liberalization of financial markets and large-scale privatizations as among the “pull” factors.

market spreads; in contrast, long-term US interest rates are found to have a strong negative impact on spreads.⁶³ The main policy lesson that Ferrucci et al. (2004) see in their results is that since both banking flows and bond spreads are significantly influenced by push factors, emerging markets should not borrow too heavily during times of a benign external environment, as a reversal in credit conditions is more often than not beyond the control of the borrower.

The IMF (2004c) and Goldman Sachs (2005b) also have recently estimated models for emerging-market interest spreads that share some of the same conceptual foundations as in Ferrucci et al. (2004). Writing in the early fall of 2004, the IMF model generates the conclusion that if the US federal funds rate should rise by 275 basis points by mid-2005, the EMBI global spread would rise by another 100 basis points or so. The Goldman Sachs (2005b) study reports four noteworthy conclusions: (1) Of the 675 basis point narrowing of emerging-market spreads between September 2002 and February 2005, about 40 percent of it is explained by domestic fundamentals in emerging markets, 17 percent by stronger export prices and global growth, 20 percent by greater availability of global liquidity, and 23 percent by greater risk appetite; (2) domestic fundamentals played a much bigger role in Turkey's spread compression over this period than in Brazil's spread compression; (3) if commodity prices and risk aversion remain at current levels and if global liquidity conditions return to a more normal level—defined as a yield on 10-year US treasuries of 5½ percent, emerging-market spreads would widen by 120 basis points; and (4) looking at the April 2004 bond market experience where yields on 10-year US treasuries increased by almost 100 basis points in six weeks and where Russian, Turkish, and Brazilian spreads rose by 108, 171, and 202 basis points, respectively, leads to the view that a 100 basis point increase in yields on 10-year treasuries would probably push up spreads on riskier emerging-market credits by a further 200 basis points. Although they do not test it, the Goldman Sachs team also conjectured that a very sudden increase in US treasury yields would have a greater impact on emerging-market spreads than if the increase were spread out over a year. In the end, they do not believe that emerging-market spreads will blow out in the dramatic way seen in some earlier Fed tightening cycles.

Since measures of risk appetite frequently appear in models explaining private capital flows to emerging economies and/or the spreads charged on those flows, it is worth mentioning another empirical regularity in the empirical literature, namely, that such risk appetite variables—sometimes simply referred to as investor sentiment—tend to be quite volatile over time and typically show large falls in periods surrounding emerging-market financial crises (e.g., the Asian financial crisis, the

⁶³ This contradicts the empirical results obtained by Arora and Cerisola (2001) but supports those of Eichengreen and Mody (1998).

Russian crisis, etc).⁶⁴ Kumar and Persaud (2002) have constructed one such measure of risk appetite. They maintain that when the appetite for risk increases, excess returns of very risky assets increase by more than those for less risky assets. They then compute the Spearman rank correlation between the volatility and excess return for a sample of 17 currencies that are relatively liquid and where the forward exchange rate is not encumbered by capital controls (covering nine industrial countries and eight emerging markets); a positive correlation means high risk appetite, while a negative one means low risk appetite. The riskiest currencies in the sample were for New Zealand, Mexico, Poland, Australia, and the Czech Republic. They find that periods of significantly high risk appetite appear to be more frequent and longer lasting than periods of significantly low risk appetite—perhaps reflecting the optimistic bias of investors. They also report that their measure of risk appetite is highly correlated with major market discontinuities and does a good job of predicting currency crises. Gai and Vause (2004) report that several measures of risk appetite indicate that high risk appetite has been high over the past two years.

A central thesis of the sudden-stop literature is that a collapse of capital flows to emerging markets is the dominant common characteristic of emerging-market financial crises. A related proposition is that domestic financial vulnerabilities in capital-importing countries largely determine how these countries fare after being hit with a sudden stop. Calvo and Talvi (2005) provide a revealing account of how the sudden stop triggered by the Russian crisis in 1998 affected Latin American emerging economies. They make the following points: (1) Beginning in 1989–90, there was a huge increase in capital flows going to emerging economies—including to Latin America, which saw these flows go from an annual rate of minus 1 percent of GDP in 1989 to plus 5½ percent of GDP in the year ending 1998Q2; (2) at the peak, these capital inflows were financing 24 percent of total investment in Latin America; (3) the Russian default in August 1998 imposed losses on financial intermediaries investing in emerging markets—some of whom were highly leveraged—and this led to a liquidity crunch, forcing a sell-off of emerging-market bonds across the board at fire sale prices to meet margin calls; (4) this, in turn, precipitated a sudden, synchronized, and large increase in interest rates in emerging markets—with spreads for Latin American countries rising from 450 basis points just before the crisis to 1,600 basis points in September 1998—and it took five years for spreads to return to the levels prevailing before the Russian default; (5) capital inflows in Latin America came to a sudden stop—falling from 5½ percent of GDP just before the crisis to less than 2 percent of GDP

⁶⁴ Gai and Vause (2004) review a number of different measures of risk appetite. They emphasize that risk appetite and risk aversion should be kept distinct. They define risk appetite as the willingness of investors to bear risk and argue that it depends on both the degree to which investors dislike uncertainty (about their future consumption) and the level of that uncertainty (which, in turn, depends on the macroeconomic environment). Risk aversion is only about investors' dislike of uncertainty. Since risk aversion is about the intrinsic make-up of the investor, it should not change markedly or frequently over time; not so for risk appetite, which should change when the macroeconomic environment deteriorates.

one year later; (6) every major country in Latin America was subject to the sudden stop—including Chile—with its record of high growth and good policies—which in fact experienced the largest fall-off in flows; (7) the severe tightening in monetary conditions resulted in a severe drop in asset prices, with Latin American stock markets falling by nearly 50 percent between 1998 and 2002; (8) domestic bank credit flows to the private sector also come to a sudden stop, declining by 20 percent in real terms; (9) as a counterpart to the sudden stop in capital flows, there was both sharp current account adjustment (from a deficit of 5 percent of GDP in the first half of 1998 to a surplus of over 1 percent in 2002) and a huge real currency depreciation (70 percent vis-à-vis the dollar); (10) there was also a severe and sustained reduction in investment levels and a large decline in economic growth; (11) despite all this, Chile did not experience a crisis, whereas Argentina did; (12) a comparison of the Chilean and Argentinean experiences suggests that the two key domestic factors conditioning the impact of a sudden stop are the openness of the economy and the degree of liability dollarization: (13) the more closed the economy, the larger the change in the real exchange rate needed to accommodate a sudden stop in capital flows; and (14) the higher the degree of liability dollarization, the more adverse are the balance-sheet effects induced by a depreciation of the domestic currency relative to the dollar.

The September 2004 issue of the IMF's *Global Financial Stability Report* (IMF 2004c) also looks at sudden-stop case histories—focusing on four former Asian-crisis economies, along with Russia, Argentina, Brazil, and Turkey. One of the questions they ask is what factors determine the length of the deleveraging process—that is, for how long the postcrisis reduction of external liabilities goes on. Whereas Argentina, Brazil, and Turkey had relatively short deleveraging periods (one to two years), Thailand, Indonesia, Korea, Russia, Malaysia, and the Philippines had relatively long ones (ranging from nearly three years to more than five years). They found that a very weak banking system (resulting in a crisis), a relatively underdeveloped domestic bond market, and a low share of securitized external debt relative to bank debt—all were associated with a relatively long deleveraging process.

To sum up, what I take away from these studies on the cost and availability of private capital flows to emerging economies—and links to US monetary policy—are a set of observations.

There is ample precedent for rapid and sizeable shifts in risk appetite or market sentiment that can get reflected both in long-term bond yields in the major creditor countries and in the interest rate spread that emerging economies pay in excess of the yield on US treasuries. Sometimes those shifts in market sentiment are initiated by unexpected changes in US monetary policy and sometimes by unexpected developments in emerging markets themselves. Within the span of a few months, changes of several hundred basis points can and have occurred on the EMBIG index and/or in the

spread on individual country's bonds. The amount of private capital that flows to and from emerging economies can also change quickly and markedly within a relatively short period.

As the US Federal Reserve raises the federal funds rate toward a more neutral stance—say, 4 to 4½ percent—and as long-term yields on US treasuries also increase—say, to 5 percent or so on 10-year securities—the opportunity cost of investing in emerging markets will rise. Many empirical studies have confirmed that when US short-term interest rates go up, private capital flows to emerging economies typically go down, and the interest rate spread on emerging-market bonds rises. The move away from very accommodating US monetary conditions of the past few years—and away from such ample global liquidity more generally—should result in an increase of emerging-market spreads—say, in the neighborhood of 100 to 150 basis points. Since the US yield curve will likely become flatter—not steeper—over the next 18 months, it is unlikely that the rise in US long-term rates will give rise to an upsurge in carry trades, which will, in turn, lower the spread on emerging-market bonds. If the Federal Reserve got behind the curve on inflationary developments and had to raise US interest rates faster than now anticipated, the rise in emerging-market spreads would be larger.

If there were a disorderly adjustment to the large and rising US current account deficit—on top of the expected tightening of US monetary policy—then there would be a further rise in long-term interest rates, probably most pronounced in the United States but also likely evident in other G-7 countries. This increase in uncertainty could also produce a pronounced shift in sentiment away from high-risk investments, including emerging-market debt and equities. A sudden stop in private capital flows to many emerging economies and a further rise in the EMBIG spread (say, of another 100 to 200 basis points) might then occur, affecting a wide array of emerging economies, with the highest-yield credits probably being most affected initially.⁶⁵ A further round of selling pressure could follow if initial losses on some emerging-market bonds for cross investors were sufficient to trigger risk-management strategies that called for further pull-backs in exposure to emerging economies to meet value-at-risk guidelines.

With their export prospects weaker and with higher costs of external finance, the creditworthiness of emerging economies would have declined some—notwithstanding improved fundamentals over the past two years or so. The higher cost and lower availability of external finance would probably spillover to domestic credit and equity markets, with negative consequences for

⁶⁵ I say that private capital flows to “many”—rather than all—emerging economies may experience a sudden stop. In a scenario in which *both* the United States and many emerging economies are regarded as less attractive destinations for investment, a large amount of capital flows would presumably want to go somewhere else. This “somewhere else” might include Europe, Japan, other OECD countries, *and* some emerging economies that are regarded as less vulnerable in the new risk environment. In this sense, the “flight to quality” need not involve exclusively the G-7 or G-10 countries.

investment and economic growth. Depending on the magnitude of the sudden stop and the amount of induced capital outflows, exchange rates of many emerging economies could also depreciate, and their current accounts could go further into surplus.

The extent to which individual emerging economies would be adversely affected by such a global interest rate shock would depend not only on whether they were simultaneously subject to country-specific bad/good news but also on their structural characteristics. More specifically, emerging economies with high external financing needs, high ratios of both short-term external debt relative to reserves and of domestic debt service to GDP, low access to emergency sources of liquidity, floating interest rates, short remaining maturity on debt, a large share of foreign currency–denominated or foreign currency–indexed debt, small domestic bond markets, low export openness, and weak domestic banking systems would be disadvantaged relative to others.

There could also be “contagion” of financial difficulties from one or more emerging economies to others. Both the Asian financial crisis of 1997–98 (that began in Thailand) and the Russian crisis of 1998 showed that the origin of such contagion need not be in an economy with a large weight in international financial markets. In addition, contagion need not operate exclusively, or even mainly, via bilateral trade and capital flow links from the country first affected to others. Two examples illustrate the point. Although financial-sector weaknesses in Asian economies had been evident for many years before 1997, it took the crisis in Thailand to remind and “wake up” investors of this fact. But once investors did awake, they looked around the region and proceeded to write down economies with vulnerabilities similar to those in Thailand, particularly, financial-sector weaknesses.⁶⁶

Second example: The losses suffered by Japanese banks in Thailand, coming on top of those suffered domestically in the bursting of the equity and land price bubble, induced them to pull back their exposure not only in Thailand but across the region more broadly. Those Asian economies that shared the same dominant external bank lender (Japanese banks) as Thailand, suffered from this pull-back, but the Philippines—which relied more heavily than others on US banks—was much less affected (Goldstein, Kaminsky, and Reinhart 2000).

One of the vulnerabilities now widespread among emerging economies is a level of public debt (relative to GDP) that is considerably higher than seems prudent (see discussion later in this section). Thus, if one or more highly indebted emerging economies got into debt-servicing difficulties as a result of higher interest rates and a sudden stop in capital flows, it could be that other emerging economies with high debt would be adversely affected by contagion.

⁶⁶ See Goldstein (1998) on the application of the “wake-up” hypothesis to the Asian financial crisis.

Table 8 brings together 30 indicators often associated with vulnerability to higher interest rate spreads and/or to a decline in private capital flows to emerging economies and ranks almost 20 emerging economies on each of those indicators.⁶⁷ Much of the data for the debt and debt-servicing variables come from the January 2005 issue of JP Morgan's *Emerging Market Debt and Fiscal Indicators*. A notable advantage of this dataset is that figures are provided not only for 2004 but also for 2005 and 2006 (based on projections made by their individual country specialists, using a common set of assumptions about the global macroeconomic environment); a disadvantage is that the data on sovereign debt cover only the debt of the central government and appear to be on a gross rather than net basis. Two other caveats worth mentioning are that the debt service data for Argentina are on an accrual basis through 2004 and then on a cash basis for 2005 and 2006, and that some countries with high sovereign domestic debt amortization payments (as a share of GDP)—such as Turkey and Mexico—refinance their short-term maturities with short-term issuance.⁶⁸

Columns (1) to (3) of table 8 look at external sovereign debt service as a percent of exports for 2004, 2005, and 2006, respectively. Here, sovereign debt service includes interest payments and amortization. Exports are a good denominator to use because these external debt service payments are made overwhelmingly in foreign exchange (predominantly in US dollars). It can be seen that Argentina, Colombia, Brazil, and Turkey have the heaviest external debt service among this group of emerging economies.⁶⁹ Argentina's external debt service payments decline sharply after (2004) its recent debt restructuring, but it still is near the top of the pack even in 2006. Venezuela and Indonesia also sit rather high on the external debt service ladder. In contrast, most Asian emerging economies and Eastern European economies have relatively low external debt servicing burdens. Because an overlapping China-US slowdown would both reduce emerging-market export earnings and increase their interest cost, it would produce a "double whammy" for emerging economies—especially those high up on the list.

In columns (4) to (6) of table 8, I look at sovereign domestic debt service payments expressed as a share of GDP. Since there is arbitrage as between international and domestic financial markets and since international investors are increasingly active in local bond markets, domestic interest rates may also be affected by a rise in global interest rates. Here, the country rankings change somewhat. Turkey now heads the list, followed by Brazil and Hungary.⁷⁰ Mexico and Poland also

⁶⁷ Because the indicators use data from different sources, the sample of emerging economies ranked under each indicator is not always the same (although the overlap across indicators is pretty high).

⁶⁸ A special problem with assessments of Argentina's vulnerability is that its cross-country ranking can be highly sensitive to whether the particular vulnerability indicator relies on data before versus after its recent debt restructuring.

⁶⁹ Again, recall that the figures for 2004 indicate what Argentina owed in external debt service in 2004—not what it actually paid.

⁷⁰ Recall again that large short-term debt issuance is associated with high amortization payments.

have heavier domestic debt service burdens than external ones, whereas Argentina and Colombia are in the opposite camp.

In columns (7) to (9) of table 8, external and domestic debt servicing obligations are brought together to get a picture of total sovereign debt service as a share of GDP. Turkey's ratio exceeds everyone else's by a significant margin in all three years, with Brazil, Hungary, Mexico, and the Philippines next in order. Of the seven economies with the heaviest total sovereign debt service in 2006, three come from Europe, three from Latin America, and one from Asia.

Debt servicing difficulties that begin in the private sector of the economy can generate a crisis for the economy as a whole—as we saw in the Asian financial crisis. The private sector—like the public sector—would find its financing costs increased by a rise in global interest rates. Column (10) of table 8 looks at the private sector's debt service relative to GDP in 2006. Argentina, Chile, and Indonesia have the heaviest (projected) burdens. The next tier encompasses Brazil, Colombia, Poland, Turkey, and the Philippines.

Others things equal, the higher the share of government debt with floating interest rates and, within the floating rate component, the higher the share indexed to domestic interest rates, the greater would be the country's vulnerability to suddenly higher global interest rates. Columns (11) and (12) use data obtained from Borensztein et al. (2004) on the structure of domestically issued government bonds (at end-2001). Column (11) provides data on the share of fixed-interest rate debt in the total. Here, the economies with the lowest share of fixed rate debt are Brazil, Venezuela, Turkey, Malaysia, and Chile. This reflects the broader tendency for Latin American emerging economies to have a much lower share of fixed rate debt than either Asian or European emerging economies. In column (12), economies are compared with respect to the share of floating rate, domestic government debt that is tied to the domestic interest rate. On this yardstick, the economies most vulnerable to a rise in domestic interest rates are Venezuela, Malaysia, Mexico, Brazil, Turkey, and Indonesia.

In the rest of table 8, I look at vulnerability indicators that are tied primarily to a sudden decline in private capital flows. Columns (13) to (15) of table 8 examine three measures of external financing needs in 2004–05. In columns (13) and (14), the measure is the sum of the current account plus external debt amortization (public and private)—expressed as a share of the country's international reserves. Turkey, Hungary, Argentina, Mexico, and Indonesia show the greatest external financing need in 2004 and the top five rankings are similar in 2005—except that Argentina drops out (again, reflecting the effect of Argentina's recent restructuring of its external debt) while

Colombia and Poland move up in the vulnerability ranking.⁷¹ Note that in quite a few Asian emerging economies (along with Russia and Venezuela) the current account surplus exceeds external debt amortization in 2004. Column (15) subtracts from (the numerator of) external financing needs (in 2004) the flow of inward foreign direct investment; comparing column (15) with column (13), one observes that the rankings are broadly similar. In column (16), I give just the current account position as a share of GDP. What we see here is that whereas in Hungary, Czech Republic, Turkey, and South Africa, current account deficits add substantially to external financing requirements, the opposite prevails in most other emerging economies, and especially so in Russia, Malaysia, and Venezuela, which are currently running large external surpluses.

In columns (17) to (19), I show three indicators that bear some relationship to rollover risk in external and domestic debt, respectively. Column (17) presents the ratio of short-term to total external debt, column (18) shows the share of short-term debt in domestically issued government bonds, and column (19) shows the average original maturity of new bond issues.⁷² Topping the economies with high ratios of short-term to total external debt are China, Czech Republic, Korea, and Thailand—countries that have not heretofore been high up on our external-financing vulnerability indicators; they are followed by Mexico, Turkey, Chile, and Poland. Turning to the share of short-term debt in domestic public debt, the Czech Republic, the Philippines, Poland, Mexico, and Hungary seem to be the most disadvantaged. As ranked by the original maturity of new bond issues, Thailand, Russia, India, and Poland appear to have the shortest maturities.

Liquidity risk also merits attention. The ratio of short-term external debt to reserves—a measure that combines elements of liquidity and currency mismatch—is shown in column (20) of table 8. Several empirical studies have found that countries that had a high ratio of short-term external debt to reserves (unity and higher) were far more likely to have had a currency crisis in the 1990s than countries with relatively low ratios (Frankel and Rose 1996). Using the data for (September) 2004, the countries that had the weakest liquidity position were Argentina, Hungary, South Africa, Turkey, and Brazil; China and India are at the bottom of the list. In column (21), we look at a related liquidity concept, namely, the ratio of short-term external debt to net foreign reserves, where net reserves are gross reserves less total credit and loans outstanding to the Fund. As of 2003, the rankings are broadly similar, except that Turkey and Brazil come out as more liquidity-constrained under the net reserves indicator, reflecting their large loans from the Fund. To bring in a crude proxy for the available amount of emergency official assistance from the IMF, column (22) compares countries' short-term external debt with 250 percent of their quota in the IMF. The

⁷¹ The rankings for 2006 are identical to those for 2005—at least as regards the eight most vulnerable economies. In Turkey, Hungary, Colombia, Indonesia, and Poland, estimated external financing needs in 2006 are larger—in some cases, substantially so, than in 2004; the opposite is true for Argentina, Mexico, and Chile.

⁷² Short-term debt is defined as an initial maturity of less than one year.

implicit assumptions here are that a country in dire straits might get an IMF loan equal to, say, 500 percent of quota but that probably only half that amount would be available early on in the IMF program. Korea appears most vulnerable on this measure—reflecting its relatively small quota in the Fund. Turkey, Mexico, Brazil, and the Philippines also face small credit lines from the Fund relative to their short-term external debt.

In columns (23) to (25), we examine how various liquidity measures have changed over the 1997–2003 period—by examining the ratio of liquidity in 2003 to that in 1997; a figure greater (less) than one implies an improvement (deterioration) in liquidity. The measure in column (23) uses the ratio of gross international reserves to short-term external debt, while columns (24) and (25) use, respectively, the ratio of net international reserves to short-term external debt and the ratio of gross international reserves to total external debt. The three main points are: (1) The degree of improvement in liquidity positions is more widespread among emerging economies when one looks at the ratio of reserves to short-term debt than when one looks at the ratio of reserves to total external debt or the ratio of reserves to broad money; (2) there is considerable variation across emerging economies in these liquidity ratios—with countries at the bottom of the columns sometimes showing ratios five to 20 times larger than those at the top of the column, and with some economies showing a worsening of liquidity ratios since 1997; and (3) several of the emerging Europe economies—namely, Poland and Hungary—show up as having relatively low liquidity in terms of reserves.

The next set of indicators in table 8 picks up our earlier discussion about what structural characteristics make sudden stops more costly in some emerging economies than in others. Three such structural characteristics are considered: the foreign-currency share of debt, the export openness of the economy, and the size of the sovereign domestic bond market relative to reliance on international bonds. In column (26), I show the Goldstein-Turner (2004) measure of aggregate effective currency mismatch, which combines data on net foreign-currency liabilities, the foreign-currency share of the total debt, and the export openness of the economy.⁷³ The larger the negative number, the more currency mismatched is the economy and, *ceteris paribus*, the more vulnerable it is to adverse balance-sheet effects from a large currency depreciation.⁷⁴ According to this currency mismatch indicator, the most vulnerable emerging economies (in 2004) were Argentina, the Philippines, Turkey, Brazil, Chile, and Hungary. Column (27) gives the ratio of sovereign external debt to sovereign domestic debt. As discussed earlier, the basic idea here is that countries that have a large domestic bond market are less vulnerable to a sudden stop in external finance than those with a

⁷³ The foreign-currency share of total debt is an estimate of the foreign-currency shares of domestic bonds, domestic bank loans, and international bonds; see Goldstein and Turner (2004).

⁷⁴ This conclusion follows only for economies that have a net liability position in foreign exchange; a positive number means a net foreign asset position in foreign exchange; see the discussion later in this section.

smaller domestic bond market.⁷⁵ Russia, Venezuela, Argentina, Indonesia, and the Philippines are the countries most vulnerable under this metric.

Last but not least, one might ask which economies would perhaps be most susceptible to a pull-back in private capital flows if there were either a sharp decline in risk appetite or contagion from debt problems elsewhere. The IMF (2004c) reports that when there was a rapid increase in US long-term interest rates between early April and May of 2004, there was a tendency for investors to pull back markedly from local-currency, emerging-market bonds in those economies with relatively high nominal interest rates—that is, from the most risky credits. Column (28) therefore provides an ordering of emerging economies according to the nominal interest rate on overnight loans (as of March 2005). Brazil, Venezuela, Turkey, Russia, and Mexico head the list. In columns (29) and (30), I present two summary statistics that ought to be indicative of relatively high indebtedness, namely, the ratio of total external debt to exports and the ratio of total sovereign debt to GDP—both for 2004. On external debt, Argentina tops the list—followed by Colombia, Brazil, Indonesia, and Turkey; the rankings are almost identical if one redoes the exercise for 2005 and 2006 (although Argentina’s ratio falls significantly). On the public debt front, the top five are Argentina, the Philippines, Turkey, India, and Brazil.

For what it is worth, the economies in table 8 that appeared most often in the top-five vulnerability spots—spanning the 30 indicators—were Turkey, Brazil, Argentina, Hungary, and Mexico. Comparing that (global financial conditions) vulnerability ranking with the ranking for vulnerability to a slowdown in China-US import growth, it is interesting to note that Mexico is the only economy to make the top five on both criteria and that Turkey—which heads the vulnerability list on global financial conditions—is very far down the vulnerability list for slower China-US import growth, presumably because it does most of its trade with other regions (Europe); the same result, albeit to a lesser degree, applies to Argentina, Brazil, and Hungary. Recall however that, as revealed in table 7, the vulnerability to a China-US import slowdown is somewhat greater in Argentina (to a lesser extent in Brazil) than bilateral export figures would imply because these latter two economies have a relatively high share of their exports in primary commodities. All this reinforces the point made earlier, namely, that the type of transmission mechanism by which a China-US slowdown spills over to emerging markets will have a lot to say about which individual emerging economies become most vulnerable.

Exchange Rate Changes for the US Dollar and Emerging-Market Currencies

⁷⁵ Ideally, this measure should also include private debt.

In the China-US slowdown scenario outlined above, at least two kinds of exchange rate changes are likely to be going on: First, there is a large, disorderly decline in the dollar (say, on the order of 20 percent from its current level), and second, there is apt to be a sharp decline in some emerging-market currencies in response to the assumed sharp decline in private capital flows to emerging markets as a group.⁷⁶ As noted earlier, a marked depreciation of emerging-market currencies has been a prominent feature of previous sudden stop episodes (e.g., Mexico, the Asian financial crisis, the aftermath of the Russian crisis, etc.); indeed, the size of the change in the nominal exchange rate (along with the size of the change in international reserves) is the metric that is commonly used to judge whether a currency “crisis” has taken place.

It turns out, however, that it is not easy a priori to make sweeping generalizations about the likely effects of exchange rate changes on crisis vulnerability in individual emerging economies because the outcome depends on a number of key factors, including (1) whether the country’s currency is “pegged” (de jure) or not to the dollar; (2) if not pegged to the dollar, whether the country’s currency depreciates or appreciates relative to the falling dollar; (3) whether the country has a net asset versus a net liability position in foreign exchange; (4) what is the currency composition of the country’s liabilities/foreign exchange payments versus that of its assets/foreign exchange receipts; (5) whether the country’s currency is significantly overvalued or significantly undervalued; (6) whether the domestic economy is overheated versus operating well below capacity; and (7) whether the country suffers a country-specific shock in addition to any generalized reduced risk appetite for high-yield bonds. To convey the flavor of why these distinctions matter for crisis vulnerability, consider three hypothetical cases that combine these characteristics in different ways.

Case A: The emerging-market currency is pegged to the dollar, the country has a net asset position in foreign exchange, its currency is significantly undervalued, both its international reserves and external debt are primarily denominated in US dollars, and the domestic economy is overheated. If the emerging-market currency remains pegged to the dollar and most of its foreign liabilities and its foreign assets are denominated in dollars, then a large fall in the dollar sets off no important balance-sheet effects. If nondollar currencies remain fairly stable, then the country’s real effective exchange rate will likely depreciate along with the dollar, improving its overall competitive position and probably strengthening the current account. If the domestic currency is undervalued, a further depreciation will make it more so—and will probably suck in an increasing volume of short-term

⁷⁶ Again, as in the earlier discussion of capital flows, it is important to note that in this scenario, some emerging economies will fare better than the developing-country average—recording currency appreciations relative to the dollar. Indeed, because developing countries now have a large weight (about 45 percent) in the trade-weighted dollar index, it is difficult to envision a large decline in the trade-weighted exchange rate for the dollar without some of the United States’s more important emerging-market trading partners experiencing an appreciation of their currencies relative to the dollar.

capital flows—chasing gains linked to an expected revaluation of the domestic currency. If the country's strong net asset position in foreign exchange makes it appear safer than other emerging economies, it may attract additional capital inflows when other emerging economies are under strain. The risks to this country of a large fall in the dollar are mainly ones associated with larger capital inflows and a larger current account surplus feeding through into credit and monetary aggregates and thereby worsening both the domestic overheating problem and the quality of credit decisions in the banking system. There may also be a risk that a large real depreciation of the currency, in combination with both a large current account surplus and large-scale intervention in the exchange market, could give rise to charges of thwarting the adjustment of global payments imbalances—thereby raising the specter of a protectionist response against the country's exports.

Case B: The emerging-market currency is in a managed float with respect to the dollar, it has a net asset position in foreign exchange, its currency is moderately undervalued, both its international reserves and its external debt are primarily denominated in dollars, and the domestic economy is expanding at a rate slightly lower than its potential. When the dollar comes under strong downward pressure, the country has the choice either to intervene heavily to prevent the domestic currency from appreciating or to accept some appreciation of the domestic currency vis-à-vis the dollar. Suppose it chooses the latter option because it is concerned that the amount of intervention required to prevent any appreciation of the domestic currency would ultimately be incompatible with maintaining domestic financial stability. If most of the country's reserves are in dollars and if it has a net asset position in foreign exchange, it will suffer a decline in net worth because of the diminished local-currency value of its reserves (associated with the appreciation of the local currency). The appreciation of the domestic currency vis-à-vis the dollar will reduce its competitiveness in the US market but not much elsewhere if trade is fairly well balanced geographically and if the overall effective exchange rate doesn't change by much; the same appreciation will also boost the purchasing power of the country's residents. What will happen to capital inflows is uncertain: If the currency appreciation removes most of the undervaluation and if foreign investors don't discriminate much among emerging economies as a result of reduced risk appetite, capital inflows should fall; alternatively, if the country is regarded as relatively low risk and if local currency appreciation is perceived as not yet over, foreign investors may be attracted to the country's equity and bond markets. It may choose to use monetary or fiscal policy to try to offset the effect of any reduced external stimulus. Balance-sheet effects (on its international reserves) aside, this country faces relatively low risk from a large fall in the dollar unless it somehow loses discipline on monetary and fiscal policies.

Case C: The emerging economy maintains a managed float against the dollar; the country has a large net liability position in foreign exchange; its international reserves are held mainly in US

dollars, but its external liabilities are denominated in a combination of dollars, euros, and Japanese yen; the domestic currency is significantly overvalued—reflecting the influence of buoyant capital inflows; the domestic economy has been running faster than potential growth; there is a large fiscal deficit; the equity market has been booming; and, at the same time as the appetite for emerging-market declines due to higher global interest rates, the country faces bad news about the insolvency of a large domestic bank. This country will obviously have a tougher time with a large fall in the dollar. With an overvalued exchange rate, a reduced risk appetite for emerging-market debt as a whole, and a country-specific banking shock, private capital inflows could experience a sudden shock—driving down the domestic currency much farther than the falling dollar—and even more so against the yen and the euro. Problems in the banking sector may dissuade the authorities from raising domestic interest rates sharply to defend the currency.⁷⁷ Given its large net liability position in foreign exchange, a large depreciation of the domestic currency means that the domestic-currency value of its liabilities would skyrocket—especially those denominated in euros and yen—probably inducing widespread financial distress in both the private and public sectors. Other asset prices—like equities—would also fall, and the domestic sources of credit would likewise decline in response to reduced creditworthiness. Investment and economic growth would fall. Reduced growth would further worsen the government’s fiscal position—feeding back adversely on the risk premium charged for credit—both externally and internally. The perception that the government’s fiscal situation had deteriorated would, in turn, further sap confidence in the banking system if banks were holding a large share of government bonds in their asset positions. It would be difficult for the authorities to use expansionary fiscal or monetary policy to offset the deflationary external shock because foreign and domestic investors might mistake short-term action as a prelude to a collapse of long-run policy discipline. In short, if a large dollar decline is imposed on an adverse set of circumstances in an individual emerging economy, one can get quite an unhappy ending—as the adverse interactions among currency, debt, and banking difficulties magnify the task of stabilization.

It is clearly not possible with the aid of only a few variables to capture all these factors conditioning the effect of exchange rate changes on crisis vulnerability. Nevertheless, in table 9, I bring together 17 indicators that are relevant for assessing potential exchange rate–related problems.

Empirical research on currency crises in emerging economies often finds that real exchange rate overvaluation is one of the best performing leading indicators of a crisis (Goldstein, Kaminsky, and Reinhart 2000; Berg, Borensztein, and Pattillo 2004). Undervaluation of the real exchange rate also carries risks but they typically are less pressing than those associated with overvaluation.

⁷⁷ Calvo and Goldstein (1996) argue that banking system difficulties were the main reason that the Mexican authorities did not raise interest rates in the wake of the Colosio assassination—even though international reserves and confidence were falling sharply.

In columns (1) to (3) of table 9, three measures of the misalignment of the real, trade-weighted exchange rate are presented. Columns (1) and (2) of table 9 provide Goldman Sachs' (2005b) recent estimates of misalignment of the dynamic real equilibrium exchange rate (DEER); column (1) covers overvaluations and column (2) undervaluations. They model the real equilibrium exchange rate as a function of productivity differentials, measures of long-term capital inflows, the degree of trade openness, and the terms of trade. It can be seen that the currencies of Venezuela, Hungary, Indonesia, Turkey, and Korea top the overvaluation estimates, with the currencies of Poland and the Czech Republic not far behind. On the undervaluation side, Goldman Sachs estimates that the currencies of Hong Kong, the Philippines, Taiwan, China, and Argentina have the largest misalignments.

The results of two more mechanical approaches to estimating real exchange rate misalignment are shown in columns (3) to (6). Columns (3) and (4) present positive (overvaluations) and negative (undervaluations) deviations from a 10-year moving average of the real, trade-weighted exchange rate, while columns (5) and (6) display positive (overvaluation) and negative (undervaluation) percentage change in the real, trade-weighted exchange rate over the 2000–04 period. Using deviations from the 10-year moving average, we find that the most overvalued real exchange rates are in the Czech Republic, Russia, Turkey, Brazil, Hungary, South Africa, and Poland, while the most undervalued ones are in Argentina, Malaysia, the Philippines, Indonesia, Colombia, and China. Using the percentage change in the real exchange rate over the 2000–04 period yields a similar identification of the most overvalued and undervalued emerging-market currencies; see columns (5) and (6).

As regards the size of real exchange rate misalignments, one ought to take the estimates in table 9 with a large grain of salt. There are, of course, many alternative approaches to estimating real exchange rate misalignments, and no single approach is without drawbacks. There is, for example, no consensus in the literature on the role of productivity differentials and trade openness in real exchange rate determination. For oil producers (e.g., Venezuela), the volatility of oil prices is apt to dominate the exchange rate calculations. Deviations from a 10-year average may not give enough weight to large changes in the balance-of-payments that occur over just a few years, while four-year percentage changes can be misleading when the country has had an exchange rate crisis and hence a very low exchange rate, near the early part of the four-year period (e.g., Argentina in 2001, Brazil in 2002, etc.). Still, warts and all, the estimated large overvaluations in much of Eastern Europe and undervaluations in much of emerging Asia seem to agree with recent exchange rate studies for individual countries and for regional groups. For example, Bulir and Smidkova (2005) use a model of equilibrium real exchange rates to estimate misalignments in several new EU accession countries and find that at end-2003, the Czech koruna was overvalued by about 15 percent, the Hungarian forint by

about 40 percent, and the Polish zloty by about 20 percent. Similarly, Anderson (2004a) obtained estimates of currency misalignment (using a basic-balance framework) for a group of Asian emerging economies and found undervaluations ranging from 5 to 25 percent. In my own recent work (Goldstein 2004) estimating the equilibrium real exchange rate for the Chinese renminbi (using both underlying balance-of-payments and global adjustment approaches), I found that the renminbi was undervalued by 15 to 25 percent. And given Turkey's large external deficit and its appreciating real exchange rate, it seems difficult to argue that the Turkish lira is anything but overvalued.

Recalling why the distinction between a net liability and a net asset position in foreign exchange matters for the balance-sheet effects of exchange rate changes, column (7) of table 9 signifies which emerging economies fall in which camp (using the Goldstein-Turner (2004) measure of currency mismatch to differentiate net liability from net asset positions). Other things equal, those with net liability positions in foreign exchange (Argentina, Brazil, Chile, Colombia, Hungary, Mexico, the Philippines, and Turkey) are more vulnerable to a depreciation of the local currency vis-à-vis reserve currencies than are the other emerging economies listed in table 9.

In columns (8) to (12) of table 9, I present several indicators that are often referred to in discussions of currency mismatch.⁷⁸ As outlined earlier, the presumption is that a large currency mismatch makes it more costly if the country undergoes a large currency depreciation. When a large currency mismatch is paired with a large overvaluation of the domestic currency, the risk is particularly high—as Argentina sadly discovered during its 2001–02 crisis. Column (8) gives the Goldstein-Turner (2004) measure of aggregate effective currency mismatch (in 2004). On this indicator, the most currency-mismatched economies are Argentina, the Philippines, Turkey, Brazil, Chile, and Hungary. In column (9), I display the share of total public debt that is either denominated in, or indexed to, foreign currency (again for 2003). On this liability measure, the more vulnerable economies are Chile, Russia, Argentina, Indonesia, and Venezuela. In columns (10) to (12), I present figures on the currency composition of long-term debt—as among the euro, the Japanese yen, and the dollar. These are relevant to cases where the local emerging-market currency might depreciate much more (in a period of financial strain) relative to the euro and the yen than with respect to the dollar. In column (10), it can be seen that three of the new EU accession countries (Hungary, Poland, and the Czech Republic) would be, *ceteris paribus*, the most vulnerable to an appreciation of the euro vis-à-vis their currencies; Argentina and Turkey would be next in line on euro appreciation. Turning to the yen-denominated liabilities in column (11), it is apparent—and not surprising—that the Asian emerging economies, led by Thailand, the Philippines, Indonesia, and Malaysia, have the

⁷⁸ See Goldstein and Turner (2004) for a discussion of what attributes a good measure of aggregate currency mismatch should possess and why measures that look at just the liability side of the balance sheet can be misleading.

highest shares of yen debt; Hungary and China also have relatively high percentages of yen-denominated liabilities. Continuing the same kind of regional focus, column (12) indicates that with the notable exception of South Africa, the emerging economies with the largest share of dollar-denominated long-term debt are US neighbors in Latin America (namely, Mexico, Chile, Colombia, Venezuela, and Brazil). Without having parallel information on the currency composition of reserve holdings, one cannot go farther in assessing vulnerabilities to different potential patterns of exchange rate movements among the three major reserve currencies.

If banking sector fragility constrains an interest rate defense of a rapidly falling domestic currency, which economies would be most constrained under that criterion? In column (13) I present one indicator of banking system soundness, namely, Moody's financial strength index. One advantage of this measure (unlike some other ratings) is that it does not incorporate the probability of a government bailout of the banking system but rather concentrates on the underlying strength and viability of the banking system. The tale told in column (13) is that among the countries identified in column (1) as having overvalued real exchange rates, Argentina, Indonesia, Venezuela, and Turkey have the most to worry about when it comes to banking fragility.

What about the emerging economies with undervalued exchange rates? As argued earlier, the main risks they face from a large decline in the dollar are either that the reserve accumulation associated with "managing" the exchange rate conflicts with efforts to maintain domestic financial stability or that letting the local currency appreciate induces large balance-sheet losses on the international reserve position. In columns (14) to (17), several indicators loosely related to those risks are presented. In column (14), I give the CPI inflation rate in 2004—albeit only for the economies that were identified as having an undervalued real exchange rate. The assumption is that the higher the inflation rate, the higher the risk that capital inflows complicate the task of monetary policy. Topping the (inflation) list are Colombia and the Philippines, followed in turn by Argentina, China, and Malaysia. Columns (15) and (16) provide two measures of costs of sterilizing reserve inflows recently put together by the World Bank in their latest *Global Development Finance* report (World Bank 2005b). The first measure is the difference between the interest rate on domestic bonds and that on two-year US government bonds (as a proxy for the nominal return on dollar reserves); in column (15) substantial differences can be seen in this interest rate cost across emerging economies with large reserve holdings, with the estimated cost highest in Turkey, Russia, and Mexico, and lowest (indeed, negative) in Thailand, Czech Republic, Brazil, and Malaysia. In column (16), these interest costs of sterilization are supplemented by estimates of the expected exchange rate change between the local

currency and the US dollar.⁷⁹ This changes quite markedly the ordinal rankings of sterilization cost, with higher (lower) costs now evident in those countries where the World Bank estimates that the local currency will appreciate (depreciate) nontrivially relative to the dollar; for example, expected appreciation of the renminbi increases significantly China's sterilization cost while expected depreciation of the lira decreases markedly Turkey's sterilization costs. As seen in column (16), Russia then emerges as the economy with the largest sterilization cost, followed by China, Indonesia, and India. It is worth noting that some other researchers have obtained quite different results on sterilization costs, at least among Asian emerging economies. Anderson (2005b), for example, considers only the interest rate differential between domestic and foreign assets in his estimates but concludes that all Asian central banks have positive net balance-sheet earnings from sterilization operations, with Singapore, Taiwan, and China having the largest gains. He also notes that in the year ending February 2005, only China and Malaysia are sterilizing more than they did during the previous 12 months. Finally, column (17) shows the ratio of international reserves to GDP in 2004. The presumption is that the higher this ratio, the larger would be the balance-sheet effects linked to an appreciation of the local currency vis-à-vis the dollar. The ranking is done only for the economies that are identified in column (7) as having a net asset position in foreign exchange. Heading the list is Malaysia, followed by China, Thailand, Korea, and Venezuela.

To sum up, *looking broadly at potential exchange rate problems, the emerging European economies as a group (especially the Czech Republic, Hungary, Turkey, and Russia) are prominent on the overvaluation vulnerability list, while the undervaluation vulnerability list is made up mainly of Asian emerging economies (especially the Philippines, Malaysia, and China).* There is some overlap with the high vulnerability positions for other transmission mechanisms (e.g., Turkey and Hungary were high up on the global financial conditions indicators, Malaysia was in the top five on the China-US import slowdown list, and Russia had a relatively high share of nonmanufactured exports in its GDP, but it is not striking.

Fiscal and Monetary Policies in Emerging Economies

Thus far, we have concentrated on external shocks to emerging economies: slower import growth in China and the United States, lower prices of primary commodities, higher global interest rates, reduced private capital flows to emerging economies, and probably, downward pressure on emerging-market exchange rates. But fiscal and monetary policies in emerging economies also need to be brought into the picture for at least three reasons: First, if there were a diminished risk appetite for emerging-market securities, the behavior of fiscal and monetary policies in individual emerging

⁷⁹ Unfortunately, one cannot tell from this World Bank report (2005b) from where/how the expected changes in emerging-market exchange rates were derived.

economies might be one of the criteria by which investors decided how to apportion their pull-back from that asset class. Second, as noted earlier, if a debt crisis in one emerging economy did occur as a result of global plus country-specific shocks, contagion might take the form of penalizing other emerging economies with high debt levels and with large actual or prospective fiscal deficits. And third, the conduct of fiscal and monetary policies after the onset of more difficult global financial conditions could be either part of the solution to stabilizing growth in emerging economies or part of the problem in turning financial difficulties into a crisis. For those economies with relatively good reputations on fiscal and monetary policies, it is apt to be easier to conduct countercyclical policies than for those with poor track records.

The last decade has witnessed a host of debt crises in emerging economies: Argentina, Ecuador, Pakistan, Russia, Ukraine, and Uruguay—to say nothing of the close calls in Brazil and Turkey. The IMF (2003), among others, has highlighted why it is premature to stop worrying about public debt levels in emerging economies: By 2002, the average ratio of (gross) public debt to GDP in emerging markets had risen to over 71 percent—reversing the progress made (in reducing that ratio) in the first half of the 1990s and bringing the emerging-market average to a level higher than that for the average of industrial countries. Although preliminary data indicate that the last two years have seen some improvement, it is likely that the average emerging-market public debt ratio for 2004 will still be higher than that prevailing in the early and/or mid-1990s. Moreover, the IMF (2003) study found that over half of public debt defaults occurred when public debt ratios were below 60 percent, that the typical emerging-economy has a public-debt ratio over twice as high as its history of fiscal policy suggests is prudent, and that (in contrast to industrial countries) governments usually fail to implement corrective fiscal policy actions when the public debt ratio climbs above 50 percent. Comparing total public debt with tax revenue—instead of with GDP—only makes the debt situation more worrisome. Whereas the ratio of external public debt to GDP has been declining for over a decade in emerging economies, the rise in domestic public debt has more than made up for it. To be sure, there are important regional differences among emerging economies in these trends; for example, whereas the ratio of public debt to GDP has risen sharply since the early 1990s in both Latin America and Asia, it has declined sharply in the transition economies of Europe and has changed only slightly in the Middle East and Africa. Still, taken as a whole, these developments in emerging-market debt developments are worrisome.

The IMF (2003) report goes on to show that most of the increase in public debt in emerging economies since the mid-1990s has been largely accounted for by interest rate and exchange rate movements, by recognition of off-balance-sheet and contingent liabilities, and by the costs of recapitalizing insolvent banking systems. Economic growth has acted to reduce public debt ratios in all emerging-economy regions. Primary fiscal balances have made a small positive contribution to

reducing debt ratios—albeit with a good deal of variation across regions (highest in the Middle East and Africa and lower, in descending order, in Latin America, Asia, and the transition economies).⁸⁰

Figure 15, taken from Borenstzein et al. (2004), shows the large contribution of exchange rate depreciation to the increase in the public debt to GDP ratio in eight emerging-market financial crises of the past decade. As regards the fiscal costs of banking crises in developing countries, Barth, Caprio, and Levine (2005, forthcoming) estimate that these costs have exceeded \$1 trillion in the late 1980s and 1990s.

Reinhart, Rogoff, and Savastano (2003) argue that a country's record in meeting its debt obligations and in managing its macroeconomy matter for forecasting its ability to sustain moderate to high levels of indebtedness—both domestic and external. They introduce the concept of “debt intolerance”—by which they mean the extreme duress that many emerging economies experience at debt levels that would seem quite manageable by the standards of industrial countries. They go on to argue that a country's debt intolerance can be explained by a small number of variables related to its repayment history, indebtedness level, and history of macroeconomic stability; they measure a country's current level of (external) debt intolerance as a ratio of the long-term average of its external debt (scaled by GDP or exports) to an index of default risk (proxied by the sovereign debt ratings reported by *Institutional Investor*). One of their main findings is that “safe” external debt thresholds for highly intolerant emerging markets are quite low—on the order of 15 to 25 percent of GDP. Interestingly enough, an IMF study (2003) that looked at “benchmark” public debt to GDP ratios for emerging markets—based on these countries' record of primary surpluses and other relevant factors—concluded similarly that the benchmark ratio of public debt to GDP for emerging markets as a group was around 25 percent—far lower than the actual debt ratios of late.

Fiscal policy in emerging economies is not just about debt sustainability. In the context of adverse external shocks emanating from a China-US slowdown and a less hospitable external financing environment, some emerging economies might contemplate using countercyclical fiscal policy to prevent or limit the negative effects on their own rates of economic growth. Indeed, the

⁸⁰ Standard debt sustainability analysis uses the following two accounting relationships for the change in public and external debt, respectively: $PD(t+1) = [1+rp(t)]PD(t) - PS(t)$ and $ED(t+1) = [1+re(t)]ED(t) - TB(t)$, where $PD(t)$ is the country's public debt at time t , PS is the primary balance in the budget, r is the real interest rate paid by the country on its public debt, $ED(t)$ is the country's external debt at time t , TB is the trade balance, and re is the real interest paid by the country on its external debt. These two expressions can then be solved for the ratio of the primary (trade) balance to GDP needed to stabilize the public (external) debt ratio, where Y is output and g is the growth of real output: $PS/Y = (rp-g)(PD/Y)$ and $TB/Y = (re-g)(ED/Y)$. These expressions illustrate why discussions of debt sustainability often focus on real economic growth, real interest rates, primary balances, and trade balances—even though this analysis ignores or downplays many other factors that influence debt developments in the real world (e.g., contingent liabilities of governments); see Goldstein (2003).

scope for using expansionary fiscal and monetary policies during an emerging-market crisis was a hotly contested issue during—and long after—the Asian financial crisis.

A new empirical study by Kaminsky, Reinhart, and Vegh (2004) sheds some useful light on what emerging economies have done with fiscal and monetary policies during “good” and “bad” times over the 1960–2003 period. Good (bad) times are those with higher (lower) than median real GDP growth rates or positive cyclical components after decomposing time series into trend and cyclical components. Their sample covers 104 countries, but we are most interested in the results for emerging economies. They look at various dimensions of fiscal policy, including government expenditure, current expenditure minus interest payments, expenditure on goods and services, and expenditure on wages and salaries—and they consider both the central government and general or consolidated government. For our purposes, their main finding is that fiscal policy in developing countries is predominantly *procyclical*—in contrast to the countercyclical or acyclical fiscal policy behavior exhibited by OECD countries; moreover, Kaminsky, Reinhart, and Vegh (2004) report that the degree of procyclicality in fiscal policy is highest in the two middle-income groups of developing countries—the very groups that contain the emerging economies that are of special interest in this paper. Indeed, every single country in their middle high-income category shows procyclical fiscal policy behavior. And these results hold quite strongly over all the measures of fiscal policy considered and are not different for crisis versus noncrisis periods. One policy implication that Kaminsky, Reinhart, and Vegh (2005) draw from their results is that developing countries need to find mechanisms that would enable macroeconomic policies to be conducted in a neutral or stabilizing way; in this regard, they mention that some emerging economies (like Chile) with good reputations for policymaking have been able to graduate from the procyclical gang to conduct countercyclical/neutral fiscal policies.

Moving from fiscal to monetary policies in emerging markets, the track record over the past decade has been brighter—albeit with some disappointments. The area where progress has been most substantial and widespread is in the reduction of inflation rates. As chronicled by Rogoff (2003) and others, average inflation rates in the developing countries have fallen from over 50 percent in the 1990–94 period to less than 6 percent over the 2000–04 period.⁸¹ In addition, this watershed improvement in inflation performance has spanned all developing-country groups—with particularly dramatic gains being recorded in Latin America (which saw its average inflation rate fall from over 200 percent in 1990–94 to less than 8 percent in 2000–04). What is responsible for this global disinflation is less clear—with different analysts emphasizing different factors—ranging from improved central bank institutions and practices, to an increased level of competition in labor and

⁸¹ The same qualitative result holds if we go back farther, say, to the 1980–84 period, when the developing-country average for inflation rates was over 30 percent; see Rogoff (2003).

product markets, to growing public dissatisfaction with poor inflation performance in the late 1960s to early 1980s, to a variety of fiscal and institutional developments.⁸²

The disappointments on the monetary and credit policy front in developing countries have already been alluded to earlier, namely, the episodic appearance of credit booms that have often ended up as financial crises. An IMF study (2004a) examined 18 credit booms in 28 emerging economies over the 1970–2002 period. Here, a credit expansion was defined as a “credit boom” if it exceeded the standard deviation of that country’s credit fluctuations around trend by a factor of 1.75. The IMF study’s main conclusions were as follows: (1) Credit booms were much less common than episodes of rapid credit growth—with only a 3 percent probability of observing a credit boom in a given country in a given year; (2) credit booms were synchronized across countries, with about 40 percent of them occurring in East Asia in the late 1990s and another 35 percent taking place in Latin America around early 1980s debt crisis; (3) credit booms were preceded by strong capital inflows more than half the time, by financial liberalization about one-sixth of the time, and by both roughly one-tenth of the time; (4) about 75 percent of the credit booms in emerging markets were associated with a banking crisis, while 85 percent were linked to a currency crisis; (5) credit booms are associated with a cyclical upturn, followed by sharp downturns in economic activity and private absorption; (6) credit booms are accompanied by an increase in real stock prices and then a subsequent dramatic drop; and (7) credit booms don’t have major effects on inflation, perhaps because these economies are sufficiently open that the pressure is reflected more in current account positions and in exchange rate developments. With real credit to the private sector having grown faster than 20 percent a year in some East Asian and Eastern European economies over the 2002–04 period and with net private capital flows to emerging Europe in 2004 at almost twice the average level of 2002–03 and expected to be even higher this year, a discussion of credit booms is not entirely academic.⁸³

As hinted at earlier, Kaminsky, Reinhart, and Vegh (2004) also examined the cyclicity of monetary policy in emerging economies, looking at five nominal interest rate series (interbank rates, treasury bill rates, discount rates, bank lending rates, and bank deposit rates). While the evidence of procyclicality is not as strong for monetary policy in emerging markets as for fiscal policy, the empirical evidence does point to a broad procyclical verdict for monetary policy as well.

In thinking about both providing a dependable, long-term nominal anchor for monetary policy and a framework in which some countercyclical monetary policy can be accommodated, there is one other development worthy of mention, namely, the adoption by a growing number of

⁸² See Celasun (2005) for a brief summary of this literature on the causes of global disinflation.

⁸³ The IIF (2005) projects net private capital flows to emerging Europe to be \$101 billion in 2005—dramatically up from \$46 billion in 2002 and \$66 billion in 2003.

emerging economies of an inflation targeting approach for monetary policy. My IIE colleague Ted Truman (Truman 2003) has defined inflation targeting as a framework for the conduct and evaluation of monetary policy that contains four elements: (1) price stability as the principal, if not the sole, explicit or implicit goal of monetary policy; (2) a numerical target or sequence of targets—to make the goal of price stability operational; (3) specification of a time horizon to reach the target or to return to the target; and (4) an evaluation or ongoing review of whether the inflation target will be or has been met. Since 1989, when New Zealand became the first country to adopt inflation targeting, more than 20 other countries have chosen it as their preferred monetary policy approach, including at least 10 emerging economies.

By now, there have been many evaluations of how inflation targeting has performed in emerging markets. My reading of that literature (summarized in Goldstein 2002) is that the results have been positive in at least four important respects: (1) countries adopting inflation targeting have been relatively successful in meeting their announced inflation targets; (2) track records in meeting inflation targets have been superior to those in meeting monetary growth targets; (3) those central banks implementing inflation targeting have not shown themselves to be “inflation nutters” (i.e., that have allowed monetary policy to respond to falls in output); and (4) inflation targeting has not been associated with a breakdown in fiscal prudence.

To sum up, the preceding discussion suggests that fiscal and monetary policies in emerging markets could be seriously challenged in a global environment in which there was both a China-US slowdown and more adverse global financial conditions. Many emerging economies have ratios of public and external debt to GDP (and to exports) that are considerably beyond “safe” levels, and their history of debt servicing difficulties could induce foreign investors to run when the economic outlook for growth, exports, interest rates, and exchange rates deteriorates. Emerging economies as a group have also found it much more difficult than industrial countries to run countercyclical fiscal and monetary policies when capital inflows slow down sharply and/or when their own economic growth declines. There has been an impressive longer-term decline in inflation rates, but there have also been episodes of credit booms—most of which have ended badly in either currency or banking crises. The capital inflows that often fuel these credit booms would of course be expected to decline in a scenario of a generalized pull-back from emerging economies. But there could be a much more differentiated response of investors to a worsening of global financial conditions—with some emerging economies that were regarded as better credit risks still struggling with sterilizing sizeable capital inflows and sterilization pressures, with others turning to more expansionary monetary policy cum financial liberalization to counteract slower external demand, and with still others battling with the more severe interactions of a sudden stop in capital flows, falling asset prices, a domestic credit crunch, recession, and mounting fragilities in the banking system.

In order to get a rough feel about which emerging economies are likely to face the greatest challenges in conducting fiscal and monetary policies during a period of deteriorating global financial conditions, I have brought together the set of 35 indicators shown in table 10. In ranking economies according to their vulnerabilities, the general presumption is that those economies that have relatively low debt ratios and more favorable debt dynamics, more disciplined fiscal and monetary policies, a history of lower procyclicality for fiscal and monetary policies, lower volatility in growth and foreign trade, better inflation histories, lower pressures to sterilize large capital inflows, an inflation targeting framework in place, a larger cushion of international reserves, and a relatively sound domestic banking system—will face less adverse external pressures and will have more room for maneuver in conducting fiscal and monetary policies.

Columns (1) to (4) of table 10 provide ratios for public and external debt. Column (1) uses debt figures published by JP Morgan, while column (2) uses those published by Deutsche Bank. The reason for presenting both of them is that the former seems to measure public debt on a gross basis, while the latter, at least for some countries, uses net public debt (see, for example, the different debt figures provided for Brazil); in addition, the country coverage is slightly different. In columns (1) and (2) we observe that Argentina, the Philippines, Turkey, and India have the highest public debt ratios, with Hungary, Brazil, and Indonesia right behind them. Argentina's public debt ratio, however, is expected to fall almost in half by 2006 as a consequence of its recent debt default and restructuring. Conspicuously, few emerging economies have public debt ratios in the 15 to 25 percent range identified by the Fund as a prudent benchmark for the average emerging market.

Columns (3) and (4) deal with total external debt (public and private). When measured relative to GDP, Argentina and the Philippines again top the highly indebted list and Turkey also remains in the top five.⁸⁴ Indonesia and Chile are more vulnerable on external debt than on public debt. Once the denominator switches from GDP to exports, Colombia and Brazil emerge as having quite high external debt ratios. Turkey remains in the top-five most indebted group under all four measures of public and external debt.

Columns (5) to (8) of table 10 introduce three indicators related to the degree of debt intolerance as defined and measured by Reinhart, Rogoff, and Savastano (2003). Column (5) indicates that about a third of the economies in our emerging-market sample have had at least one default on their external debt since 1970; most of the previous defaulters come from Latin America (Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela), but the Philippines, Russia, and Turkey also have

⁸⁴ Again, Argentina is a special case because its total external debt too is expected to decline significantly—albeit not as much as public debt—between 2004 and 2006.

this problem of history to overcome.⁸⁵ Columns (6) and (7) give two measures of debt intolerance for external debt—the first when GDP is used as the denominator and the second when exports fulfill that role. While the ordering is somewhat different under the two measures, the composition of the six most debt intolerant economies is almost the same, namely, Argentina, the Philippines, Turkey, Brazil, Chile, and Venezuela. Colombia and Mexico are also ranked as highly debt intolerant.

Turning to columns (8) to (17) of table 10, we present a series of indicators that relate to the sustainability of public and external debt, where sustainability typically means a debt ratio that is stable—as opposed to increasing. In column (8), one gets the answer to the following question: For how many years in the past four has the ratio of public debt to GDP been increasing; the maximum number is, of course, four, and the lowest is zero. It is notable that the list in column (8) is not for the most part headed by the countries with the highest public debt ratios in columns (1) and (2); among the economies with climbing public debt ratios in three of the past four years, only India was part of our most highly indebted group. Argentina, Brazil, the Philippines, and Turkey all fall in the middle of the pack, with increasing public debt ratios in two of the past four years.

Column (9) provides some further clues on this by presenting measures of the primary balance in the budget for 2004. Notice that Turkey, Brazil, and Argentina—with large primary surpluses—are near the bottom of this vulnerability list, and the Philippines also ran a primary surplus (albeit a much smaller one). The question in the case of these (primary surplus) economies is whether they would have the political will to continue running large or even larger primary surpluses if the economic growth fell and real interest rates rose as a result of more adverse global financing conditions. Suppose, for example, that economic growth fell from 6 to 4 percent and that the real interest rate rose 10 to 12 percent. For an emerging economy with a ratio of public debt to GDP of, say, 60 percent, the debt-stabilizing primary surplus then doubles, from 2.4 to 4.8 percent of GDP. On a more disappointing note, observe that India, Hungary, and Malaysia—each of whom was in the top third of the most publicly indebted group—each ran a primary deficit in 2004.

The ratio of the trade balance to GDP is the analogous construct to the primary surplus in the analysis of debt sustainability for external debt. These are shown in column (10) of table 9. Again, suppose we compare the most highly indebted ranking with the trade balance surplus list (in columns 3 and 4). Here, we find a mixed pattern. On the plus side of the ledger, Argentina, Indonesia, Brazil, and Chile each ran large trade balance surpluses last year. The issue again is whether those can be maintained on anything like the same scale when external conditions weaken. On the negative side, Turkey exacerbated its relatively high external debt ratio by running a large current account deficit in

⁸⁵ It should be recognized that different studies, different time periods, and different debt instruments (bonds versus bank loans) can produce different answers on default histories; for example, Manasse and Roubini (2005) reach different default conclusions for Korea, Thailand, Colombia, and Indonesia than do Reinhart, Rogoff, and Savastano (2003).

2004 (8 percent of GDP), and Hungary and the Philippines didn't help their cases either by recording moderate and small trade-balance deficits, respectively.

In columns (11) and (13) we provide some information on interest rates for our group of emerging economies. As suggested earlier, the higher the real interest rate on debt, the more difficult, other things equal, is the effort to maintain debt sustainability. Unfortunately, good measures of the real interest rate on public and/or external debt are hard to come by on an individual-country basis—as they require detailed information on both the composition of the debt stock and the interest rates paid on old debt as well as new debt. Lacking such a customized interest rate series, we have had to make do with three crude, off-the-rack substitutes. In column (11), I give the average, real dollar interest rate on public debt—computed from JP Morgan data on dollar interest payments (relative to stocks of debt) for both public and external debt; to move from nominal to real interest rates, I then subtracted the 2004 CPI, US inflation rate (2.7 percent) to get the real interest rate. Such a real interest rate measure can be misleading when there have been large real exchange rate changes between the local currency and the dollar. Nevertheless, the tale told in column (11) is that Turkey, Brazil, Venezuela, Mexico, Colombia, Hungary, and the Philippines still are facing relatively high real interest rates on their public debt; such high real interest rates are particularly a problem for the Philippines, Turkey, Brazil, and Hungary because a glance back at column (1) shows that they have relatively high ratios of public debt to GDP. In columns (12) and (13), I give two simple measures of the real interest rate using solely domestic data, namely, the nominal money market rate less the economy's rate of CPI inflation and the analogous construct using treasury bill interest rates. Again, Turkey and Brazil head the list, followed by Hungary, South Africa, and Mexico.

In columns (14) and (15), I offer two additional indicators related to interest rates. The first is the ratio of interest payments by the central government to GDP (measured in local currency) and the second is the ratio of interest payments to government revenues. Column (14) tells us that interest payments in Turkey and Brazil still take up a considerably higher share of GDP than elsewhere in the emerging-market world; Colombia and India fall next in line. Taking government revenues into the picture—in column (15)—doesn't alter the ranking too much but highlights just how large Turkey's interest payments are relative to any other economy in the sample. The Philippines, India, and Colombia occupy the other top slots. Brazil looks better when interest rate payments are compared with government revenues but still retains a top-five vulnerability spot.

Cutting government expenditures and/or raising taxes is not just economics; it's also a matter of politics. In column (16), I present the ICRG index of political stability, which combines measures of popular support for the government, the degree of government unity, and legislative strength of the incumbents. Unfortunately, the data are only for February 2003. What the data show is that while political stability was (understandably) very low in Argentina in early 2003, it was not

that low in several other highly indebted emerging economies, particularly Hungary, Turkey, the Philippines, and India.

The rate of real economic growth is the remaining key variable for debt dynamics calculations. This is shown in column (17) of table 10 for 2004. This is of course the other factor (besides primary and trade balance surpluses) that has improved debt sustainability in a number of highly indebted emerging economies. More specifically, Argentina and Turkey both recorded real GDP growth in the 8 percent ballpark last year, and India and the Philippines turned in strong growth performances as well (in the 6 to 7 percent plus range). Once again, the relevant questions are what will happen to those high growth rates if external financial conditions and G-7 growth both worsen appreciably, and what, in turn, would lower domestic growth imply for the future path of public debt? Of the economies with relatively slow real GDP growth in 2004, Colombia is one that raises some potential red flags since it has high external debt relative to exports (column 4), moderately high public debt relative to GDP (column 1), relatively high real interest rates and interest payments (columns 11 to 13), a primary deficit in the budget (column 9), only a small trade surplus, and a ratio of public debt to GDP that has increased in three of the last four years (column 8). Hungary is another one where 4 percent real GDP growth does not look so reassuring given relatively high stocks of public and external debt, quite a large trade balance deficit, a primary deficit in the budget, relatively high real interest rates, and again, a ratio of public debt to GDP that increased in three of the last four years.

Another oft-mentioned distinguishing characteristic of emerging economies (relative to industrial economies) is a high degree of volatility in the major macroeconomic variables. The presumption is that a high degree of macroeconomic volatility creates difficulties for fiscal (and monetary) policy because it both forces policy to operate in a highly uncertain operating environment and requires large changes in policy instruments to deal with adverse shocks. Two such volatility measures covering roughly the past decade are portrayed in columns (18) and (19), dealing respectively with variability in real GDP growth rates and variability in the real exchange rate. The three countries with the highest volatility in real GDP growth are all ones with high shares of primary products in their exports—to say nothing about their propensity for economic crises, namely, Venezuela, Russia, and Argentina. They are followed on the list by Turkey and Indonesia—two other countries that had severe and/or frequent financial crises during this period. Turning to the real exchange rate calculations in column (19), one can see that the highest variability group is broadly similar, with Indonesia, Venezuela, Russia, Brazil, and Argentina leading the pack.

The last indicator relating to fiscal policy is an index of the cyclical policy, constructed by Kaminsky, Reinhart, and Vegh (2005). This is shown in column (20). It is worthy of mention that five of the seven economies with the most procyclical fiscal policy hail from Latin

America (Venezuela, Argentina, Chile, Brazil, and Mexico) and that four of the top six also are economies with relatively high ratios of public debt to GDP (Argentina, the Philippines, India, and Brazil). It could also be the case that the very high procyclicality of fiscal policy in Venezuela—and the relatively high one in Mexico—are both related to the role of oil revenues in the government budget (and the tendency for those oil revenues to be higher during global periods of “good times”).

In columns (21) to (28) of table 10, I consider a group of indicators relating to monetary policy. That group begins in columns (21) and (22) with measures of (CPI) inflation for 2004 and for 2001–03 average, respectively. At high inflation rates—particularly those 10 percent or higher—the central bank has a considerable way to go to establish anti-inflationary credibility and typically has less scope to reduce interest rates when there is a negative shock—lest market participants conclude that monetary policy is “off to the races.” In 2004, Venezuela had the highest inflation rate (over 20 percent) in our group of emerging economies, followed by Turkey and Russia; beside those three, no other emerging economy turned in a double-digit inflation performance, although inflation in Hungary, Brazil, Indonesia, and Colombia was in the 6 to 7 percent range. Argentina managed to keep inflation below 5 percent last year. Moving to column (22), one observes that the country composition of the five economies with highest inflation rates in 2001–03 was broadly similar to that in 2004 (except that Argentina was in the top five in the first period but not last year, and Hungary was in the top five last year but not in the earlier period). Probably of more importance for the monetary policy task ahead, each of the five countries in the top inflation group had a considerably lower inflation rate in 2004 than in 2001–03.

The earlier discussion highlighted the risks facing certain emerging economies—mostly in Asia—that were experiencing large capital inflows and that were using large-scale sterilization operations to prevent these inflows from being translated into rapid increases in monetary and credit aggregates. In column (23), I present the average capital account balance in 2003–04 relative to 2004 GDP.⁸⁶ The higher these capital inflows, the tougher the job, *ceteris paribus*, for monetary policy (at least when monetary policy seeks to be restrictive). Malaysia and China head the list of emerging economies with large capital inflows over the past two years. Hungary and Korea also experienced large inflows, as did Argentina. In column (24), I use Anderson’s (2005a) estimates of the size of sterilization operations as a share of GDP for the period February 2004–February 2005. With sterilization operations accounting for 20 percent of GDP last year, Malaysia leads the list by a wide margin, followed by China. Recall that Malaysia and China both have in place fixed exchange rate regimes and that many analysts regard their present real exchange rates as significantly undervalued. The economies next highest on the sterilization roster are Singapore, Korea, and Taiwan.

⁸⁶ These capital-account figures are obtained by taking the change in reserves (relative to GDP) and subtracting from them the current account position (also relative to GDP).

Also harking back to the earlier discussion, column (25) shows the behavior of domestic credit over the past two years (relative to the size of the economy). China, Malaysia, South Africa, Turkey, and Hungary emerge as the economies with the most rapid rate of credit growth. Whereas the banking systems of South Africa, Hungary, and Malaysia are relatively highly rated (see discussion below), those of China—and to a less extent, Turkey—are not. The latter two countries therefore have cause for concern about the effect of such rapid credit growth on the quality of loan decisions. As detailed in section II, China had a bank credit blowout in 2003 and the early part of 2004, and there are good reasons to believe that this wound up causing the government large fiscal losses (see Goldstein and Lardy 2004b).

As suggested earlier in this section, when emerging economies are holding very large stocks of international reserves and when their currencies are significantly undervalued, they face a sizeable capital loss if and when the local currency appreciates relative to reserve currencies.⁸⁷ But a large stock of reserves also provides a safety cushion in case of negative shocks to the balance of payments and thus provides some degree of insulation to monetary (and fiscal) policy if there were a sharp fall-off in private capital flows to emerging markets and a deterioration in the current account. In columns (26) and (27), I present two measures of “excess” international reserves recently published by the World Bank (2005b). Column (26) uses reserves equal to six months of imports as a benchmark and shows the excess reserve holdings relative to that benchmark in 2004. Column (27) presents the 2004 ratio of reserves to short-term external debt. Some analysts have argued that private capital flows and other features of today’s global financial system are so volatile that emerging economies should be holding enough reserves that they can meet all external debt payments falling due over the next year without engaging in any new external borrowing. Hence, a ratio of reserves to short-term debt of at least unity is regarded as a minimal standard. Column (26) tells us that the Philippines and Mexico are the only ones among the economies listed whose reserves fall below the six-months-of-imports benchmark, while Turkey, Thailand, Poland, Malaysia, and Czech Republic just meet the benchmark. In contrast, the five emerging economies listed at the bottom of column (26)—Venezuela, India, Indonesia, Brazil, and China currently have large reserve cushions relative to imports. Column (27) reveals that all of the countries listed meet the minimum unity benchmark for reserves relative to short-term external debt. Only Argentina is close to the unity benchmark and only the Philippines, Turkey, and Brazil have reserves less than twice as high as short-term debt. In contrast, China, India, Malaysia, Thailand, and Venezuela have substantial excess reserves on this criterion.

⁸⁷ On the other hand, as mentioned earlier, an appreciation of the local currency improves the purchasing power of residents over foreign goods.

Earlier on, I outlined the nontrivial advantages of an inflation targeting regime for emerging markets. Column (28) tells us which emerging economies in our sample currently have such regimes in place and which do not. Almost half the sample does not presently employ such a framework for monetary policy, including Venezuela, Russia, and Indonesia—each of which had either high or relatively high inflation last year. On the other hand, Turkey, Hungary, and Colombia—each of which is also battling relatively high inflation—were employing such a framework.

Finally, we come to the strength of local banking systems. As outlined earlier, when things go badly in the banking system, the losses can carry very large fiscal (and real output) costs, and fragility in the banking system has often proved to be a binding constraint on interest rate policy, particularly in defense of a rapidly falling currency. In columns (28) to (34) are arrayed a group of indicators that provide information on the state and/or outlook for the banking system.

Column (29) looks at the projected change in real GDP growth as between (average) 2003–04 and 2005–06 (where the latter growth rates are obtained from forecasts made by Deutsche Bank (2005)). The greater the projected slowdown in the real economy, the more likely it is that banks' loan customers will have difficulty servicing their loans—with adverse effects on the health of the banking system.⁸⁸ As can be seen, Argentina, Russia, Turkey, and Malaysia are expected to suffer the worst growth slowdowns in 2005–06. In contrast, growth is expected to accelerate significantly in Brazil, Mexico, and Venezuela.

In column (30), Moody's average bank financial strength index (for December 2004) is presented (it also appeared earlier in table 9). It shows that the weakest banking systems in our sample presently reside in Argentina, Indonesia, Venezuela, China, and Russia. Of those five economies, Argentina and Indonesia are the ones with the relatively high debt ratios (public and external)—although Argentina's debt is declining sharply. Column (31) gives estimates of the share of NPLs in total loans, as of the first quarter of 2004. Banking systems in Argentina and China again appear fragile on this yardstick, whereas banks in Chile, South Africa, and Korea are regarded as least disadvantaged by the existing stock of bad loans. In column (32), data on the ratio of banks' regulatory capital to risk-weighted capital are shown; on this score, Korea, Hungary, and India appear as having relatively small capital cushions, while Turkey, India, and Brazil are estimated to have much larger ones. Columns (33) and (34) contain two indicators—obtained from data put together by Barth, Caprio, and Levine (2005, forthcoming)—that seem to have a relationship to banking crises or to NPLs in the banking system.⁸⁹ The first one looks at the restrictions on banking activities as they

⁸⁸ See Demirguc-Kunt and Detragiache (2000) for the effect of real GDP growth on banking fragility in emerging markets.

⁸⁹ Barth, Caprio, and Levine (2005, forthcoming) also find that the presence of a formal deposit insurance scheme tends to increase vulnerability to a banking crisis, but this variable has quite limited cross-country variation in our sample (i.e., the great majority of the sample has a formal deposit insurance scheme in place).

relate to securities, insurance, real estate, and ownership of nonfinancial firms. They find that banking systems that permit these activities tend to be better diversified and have lower crisis vulnerability than those that do not permit them; the lowest possible value of the index (highest vulnerability) is zero and the highest possible value is four. The second indicator is an index of private monitoring. It attempts to measure the extent to which the market for private monitoring of banks exists in different countries and combines information of whether a certified audit is required, the percent of the 10 biggest banks rated by international or domestic rating agencies, whether there is an explicit deposit insurance scheme in place, and whether bank accounting meets certain standards. Barth, Caprio, and Levine (2005, forthcoming) find that higher levels of private monitoring are associated with higher levels of bank development and a lower level of NPLs. Column (33) tells us that China, Indonesia, and Mexico have the most restrictive regimes on the scope of permissible banking activities, while Argentina and the Philippines have the least restrictive. On private monitoring as displayed in column (34), Venezuela and India seem to be cases where relatively little market discipline operates on banks; at the other end of the spectrum, Korea permits a larger role for private monitoring.

Last but not least, column (35) contains information on the extent to which banks hold government debt on their balance sheets (relative to bank deposits)—again obtained from Barth, Caprio, and Levine (2005, forthcoming). Although some might argue that having domestic banks hold considerable government debt produces a more stable ownership base for these securities, the offsetting—and I would say, more important—consideration is that large holdings of government debt by banks mean that government debt problems are quickly transferred to the banking system. This can easily turn a debt crisis into a banking crisis as well, as shown in the recent Argentine crisis. Many developing-country governments engage heavily in this practice anyway because they can often place government debt with the domestic banking system at much lower cost than borrowing in the market. Column (35) indicates that the economies where the banking system is most prone to this kind of risk are Argentina, Mexico, Brazil, Turkey, and India. A glance back at columns (1) and –(2) reveals that with the exception of Mexico, these are also economies with relatively high debt ratios.

Again, I looked across this set of fiscal-monetary indicators (in table 10) to see which economies appeared most frequently in the top-five vulnerability spots. The answer was Turkey, Argentina, Brazil, Venezuela, Hungary, and Mexico. With the exception of Venezuela, these are the same economies that also headed up the high vulnerability list when we were looking at vulnerability to adverse global financial conditions—a factor that presumably reflects the importance of public and external debt positions in both sets of indicators, as well as links between high inflation and high interest rates.

Summarizing the Vulnerability Rankings

Table 11 brings together the vulnerability rankings presented previously under the five transmission channels. Five (most vulnerable) economies are listed under each channel. For exchange rates, only the overvaluation cases are presented (under the assumption that overvaluation problems are more pressing than undervaluation ones).⁹⁰ *In terms of frequency of appearance in table 11, Venezuela heads the bit parade, appearing in four of the five vulnerability channels; next in line are Turkey and Hungary, which each appear in three of the five channels. The next tier of vulnerability is represented by Argentina, Brazil, Mexico, and Russia, which each appear in two of the five transmission channels. If the criterion were instead the number of appearances in the top-three vulnerability positions, then Turkey tops the list (appearing in that spot under three channels), followed by Argentina and Brazil (each with top-three vulnerability rankings under two channels).*⁹¹ Given the focus of this paper on cross-country differences in vulnerability across various transmission channels, I don't think it's useful to push the average vulnerability conclusions beyond that.

IV. CONCLUDING REMARKS

In this paper I have outlined a story in which an overlapping growth slowdown in China and the United States, along with deterioration in global financial conditions linked to a disorderly correction of global payments imbalances, could put emerging markets on the threshold of a new financial crisis. I have emphasized that it makes a great deal of difference to emerging-market prospects if the US/China slowdown is or is not accompanied both by a large increase in emerging-market interest rate spreads and by a large decline in private capital flows to them. Interestingly enough, the latest issue (April 2005) of the World Bank's *Global Development Finance* (World Bank 2005b) seems to come to a similar qualitative conclusion: It finds that a rise by 200 basis points in US short- and long-term interest rates (relative to the baseline scenario) slows developing-country growth (again relative to the baseline) by 1 percentage point each in 2005 and 2006. But if that same rise in US interest rates is accompanied by a return of emerging-market interest rate spreads to "normal" levels, then the decline in developing-country growth is much larger—by over 2 percentage points in 2005 and by roughly 4½ percentage points in 2006 (relative to baseline).

I have also tried to highlight the point that the identification of those emerging economies that would be most vulnerable to a crisis is not invariant either to the way in which the crisis unfolds or to the different characteristics of individual emerging economies themselves. Some emerging

⁹⁰ To determine the ordinal ranking for overvaluations, I averaged the three overvaluation measures listed in table 9.

⁹¹ If the cutoff were instead the top seven economies under each transmission channel, then Venezuela and the Philippines lead the pack, appearing in four of the five channels.

economies have strong bilateral export links with China and/or the United States, while others do not. Some have a relatively high concentration of exports in those primary commodities where China and/or the United States could affect the world price, and others do not. Some have financing requirements and debt positions that make them quite sensitive to large increases in global interest rates and to large declines in private capital flows, while others are much less sensitive. Some have net foreign asset positions in foreign exchange, while others have net liability positions. Some have significant foreign-currency debt in nondollar currencies; others do not. Some still have relatively serious currency mismatches and/or large real exchange rate misalignments to contend with, while others do not. Some have good monetary policy frameworks in place, have turned in very good inflation performance of late, and might well be able to take some countercyclical policy action if hit with a serious external shock; others do not, have not, and could not. Some have to carry the baggage of fragile banking systems, while others are much farther along on banking reform. The various indicator tables included in the paper represent a first-pass to deal with some of those cross-country differences.

But if the threat of a new emerging-market crisis is not something to be dismissed lightly, it is natural to ask what might be done to reduce the risk and to strengthen the forces of crisis prevention going forward?

Since my crisis story is linked to a disorderly correction of global payments imbalances, a good place to start on crisis prevention would be to make the payments-adjustment process more orderly and more effective. That entails at least three complementary sets of policy actions. In the United States, there needs to be a credible plan to reduce the structural budget deficit to less than 1 percent of GDP by 2010; there is no such plan on the table right now. Also, the US Federal Reserve needs to continue with its ongoing tightening of monetary conditions so that US domestic demand growth is brought beneath the growth of output and stays there until the US current account deficit is roughly half its present size. In Europe, the ECB should be cautious in raising interest rates so that domestic demand growth in the European Union can grow faster than output growth. In Asia, the imperative is to get more appreciation of key Asian currencies—especially the Chinese renminbi—so that the needed second wave of dollar depreciation can be both broadly distributed among nondollar currencies and large enough to perform its expenditure-switching function.

The emerging markets too still have plenty to do, so that they are both better equipped to withstand a shift toward less benign global financing conditions and less likely to throw fat on the fire with their own country-specific difficulties. This means continuing to work toward reducing high public debt ratios and currency mismatches, taking action to remove large over and undervaluations of their real exchange rates (before the markets force such a change on them), persuading more emerging economies to adopt transparent frameworks for the conduct and evaluation of monetary

policy, building deeper local bond markets, and increasing efforts to reduce the fragility of domestic banking systems.

The fact that (almost) everybody has heard this diagnosis and prescription before doesn't make it any less relevant.

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Figure 1 Real GDP growth in emerging-market economies

e = estimate; f = IIF forecast

Source: IIF (2005).

Table 1 Real GDP growth in emerging economies
(percentage change from previous year)

Region	2002	2003	2004e	2005f
Latin America	-0.9	1.6	5.4	3.7
Europe	4.3	5.5	6.5	5.4
Africa/Middle East	3.4	4.1	4.1	4.5
Asia/Pacific	6.6	7.2	7.0	6.4
<i>Weighted average</i>	3.7	5.2	6.3	5.4

e = estimate; f = IIF forecast

Source: IIF (2005).

Table 2 The global outlook in summary

(percentage change from previous year, except interest rates and oil prices)

	2003	2004	Forecast	
			2005f	2006f
Global conditions				
World trade volume	5.6	10.3	7.7	7.7
Consumer prices				
G-7 countries ^{a,b}	1.6	1.8	1.7	1.6
United States	2.3	2.7	3.0	3.5
Commodity prices (US dollar terms)				
Nonoil commodities	10.2	17.5	4.7	-5.2
Oil price (World Bank average) ^c	28.9	37.7	42.0	36.0
Oil price (percent change)	15.9	30.6	11.3	-14.3
Manufactures unit export value ^d	7.5	7.0	3.0	2.8
Interest rates				
\$, 6-month (percent)	1.2	1.6	3.5	4.6
€, 6-month (percent)	2.3	2.1	2.1	2.8
Real GDP growth^e				
World	2.5	3.8	3.1	3.1
<i>Memorandum item:</i>				
World (PPP weights) ^f	3.9	5.0	4.3	4.2
High income	1.9	3.1	2.4	2.6
OECD countries ^g	1.8	3.1	2.3	2.5
Euro area	0.5	1.8	1.2	2.2
Japan	1.4	2.6	0.8	1.9
United States	3.0	4.4	3.9	3.0
Non-OECD countries	3.2	6.2	4.4	4.4
Developing countries	5.3	6.6	5.7	5.2
East Asia and Pacific	8.0	8.3	7.4	6.9
Europe and Central Asia	5.9	6.8	5.5	4.9
Latin America and the Caribbean	1.7	5.7	4.3	3.7
Middle East and North Africa	5.8	5.1	4.9	4.3
South Asia	7.8	6.6	6.2	6.4
Sub-Saharan Africa	3.4	3.8	4.1	4.0
<i>Memorandum items:</i>				
Developing countries				
excluding transition countries	5.2	6.7	5.7	5.3
excluding China and India	3.9	5.8	4.8	4.4

PPP = purchasing power parity; e = estimate; f = World Bank forecasts

a. Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States.

b. In local currency, aggregated using 1995 GDP weights.

c. Simple average of Dubai, Brent, and West Texas Intermediate crude oils.

d. Unit value index of manufactured exports from major economies, expressed in U.S. dollars.

e. GDP in constant dollars at 1995 prices and market exchange rates.

f. GDP measured at 1995 PPP weights.

Source: World Bank (2005).

Figure 2 EMBIG spreads (basis points)

EMBIG = Emerging Market Bond Index Global

Source: International Monetary Fund.

Table 3 Emerging-market economies' external financing
(billions of dollars)

	2002	2003	2004e	2005f
Current account balance	78.8	119.6	169.8	113.3
External financing, net:				
Private flows, net	120.4	207.6	303.4	310.7
Equity investment, net	118.8	125.1	176.7	184.9
Direct investment, net	117.7	92.7	138.3	148.2
Portfolio investment, net	1.1	32.5	38.5	36.7
Private creditors, net	1.6	82.5	126.7	125.9
Commercial banks, net	-3.9	30.6	54.2	46.2
Nonbanks, net	5.4	51.9	72.5	79.7
Official flows, net	-3.3	-21.0	-27.9	-50.4
International financial institutions	7.8	-6.7	-18.7	-16.9
Bilateral creditors	-11.1	-14.3	-9.1	-33.5
Resident lending/ other, net^a	-45.1	11.2	-53.5	-46.3
Reserves (- = increase)	-150.8	-317.4	-391.8	-327.4

e = estimate; f = IIF forecast

a. Including net lending, monetary gold, and errors and omissions.

Source: Institute for International Finance (2005).

Figure 3: China's GDP Growth, 1992-20051H

Figure 4 China: Real lending rate*, 2002-05

*Nominal interest rate – change in corporate goods price index (PBC)

Figure 5 China: Domestic and foreign currency loans, 1998–2004
(percent of GDP)

Figure 6 China: Lending growth, January 2003–May 2005

Figure 7 Real effective exchange rate of the renminbi, 1994–2005

Figure 8 China's foreign exchange reserves, 2001–05Q1

Note: After 12/2003, foreign exchange figures are adjusted to reflect \$45 billion transfer to SOCB.

Figure 9 China: Investment as a share of GDP, 1979–2004

E = estimate

Figure 10 China: Increase in real fixed asset investment, 1992–2004
(percent)

Figure 11 China: Expenditure shares of GDP, 2003 (percent)

Source: China Statistical Yearbook 2004, 65–66.

Figure 12 China: Real consumption, 1992–2003 (percent of GDP)

Table 4 Sharing the adjustment of payment imbalances

Country	Real effective exchange rate (REER) changes	Fed weight	Change in international reserves		Current account	Estimated exchange rate undervaluation
	(percent)	(percent)	(billions of dollars)	(percent of GDP)	(percent of GDP)	(percent)
	Feb 02–May 05	2005	2004	2004	2004	2004
Selected countries and Euro area						
China	-8	11	207	13	4	26
Euro area	23	19	211	2	1	—
United Kingdom	-1	5	45	2	-2	—
Canada	10	16	34	4	3	—
Australia	27	1	36	6	-6	—
Mexico	-7	10	8	1	-1	—
Japan	-3	11	171	4	4	37
Emerging Asia						
Hong Kong	-16	2	5	3	10	5
Indonesia	3	1	0	0	3	12
Malaysia	-15	2	22	19	13	14
Korea	18	4	44	7	4	10
Singapore	10	2	16	16	26	14
Taiwan	-2	3	35	11	6	22
Thailand	1	1	7	5	5	9

Sources: JP Morgan (REER); Federal Reserve Board (weights); IMF's *International Financial Statistics* (international reserves); World Bank's *World Economic Outlook* (current account as a percent of GDP); Anderson (2003) (exchange rate undervaluation).

Figure 13 US savings and investment (as percent of GDP)

Source: Bureau of Economic Analysis, National Income and Product Accounts and International Transactions Accounts.

Figure 14 CBO's January 2005 budget projections (as percent of GDP)

- ◆— CBO January 2005 Baseline
- Plus Extend Expiring Tax Cuts
- ▲- Plus Reform Alternative Minimum Tax
- ×- Plus Discretionary Spending Growth at Growth Rate of Nominal GDP
- *- Plus Assume Phasedown of Activities in Iraq and Afghanistan and Continued Spending for the Global War on Terrorism

CBO = Congressional Budget Office

Table 5 Vulnerability to import slowdown in China and the United States, 2004

Exports to China				Exports to the United States			
Share of total exports		Share of GDP		Share of total exports		Share of GDP	
(1)	Percent	(2)	Percent	(3)	2004	(4)	2004
Hong Kong	44	Hong Kong	69	Mexico	81	Hong Kong	26
Korea	22	Singapore	15	Venezuela	55	Singapore	22
Taiwan	19	Taiwan	9	Ecuador	48	Venezuela	22
Philippines	11	Korea	7	Colombia	41	Mexico	21
Chile	10	Malaysia	7	Peru	30	Malaysia	20
Peru	10	Philippines	6	China	23	Ecuador	14
Singapore	9	Thailand	4	Brazil	21	China	9
Argentina	8	Chile	3	Malaysia	19	Philippines	8
Brazil	8	Saudi Arabia	2	Saudi Arabia	18	Taiwan	8
India	8	Indonesia	2	India	18	Saudi Arabia	8
Indonesia	7	Argentina	2	Korea	18	Thailand	8
Thailand	7	Russia	2	Philippines	17	Colombia	7
Malaysia	7	Ukraine	2	Hong Kong	17	Korea	6
Russia	7	Peru	2	Taiwan	17	Peru	5
Saudi Arabia	6	Brazil	1	Thailand	16	Chile	4
United States	4	India	1	Chile	14	Indonesia	4
Ukraine	4	Venezuela	1	Singapore	13	Brazil	3
South Africa	2	South Africa	1	Indonesia	13	Argentina	2
Egypt	2	Czech Republic	0	Egypt	12	India	2
Venezuela	1	Egypt	0	South Africa	10	South Africa	2
Mexico	1	Ecuador	0	Argentina	10	Lithuania	2
Colombia	1	United States	0	Turkey	8	Russia	2
Ecuador	1	Mexico	0	Russia	6	Egypt	2
Czech Republic	1	Poland	0	Lithuania	5	Czech Republic	2
Hungary	1	Hungary	0	Czech Republic	3	Turkey	1
Poland	1	Colombia	0	Hungary	3	Ukraine	1
Turkey	1	Turkey	0	Poland	3	Hungary	1
Lithuania	0	Lithuania	0	Ukraine	3	Poland	1

Sources: IMF's *Direction of Trade Statistics* and *International Financial Statistics*.

Table 5 Vulnerability to import slowdown in China and the United States *(continued)*

Exports to China and United States			
Share of total exports		Share of GDP	
(5)	Percent	(6)	Percent
Mexico	82	Hong Kong	95
Hong Kong	61	Singapore	37
Venezuela	56	Malaysia	28
Ecuador	49	Venezuela	23
Colombia	42	Mexico	21
Korea	40	Taiwan	18
Peru	40	Ecuador	14
Taiwan	36	Philippines	14
Brazil	29	Korea	13
Philippines	29	Thailand	11
India	26	Saudi Arabia	11
Malaysia	25	Chile	8
Saudi Arabia	24	Peru	7
Chile	24	Colombia	7
Thailand	23	Indonesia	6
Singapore	22	Argentina	4
Indonesia	20	Brazil	4
Argentina	19	Russia	4
Egypt	13	India	3
Russia	13	Ukraine	3
South Africa	13	South Africa	3
Turkey	8	Lithuania	2
Ukraine	6	Egypt	2
Lithuania	6	Czech Republic	2
Czech Republic	4	Turkey	2
Hungary	4	Hungary	1
Poland	3	Poland	1

Sources: IMF's *Direction of Trade Statistics* and *International Financial Statistics*.

Table 6 Specialized primary commodities
(percent of total exports)

Country/commodity	1990-99
Venezuela (crude oil)	78
Chile (copper)	41
Russia (crude oil)	24
Colombia (crude oil)	23
Colombia (coffee)	18
Russia (natural gas)	17
Indonesia (crude oil)	15
Mexico (crude oil)	11
Indonesia (natural gas)	10
Argentina (crude oil)	10
Argentina (soybean meals)	8
Colombia (coal)	8
Brazil (iron ore)	7
South Africa (coal)	6
Poland (coal)	6
Argentina (wheat)	5
Argentina (soybean oil)	5
Malaysia (palm oil)	5
Argentina (hides)	5

Source: International Monetary Fund.

Table 7 Nonmanufactured exports, 2002

Country	Percent of total merchandise exports	Country	Percent of GDP
Venezuela	87	Venezuela	24
Chile	82	Russia	24
Russia	78	Philippines	23
Argentina	69	Chile	22
Colombia	62	Singapore	21
Philippines	50	Malaysia	21
Brazil	46	Argentina	17
Indonesia	46	Indonesia	15
South Africa	37	Thailand	14
Thailand	26	South Africa	10
India	25	Colombia	9
Malaysia	21	Hungary	7
Poland	18	Hong Kong	6
Mexico	16	Brazil	6
Turkey	16	Czech Republic	6
Singapore	15	Mexico	4
Hungary	14	Poland	4
Czech Republic	11	Turkey	3
China	10	Taiwan	3
Korea	8	China	3
Taiwan	6	India	2
Hong Kong	5	Korea	2

Source: World Bank's World Development Report 2004.

Table 8 Vulnerability to interest rate shocks and to a sudden stop in private capital flows

External sovereign debt service (percent of exports)					
(1)	2004	(2)	2005f	(3)	2006f
Argentina	55	Argentina	23	Colombia	23
Brazil	23	Colombia	23	Argentina	21
Turkey	19	Brazil	21	Brazil	20
Colombia	17	Turkey	20	Turkey	17
Indonesia	13	Indonesia	13	Venezuela	13
India	12	Venezuela	12	Indonesia	13
Venezuela	10	India	12	India	11
Mexico	8	Russia	8	Russia	6
Thailand	8	Mexico	7	Philippines	6
Russia	7	Philippines	7	Mexico	5
Philippines	7	Thailand	7	Poland	5
Chile	5	Poland	5	Thailand	5
South Africa	4	South Africa	4	South Africa	4
Poland	4	Hungary	4	China	3
China	4	Chile	3	Chile	2
Hungary	3	China	3	Hungary	2
Korea	2	Korea	1	Korea	1
Malaysia	0	Malaysia	0	Malaysia	0
Czech Republic	n.c.	Czech Republic	n.c.	Czech Republic	n.c.

Domestic sovereign debt service (percent of GDP)					
(4)	2004	(5)	2005f	(6)	2006f
Turkey	41	Turkey	35	Turkey	32
Hungary	29	Brazil	25	Brazil	23
Brazil	27	Hungary	17	Mexico	13
Mexico	14	Mexico	14	Hungary	9
Chile	13	Poland	11	Philippines	8
Poland	12	Chile	10	Poland	8
Philippines	8	Philippines	9	Colombia	7
Malaysia	7	Colombia	7	Malaysia	7
Colombia	6	Malaysia	7	Venezuela	5
Venezuela	6	Venezuela	5	Chile	4
Argentina	4	Argentina	4	South Africa	4
South Africa	3	South Africa	3	Argentina	3
Indonesia	3	Indonesia	3	Indonesia	3
China	2	Thailand	2	Thailand	3
Thailand	2	China	2	China	2
Russia	1	Russia	1	Russia	0
India	n.c.	India	n.c.	India	n.c.
Korea	n.c.	Korea	n.c.	Korea	n.c.
Czech Republic	n.c.	Czech Republic	n.c.	Czech Republic	n.c.

f= forecast

n.c. = not covered

Source: JP Morgan (2005).

Table 8 (continued)

Total sovereign debt service (percent of GDP)					
(7)	2004	(8)	2005f	(9)	2006f
Turkey	47	Turkey	41	Turkey	37
Brazil	31	Brazil	29	Brazil	27
Hungary	31	Hungary	19	Mexico	15
Argentina	20	Mexico	16	Philippines	12
Mexico	17	Philippines	13	Hungary	11
Chile	14	Poland	12	Colombia	11
Poland	14	Chile	11	Poland	10
Philippines	12	Colombia	10	Venezuela	9
Colombia	9	Argentina	10	Argentina	9
Venezuela	9	Venezuela	9	Malaysia	7
Indonesia	7	Malaysia	7	Indonesia	6
Malaysia	7	Thailand	7	Thailand	6
Thailand	7	Indonesia	6	Chile	5
South Africa	4	South Africa	4	South Africa	4
Russia	4	Russia	3	China	3
China	4	China	3	Russia	2
India	2	India	2	India	2
Korea	1	Korea	1	Korea	1
Czech Republic	n.c.	Czech Republic	n.c.	Czech Republic	n.c.

Private-sector debt service (percent of GDP)		Fixed-interest rate debt (percent of total)		Floating domestic government debt tied to domestic interest rate (percent of total)	
(10)	2006f	(11)	End-2001	(12)	End-2001
Argentina	6	Brazil	10	Venezuela	90
Indonesia	4	Venezuela	10	Malaysia	80
Chile	4	Turkey	15	Mexico	60
Turkey	3	Malaysia	20	Brazil	53
Brazil	3	Chile	21	Turkey	50
Poland	3	Indonesia	25	Indonesia	31
Philippines	3	Mexico	36	Hungary	21
Colombia	3	Hungary	79	Poland	11
Mexico	2	Poland	89	Chile	0
Malaysia	2	South Africa	98	Czech Republic	0
Thailand	2	Czech Republic	100	India	0
Hungary	2	India	100	Philippines	0
Korea	2	Philippines	100	South Africa	0
Venezuela	1	Thailand	100	Thailand	0
China	1	Argentina	n.c.	Argentina	n.c.
Russia	1	China	n.c.	China	n.c.
South Africa	n.c.	Colombia	n.c.	Colombia	n.c.
India	n.c.	Korea	n.c.	Korea	n.c.
Czech Republic	n.c.	Russia	n.c.	Russia	n.c.

n.c. – not covered

Sources: JP Morgan (columns 7 to 10); Borensztein et al. (2004) (columns 11 and 12).

Table 8 (continued)

Current account + external debt amortization (percent of reserves)				Current account + external debt amortization - foreign direct investment (FDI) (percent of reserves)		Current account (percent of GDP)	
(13)	2004	(14)	2005	(15)	2004	(16)	2004
Turkey	113	Turkey	115	Turkey	118	Hungary	-9
Hungary	100	Hungary	110	Hungary	117	Czech Republic	-6
Argentina	96	Indonesia	54	Argentina	101	Turkey	-4
Mexico	49	Colombia	54	Chile	81	South Africa	-2
Indonesia	45	Poland	49	Mexico	75	Poland	-2
Chile	40	Mexico	45	Colombia	48	Mexico	-1
Poland	35	Argentina	38	Poland	46	Colombia	-1
Colombia	31	Chile	25	Indonesia	42	Chile	1
Czech Republic	20	Czech Republic	21	Czech Republic	34	India	1
India	7	India	9	India	11	Argentina	1
Thailand	6	Thailand	2	Thailand	9	Brazil	1
China	-6	China	-2	China	3	China	2
Korea	-8	Korea	-3	Korea	-6	Philippines	3
Philippines	-9	Philippines	-9	Philippines	-8	Indonesia	3
Malaysia	-20	Malaysia	-13	Brazil	-11	Korea	3
Brazil	-30	Brazil	-18	Malaysia	-17	Thailand	4
Russia	-40	Russia	-26	Russia	-38	Russia	10
Venezuela	-47	Venezuela	-39	Venezuela	-43	Malaysia	12
South Africa	n.c.	South Africa	n.c.	South Africa	n.c.	Venezuela	14

Short-term external debt (percent of total external debt)		Short-term debt (percent of domestically issued government bonds)		Average original maturity of new issuance, in years	
(17)	2004	(18)	2001	(19)	2004
China	43	Czech Republic	59	Thailand	5
Czech Republic	33	Philippines	36	Russia	5
Korea	31	Poland	27	India	5
Thailand	23	Mexico	24	Poland	7
Mexico	21	Hungary	23	South Africa	8
Turkey	19	Chile	21	Hungary	8
Chile	19	Malaysia	20	Chile	8
Poland	18	India	18	Malaysia	8
Venezuela	16	Turkey	15	South Korea	9
Malaysia	15	Venezuela	10	China	9
Hungary	15	Thailand	9	Argentina	9
Argentina	15	South Africa	5	Czech Republic	10
Colombia	10	Brazil	0	Indonesia	10
Brazil	10	Indonesia	0	Philippines	10
Philippines	10	Argentina	n.c.	Colombia	12
India	3	China	n.c.	Brazil	12
South Africa	n.c.	Colombia	n.c.	Turkey	13
Russia	n.c.	Korea	n.c.	Mexico	16
Indonesia	n.c.	Russia	n.c.	Venezuela	5

n.c. = not covered

Sources: JP Morgan (columns 13 to 15), Deutch Bank (column 16), BIS (columns 16 to 19).

Table 8 *(continued)*

Short-term external debt (percent of reserves)		Short-term external debt (percent of net foreign reserves)		Short-term external debt (percent of 250 percent IMF quota)	
(20)	2004 (Sept.)	(21)	2003	(22)	2003
Argentina	101	Turkey	152	Korea	934
Hungary	100	Brazil	132	Turkey	722
South Africa	85	South Africa	125	Mexico	413
Turkey	76	Indonesia	88	Brazil	371
Brazil	74	Hungary	61	Philippines	369
Chile	70	Philippines	49	Chile	360
Philippines	67	Czech Republic	38	Hungary	325
Mexico	45	Korea	30	Argentina	293
Indonesia	39	Colombia	27	Thailand	288
Russia	32	Russia	25	Poland	273
Colombia	30	Poland	24	Malaysia	215
Korea	29	Thailand	24	Indonesia	203
Poland	28	Chile	22	China	170
Venezuela	25	Malaysia	20	South Africa	152
Malaysia	22	Mexico	18	Colombia	138
Thailand	20	Venezuela	18	Russia	123
Czech Republic	20	China	13	India	118
India	18	India	7	Venezuela	35
China	8	Argentina	-706	Czech Republic	n.c.

Sources: IIF (columns 20 and 21), IMF (column 22).

Table 8 (continued)

Reserves (percent of broad money)				Reserves (percent of short-term debt)				Reserves (percent of total debt)			
(23)	1997	2003	2003– 1997	(24)	1997	2003	2003– 1997	(25)	1997	2003	2003– 1997
Venezuela	82	53	0.6	Poland	573	251	0.4	Poland	192	59	0.3
Hungary	40	31	0.8	Hungary	148	99	0.7	Argentina	22	9	0.4
South Africa	7	6	0.9	Argentina	56	38	0.7	Venezuela	78	44	0.6
Hong Kong	26	23	0.9	Chile	159	143	0.9	Chile	66	44	0.7
Argentina	29	26	0.9	Brazil	92	102	1.1	Brazil	46	32	0.7
China	13	12	0.9	Venezuela	260	321	1.2	Hungary	37	27	0.7
Poland	39	36	0.9	Turkey	95	119	1.3	South Africa	19	19	1.0
Chile	56	53	0.9	India	305	457	1.5	Turkey	44	44	1.0
Mexico	16	16	1.0	South Africa	34	58	1.7	Colombia	44	49	1.1
Turkey	27	27	1.0	Mexico	87	157	1.8	Philippines	25	30	1.2
Singapore	72	74	1.0	Philippines	56	129	2.3	Czech Republic	83	122	1.5
Colombia	37	44	1.2	Colombia	126	291	2.3	Malaysia	50	74	1.5
Brazil	23	31	1.3	Malaysia	133	327	2.5	Mexico	26	42	1.6
Thailand	19	27	1.4	Czech Republic	176	434	2.5	Hong Kong	40	79	2.0
Czech Republic	26	39	1.5	China	392	1052	2.7	Singapore	34	74	2.2
Malaysia	21	32	1.5	Hong Kong	54	164	3.0	India	94	220	2.3
India	12	20	1.7	Singapore	40	139	3.5	China	139	472	3.4
Philippines	14	29	2.1	Indonesia	45	241	5.4	Thailand	33	138	4.2
Indonesia	13	29	2.2	Thailand	66	366	5.5	Indonesia	24	102	4.3
Russia	16	43	2.7	Russia	39	218	5.6	Russia	16	75	4.7
Korea	4	16	4.0	Korea	30	230	7.7	Korea	13	95	7.3

Sources: IIF, Moody, Fitch.

Table 8 (continued)

Currency mismatch measure		Ratio of sovereign external debt to sovereign domestic debt		Current nominal interest rate (overnight policy rate)	
(26)	2004	(27)	2004	(28)	2004
Argentina	-115	Russia	4.1	Brazil	19
Philippines	-18	Venezuela	1.6	Venezuela	16
Turkey	-11	Argentina	1.5	Turkey	16
Brazil	-11	Indonesia	1.2	Russia	13
Chile	-5	Philippines	1.2	Mexico	9
Hungary	-5	Colombia	0.9	Philippines	9
Mexico	-4	Mexico	0.8	Hungary	8
Colombia	2	Turkey	0.6	South Africa	8
Indonesia	2	Malaysia	0.6	Indonesia	7
South Africa	2	Chile	0.5	Colombia	7
Poland	2	Poland	0.4	Poland	7
China	3	Brazil	0.4	India	5
Thailand	4	Hungary	0.3	Korea	3
Malaysia	4	Thailand	0.3	Argentina	3
Korea	4	India	0.2	Chile	3
Czech Republic	5	China	0.2	Malaysia	3
India	5	Korea	0.2	China	2
Russia	16	South Africa	0.2	Czech Republic	2
Venezuela	57	Czech Republic	n.c.	Thailand	2

Sources: Goldstein and Turner (2004) (column 26); JP Morgan (columns 27 and 28).

Total external debt (percent of exports)		Total sovereign debt (percent of GDP)	
(29)	2004	(30)	2004
Argentina	396	Argentina	121
Colombia	221	Philippines	89
Brazil	187	Turkey	88
Indonesia	183	India	76
Turkey	174	Brazil	73
Chile	122	Malaysia	62
India	119	Hungary	60
Philippines	117	Indonesia	58
Poland	108	Colombia	54
Russia	101	Poland	51
Hungary	87	Thailand	50
Venezuela	86	South Africa	41
South Africa	81	Venezuela	39
Mexico	66	Chile	34
Korea	56	Mexico	27
Thailand	43	Russia	24
Malaysia	36	China	21
China	33	Korea	19
Czech Republic	n.c.	Czech Republic	n.c.

n.c. = not covered

Source: JP Morgan (2005) (columns 29 and 30).

Table 9 Vulnerability to exchange rate problems

Goldman Sachs dynamic real equilibrium exchange rate (DEER)				Deviation from 10-year moving average				Real effective exchange rate (REER) (percent changes, 2000–04)			
(1) Overvaluation		(2) Undervaluation		(3) Overvaluation		(4) Undervaluation		(5) Appreciation		(6) Depreciation	
Venezuela	29	Philippines	-14	Czech Republic	26	Argentina	-26	Russia	61	Argentina	-41
Hungary	23	China	-8	Russia	22	Malaysia	-16	Czech Republic	28	Malaysia	-6
Indonesia	17	Argentina	-5	Turkey	22	Philippines	-7	Turkey	17	Philippines	-4
Turkey	17	Malaysia	-2	Brazil	20	Indonesia	-6	Poland	21	China	-4
Korea	12	Brazil	-2	Hungary	17	Colombia	-3	Brazil	21	Indonesia	-2
Poland	9	Colombia	-2	South Africa	17	China	-3	Hungary	20	Colombia	-2
Czech Republic	8			Poland	16			Poland	15		
Chile	8			Venezuela	14			Venezuela	2		
Mexico	7			Mexico	9			Mexico	3		
Thailand	4			Korea	8			Korea	3		
Russia	2			Chile	2			Chile	4		
South Africa	1			India	2			India	2		
				Thailand	2			Thailand	0		

Sources: DEER: Goldman Sachs (2005a); Deviation from 10-year moving average: Author's calculations; Real movement: JP Morgan.

Table 9 (*continued*)

Net liability / asset position in foreign exchange		Aggregate effective currency mismatch		Foreign currency or foreign currency-linked debt (percent of total public debt)	
(7)	2003	(8)	2004	(9)	2003
Argentina	n.l.	Argentina	-115	Chile	88
Turkey	n.l.	Philippines	-18	Russia	82
Brazil	n.l.	Turkey	-11	Argentina	73
Philippines	n.l.	Brazil	-11	Indonesia	69
Chile	n.l.	Chile	-5	Venezuela	63
Hungary	n.l.	Hungary	-5	Colombia	52
Colombia	n.l.	Mexico	-4	Turkey	50
Mexico	n.l.	Colombia	2	Philippines	49
South Africa	n.a.	Indonesia	2	Mexico	45
Malaysia	n.a.	South Africa	2	Poland	38
Poland	n.a.	Poland	2	Hungary	28
Korea	n.a.	China	3	Brazil	26
India	n.a.	Thailand	4	Thailand	22
China	n.a.	Malaysia	4	Malaysia	20
Czech Republic	n.a.	Korea	4	China	16
Thailand	n.a.	Czech Republic	5	South Africa	14
Russia	n.a.	India	5	India	8
Indonesia	n.a.	Russia	16	Czech Republic	7
Venezuela	n.a.	Venezuela	57	Korea	n.c.

n.a. = net assets

n.l. = net liabilities

Sources: Goldstein and Turner (2004) (columns 7 and 8); Moody (column 9).

Table 9 (continued)

Euro debt (percent of total long-term debt)		Yen debt (percent of total long-term debt)		Dollar debt (percent of total long-term debt)	
(10)	2002	(11)	2002	(12)	2002
Hungary	63	Thailand	57	South Africa	92
Poland	46	Philippines	41	Mexico	90
Czech Republic	35	Indonesia	28	Chile	89
Argentina	35	Malaysia	21	Colombia	78
Turkey	25	Hungary	19	Venezuela	77
Russia	24	China	15	Brazil	74
Venezuela	13	India	12	India	74
Brazil	12	Brazil	9	China	73
Colombia	11	Turkey	8	Malaysia	71
Indonesia	9	Argentina	5	Russia	70
India	6	Mexico	5	Turkey	65
Chile	6	Poland	4	Argentina	56
China	6	Colombia	4	Indonesia	56
Philippines	5	South Africa	4	Czech Republic	54
Malaysia	3	Chile	3	Philippines	39
South Africa	3	Czech Republic	2	Thailand	38
Thailand	2	Venezuela	1	Poland	36
Mexico	1	Russia	0	Hungary	16
Korea	n.c.	Korea	n.c.	Korea	n.c.

n.c. = not covered

Source: World Bank's *World Development Report* (columns 10 to 12).

Table 9 *(continued)*

Moody's Weighted Average Bank Financial Strength Index		CPI inflation rate for undervaluation cases	
(13)	May 2004	(14)	2004
Argentina	0	Colombia	6
Indonesia	7	Philippines	5
Venezuela	8	Argentina	5
China	10	China	4
Russia	11	Malaysia	2
Thailand	17		
Turkey	19		
Philippines	19		
Korea	20		
Colombia	24		
Brazil	24		
India	28		
Poland	30		
Malaysia	37		
Mexico	37		
Czech Republic	38		
Hungary	43		
South Africa	50		
Chile	57		

Source: IMF (columns 13 and 14).

Table 9 (continued)

Domestic/foreign interest rate spreads		Exchange rate-adjusted spreads		International reserves (Percent of GDP)	
(15)	Jan-05	(16)	Jan-05	(17)	2004
Turkey	16.8	Russia	8.0	Malaysia	57
Russia	9.8	China	7.6	China	38
Indonesia	6.0	Indonesia	3.4	Thailand	31
Mexico	5.6	India	1.8	Korea	29
Poland	3.3	Mexico	1.3	Venezuela	23
Philippines	3.2	Thailand	1.0	Russia	21
China	2.4	Poland	0.2	India	18
India	2.3	Czech Republic	-0.2	Poland	16
Malaysia	-0.5	Turkey	-0.6	Indonesia	14
Brazil	-0.6	Philippines	-0.9	Czech Republic	n.c.
Czech Republic	-0.7	Brazil	-14.9	South Africa	n.c.
Thailand	-1.2	Malaysia	n.c.		
Argentina	n.c.	Argentina	n.c.		
Chile	n.c.	Chile	n.c.		
Hong Kong	n.c.	Hong Kong	n.c.		
Hungary	n.c.	Hungary	n.c.		
Korea	n.c.	Korea	n.c.		
Singapore	n.c.	Singapore	n.c.		
Venezuela	n.c.	Venezuela	n.c.		

n.c. = not covered

Sources: *Global Development Finance* (2005) (columns 15 and 16) ; Deutsche Bank (column 17).

Figure 15 Recent crises: Impact of exchange rate depreciation on the ratio of public debt to GDP (percent of GDP)

* Contribution of exchange rate depreciation is measured as the increase in the pre-crisis debt to GDP ratio that results from setting the pre-crisis real exchange rate to its post-crisis level.

Source: Borensztein et al. (2004).

Table 10 Pressures on fiscal and monetary policies

Public debt (percent of GDP) JP Morgan		Public debt (percent of GDP) Deutsche Bank		Total external debt (percent of GDP)		Total external debt (percent of exports)	
(1)	2004	(2)	2004	(3)	2004	(4)	2004p
Argentina	121	Argentina	120	Argentina	111	Argentina	396
Philippines	89	Philippines	94	Philippines	70	Colombia	221
Turkey	88	Singapore	87	Indonesia	53	Brazil	187
India	76	India	78	Turkey	53	Indonesia	183
Brazil	73	Turkey	77	Hungary	52	Turkey	174
Malaysia	62	Hungary	59	Chile	49	Chile	122
Hungary	60	Indonesia	53	Malaysia	44	India	119
Indonesia	58	Brazil	52	Colombia	41	Philippines	117
Colombia	54	Poland	52	Poland	40	Poland	108
Poland	51	Malaysia	51	Russia	36	Russia	101
Thailand	50	Colombia	49	Brazil	34	Hungary	87
South Africa	41	Mexico	43	Thailand	31	Venezuela	86
Venezuela	39	Czech Republic	39	Venezuela	31	South Africa	81
Chile	34	Venezuela	39	Korea	24	Mexico	66
Mexico	27	Taiwan	39	Mexico	21	Korea	56
Russia	24	South Africa	37	South Africa	19	Thailand	43
China	21	Korea	34	India	19	Malaysia	36
Korea	19	China	34	China	14	China	33
Czech Republic	n.c.	Chile	31	Czech Republic	n.c.	Czech Republic	n.c.
Hong Kong	n.c.	Russia	21	Hong Kong	n.c.	Hong Kong	n.c.
Singapore	n.c.	Hong Kong	2	Singapore	n.c.	Singapore	n.c.
Taiwan	n.c.	Taiwan	n.c.	Taiwan	n.c.	Taiwan	n.c.

Countries with at least one external default between 1970 and 2003		Debt intolerance ranking				Number of years with increasing ratio of total public debt to GDP	
		(External debt/GNP) /IIR	(External debt/GNP) /IIR	(External debt/exports) /IIR	(External debt/exports) /IIR		
(5)		(6)	1979– 2000	(7)	1979–2000	(8)	2001–04
Argentina	Yes	Philippines	1.6	Argentina	10.6	Colombia	3
Brazil	Yes	Chile	1.2	Brazil	8.8	Venezuela	3
Chile	Yes	Argentina	1.1	Turkey	6.0	Hungary	3
Indonesia	Yes	Venezuela	1.0	Philippines	5.8	Poland	3
Mexico	Yes	Turkey	0.9	Chile	4.7	China	3
Philippines	Yes	Brazil	0.8	Mexico	4.4	India	3
Russia	Yes	Colombia	0.8	Colombia	4.3	Argentina	2
Turkey	Yes	Mexico	0.8	India	4.2	Brazil	2
Venezuela	Yes	Thailand	0.7	Venezuela	3.5	Chile	2
China	No	Malaysia	0.6	Thailand	2.0	Mexico	2
Colombia	No	Korea	0.5	Korea	1.4	South Africa	2
Czech Republic	No	India	0.4	Malaysia	1.0	Turkey	2
Hong Kong	No	Singapore	0.1	Singapore	0.1	Korea	2
Hungary	No	China	n.c.	China	n.c.	Philippines	2
India	No	Czech Republic	n.c.	Czech Republic	n.c.	Malaysia	1
Korea	No	Hong Kong	n.c.	Hong Kong	n.c.	Russia	0
Malaysia	No	Hungary	n.c.	Hungary	n.c.	Indonesia	0
Poland	No	Korea	n.c.	Korea	n.c.	Thailand	0
Singapore	No	Poland	n.c.	Poland	n.c.	Czech Republic	n.c.
South Africa	No	Russia	n.c.	Russia	n.c.	Hong Kong	n.c.
Thailand	No	South Africa	n.c.	South Africa	n.c.	Singapore	n.c.
Taiwan	No	Taiwan	n.c.	Taiwan	n.c.	Taiwan	n.c.

IIR = Institutional Investors Rating

Sources: JP Morgan (columns 1, 3, and 4); Deutsche Bank (column 2); Reinhart, Rogoff, Savastano (2003) (columns 5 and 7); JP Morgan (column 8).

Table 10 (continued)

Primary surplus (percent of GDP)		Trade balance (percent of GDP)	
(9)	2004	(10)	2004
Czech Republic	-2.5	Turkey	-8.0
Poland	-2.1	Hong Kong	-7.3
Colombia	-1.4	Hungary	-4.5
China	-1.3	India	-3.7
Hungary	-1.1	Poland	-2.5
Malaysia	-1.0	Mexico	-1.2
Taiwan	-0.9	Czech Republic	-0.8
Venezuela	0.2	Philippines	-0.4
South Africa	0.5	South Africa	0.0
Korea	1.0	Thailand	0.5
Philippines	1.1	Colombia	0.9
Indonesia	1.4	Taiwan	1.8
Hong Kong	1.6	China	1.9
Thailand	1.6	Brazil	5.6
Mexico	2.6	Korea	5.7
Argentina	3.9	Indonesia	7.5
Brazil	4.6	Argentina	8.1
Russia	5.0	Chile	10.3
Turkey	6.5	Russia	15.7
Chile	n.c.	Venezuela	19.9
India	n.c.	Malaysia	23.1
Singapore	n.c.	Singapore	26.9

Average real dollar interest rate on debt		Real money market rate		Real treasury bill rate	
(11)	2004	(12)	2004	(13)	2004
Turkey	12.5	Turkey	12.3	Turkey	12.7
Brazil	8.9	Brazil	8.6	Brazil	9.5
Venezuela	5.8	South Africa	3.6	Hungary	5.8
Mexico	4.9	Mexico	2.0	South Africa	3.9
Colombia	4.8	Colombia	1.5	Mexico	1.6
Hungary	4.2	Malaysia	1.3	Philippines	1.4
Philippines	3.6	Philippines	1.2	Malaysia	1.0
Russia	3.1	Hong Kong	0.6	Czech Republic	-0.2
Poland	3.0	Korea	0.0	Singapore	-0.7
Indonesia	2.6	Czech Republic	-0.2	China	-3.8
Chile	2.4	Chile	-0.5	Russia	-8.6
Malaysia	1.5	Singapore	-0.6	Argentina	n.c.
Argentina	0.8	Indonesia	-0.7	Chile	n.c.
China	-0.4	Thailand	-1.5	Hong Kong	n.c.
Czech Republic	n.c.	Argentina	-4.1	Colombia	n.c.
India	n.c.	Russia	-8.4	India	n.c.
Korea	n.c.	Venezuela	-14.8	Indonesia	n.c.
South Africa	n.c.	Taiwan	n.c.	Korea	n.c.
Thailand	n.c.	China	n.c.	Poland	n.c.
Hong Kong	n.c.	Hungary	n.c.	Thailand	n.c.
Singapore	n.c.	India	n.c.	Venezuela	n.c.
Taiwan	n.c.	Poland	n.c.	Taiwan	n.c.

n.c. = not covered

Sources: Deutsche Bank (columns 9 and 10); JP Morgan (column 11); IMF's *International Financial Statistics* (columns 12 and 13).

Table 10 (continued)

Interest payments (percent of GDP)		Interest payments in percent of government revenues		ICRG Government Stability Index (government unity, legislative strength, popular support)		Real GDP growth	
(14)	2004e	(15)	2003	(16)	2003-Feb	(17)	2004
Turkey	12.6	Turkey	58.5	Argentina	3.5	South Africa	3.7
Brazil	7.3	Philippines	36.1	Venezuela	5.5	Colombia	3.8
Colombia	4.4	India	33.5	Chile	7.0	Czech Republic	4.0
India	4.1	Colombia	28.3	Czech Republic	7.0	Hungary	4.0
Venezuela	3.9	Brazil	26.2	Mexico	7.0	Mexico	4.2
South Africa	3.6	Indonesia	21.9	Taiwan	7.0	Korea	4.6
Poland	3.2	Venezuela	21.3	Korea	8.0	Indonesia	5.1
Indonesia	2.7	South Africa	15.3	South Africa	8.0	Brazil	5.2
Malaysia	2.7	Hungary	14.6	Colombia	8.5	Poland	5.4
Argentina	1.3	Argentina	14.3	India	8.5	Taiwan	5.7
Russia	1.2	Mexico	11.9	Brazil	9.0	Chile	5.9
Czech Republic	1.1	Malaysia	11.4	Indonesia	9.0	Philippines	6.1
Thailand	0.9	Poland	8.0	Philippines	9.0	Thailand	6.1
Hungary	-4.1	Thailand	6.4	Poland	9.0	Malaysia	7.1
Korea	n.c.	Russia	5.5	Thailand	9.5	Russia	7.1
China	n.c.	Chile	4.0	Turkey	9.5	India	7.3
Hong Kong	n.c.	China	2.7	Hong Kong	10.0	Hong Kong	7.8
Singapore	n.c.	Czech Republic	2.2	Hungary	10.0	Turkey	7.9
Taiwan	n.c.	Singapore	2.1	China	10.5	Singapore	8.4
Chile	n.c.	Hong Kong	0.0	Malaysia	10.5	Argentina	8.8
Mexico	n.c.	Korea	n.c.	Singapore	11.0	China	9.5
Philippines	n.c.	Taiwan	n.c.	Russia	11.5	Venezuela	17.3

Real GDP growth volatility (coefficient of variation)		REER monthly growth volatility (standard deviation)		Index of cyclicality of fiscal policy	
(18)	1993–2004	(19)	1993–2004	(20)	
Venezuela	14.0	Indonesia	7.5	Venezuela	0.36
Russia	11.4	Venezuela	5.6	Argentina	0.28
Argentina	3.2	Russia	4.7	Philippines	0.28
Turkey	1.6	Brazil	3.8	India	0.25
Indonesia	1.6	Mexico	3.6	Chile	0.24
Thailand	1.3	Turkey	3.6	Brazil	0.22
Mexico	1.3	Argentina	3.4	Mexico	0.19
Colombia	1.0	South Africa	3.2	Malaysia	0.11
Czech Republic	1.0	Korea	3.1	Indonesia	0.09
Malaysia	0.9	China	3.1	South Africa	0.06
Brazil	0.7	Philippines	2.7	Turkey	0.03
Chile	0.6	Thailand	2.6	Colombia	-0.02
Hungary	0.5	Colombia	2.3	China	-0.03
Philippines	0.5	Malaysia	2.1	Korea	-0.11
Poland	0.4	India	2.0	Czech Republic	n.c.
South Africa	0.4	Chile	1.8	Hong Kong	n.c.
China	0.2	Poland	1.7	Hungary	n.c.
India	0.2	Czech Republic	1.5	Poland	n.c.
Hong Kong	n.c.	Hungary	1.2	Russia	n.c.
Taiwan	n.c.	Hong Kong	n.c.	Singapore	n.c.
Singapore	n.c.	Taiwan	n.c.	Taiwan	n.c.
Korea	n.c.	Singapore	n.c.	Thailand	n.c.

n.c. = not covered

Sources: IIF (column 14); Moody (column 15); ICRG (column 16); Deutsche Bank (column 17); IMF's *International Financial Statistics* (columns 18, 21, and 22); JP Morgan (column 19); Reinhart et al. (2004, column 20).

Table 10 (continued)

Inflation rate			
(21)	2004	(22)	Avg. 2001–03
Venezuela	24	Turkey	42
Turkey	11	Venezuela	22
Russia	10	Russia	17
Hungary	7	Argentina	13
Brazil	7	Indonesia	10
Indonesia	7	Brazil	10
Colombia	6	Colombia	7
Philippines	5	South Africa	7
Argentina	5	Hungary	6
India	5	Mexico	5
Mexico	4	Philippines	4
China	4	India	4
Korea	4	Korea	4
Poland	4	Chile	3
Czech Republic	3	Poland	3
Thailand	3	Czech Republic	2
South Africa	3	Malaysia	1
Malaysia	2	Thailand	1
Singapore	2	China	0
Chile	1	Singapore	0
Hong Kong	0	Hong Kong	-2
Taiwan	n.c.	Taiwan	n.c.

Capital account (scaled by 2004 GDP)		Asian sterilization operations (percent of GDP)		Domestic credit change (percent of average 2003–04 GDP)	
(23)	2003–04 avg.	(24)	Feb-04 to Feb-05	(25)	2003–04
Malaysia	11.2	Malaysia	20.0	China	42
China	9.8	China	10.0	Malaysia	25
Argentina	5.3	Singapore	9.0	South Africa	23
Hungary	4.7	Korea	6.0	Turkey	17
Korea	4.5	Taiwan	5.0	Hungary	15
Russia	4.3	Philippines	2.0	Chile	11
Venezuela	4.3	Japan	1.5	Korea	11
India	4.3	Thailand	1.5	India	10
Thailand	3.6	India	1.0	Russia	10
Turkey	3.3	Indonesia	-2.5	Indonesia	8
Czech Republic	2.9			Czech Republic	8
Poland	2.0			Philippines	8
Philippines	1.2			Thailand	8
Colombia	1.2			Brazil	8
Indonesia	1.1			Colombia	7
Mexico	0.6			Venezuela	5
Brazil	0.1			Mexico	4
Chile	-0.3			Poland	3
South Africa	n.c.			Argentina	1

n.c. = not covered

Sources: IMF's *International Financial Statistics* (columns 21 to 23, and 25), UBS (column 24).

Table 10 (continued)

Excess reserves				Inflation targeters	
Deviation of reserves as months of imports (benchmark = 6 months)		Ratio of reserves to short-term debt			
(26)	2004	(27)	2004	(28)	2004 Dec.
Mexico	-2	Argentina	1	Argentina	No
Philippines	-2	Philippines	2	China	No
Czech Republic	0	Brazil	2	Hong Kong	No
Malaysia	0	Turkey	2	India	No
Poland	0	Mexico	2	Indonesia	No
Thailand	0	Indonesia	3	Malaysia	No
Turkey	0	Poland	3	Russia	No
Argentina	5	Russia	3	Singapore	No
Russia	5	Czech Republic	5	Taiwan	No
Brazil	6	Thailand	5	Venezuela	No
China	6	Venezuela	5	Brazil	Yes
Indonesia	7	Malaysia	5	Chile	Yes
India	10	India	6	Colombia	Yes
Venezuela	14	China	14	Czech Republic	Yes
Colombia	n.c.	Colombia	n.c.	Hungary	Yes
Chile	n.c.	Chile	n.c.	Korea	Yes
Hungary	n.c.	Hungary	n.c.	Mexico	Yes
Korea	n.c.	Korea	n.c.	Philippines	Yes
Taiwan	n.c.	Philippines	n.c.	Poland	Yes
Singapore	n.c.	Singapore	n.c.	South Africa	Yes
South Africa	n.c.	South Africa	n.c.	Thailand	Yes
Hong Kong	n.c.	Hong Kong	n.c.		

n.c. = not covered

* Turkey will become a full inflation targeter in 2006.

Sources: World Bank's *Global Development Finance 2005* (columns 26 and 27); IMF (column 28).

Table 10 (continued)

Change of real GDP growth 2003–04 to 2005–06 (percent) **Moody's Weighted Average Bank Financial Strength Index** **Bank nonperforming loans to total loans**

(29)		(30)	2004 Dec.	(31)	2004Q1
Argentina	-35	Argentina	0	Argentina	28
Russia	-29	Indonesia	7	China*	22
Turkey	-26	Venezuela	8	Poland*	21
Malaysia	-23	China	10	Philippines	17
Thailand	-18	Russia	11	Malaysia	14
Poland	-16	Thailand	16	Thailand	12
China	-13	Korea	18	Turkey	10
Colombia	-10	Philippines	19	India*	9
India	-10	Turkey	21	Venezuela	7
Philippines	-3	India	24	Colombia	7
Korea	-3	Colombia	24	Indonesia*	6
Indonesia	-1	Brazil	24	Russia	5
Czech Republic	1	Poland	31	Czech Republic	5
Hungary	3	Malaysia	35	Brazil*	4
Chile	11	Czech Republic	41	Hungary*	3
South Africa	15	Mexico	42	Mexico	3
Venezuela	21	Hungary	45	Korea*	3
Mexico	24	South Africa	50	South Africa	2
Brazil	26	Chile	58	Chile	2
Hong Kong	n.c.	Hong Kong	62	Hong Kong	n.c.
Singapore	n.c.	Singapore	75	Singapore	n.c.

Bank regulatory capital to risk-weighted assets (percent)		Limits on banking activities (0=most restricted)		Private Monitoring Index		Government debt to deposits	
(32)	2004Q1	(33)		(34)	2004	(35)	2003
Korea*	11	China	0	Venezuela	6	Argentina	100
Hungary*	12	Mexico	1	India	7	Mexico	79
India*	13	Turkey	1	Chile	8	Brazil	62
South Africa	13	Indonesia	1	Philippines	8	Turkey	59
Thailand	13	Brazil	2	Thailand	8	India	44
Colombia	13	Chile	2	Turkey	8	Indonesia	39
Malaysia	14	Venezuela	2	Argentina	9	Philippines	37
Poland*	14	India	2	Brazil	9	Colombia	31
Argentina	14	Malaysia	2	Czech Republic	9	Czech Republic	31
Mexico	15	Poland	2	Hungary	9	Russia	29
Chile	15	Russia	3	Malaysia	9	Hungary	28
Czech Republic	15	Czech Republic	3	Poland	9	Venezuela	11
Philippines*	16	Hungary	3	South Africa	9	China	8
Russia	19	Korea	3	Korea	10	Malaysia	6
Brazil*	19	Singapore	3	China	n.c.	Thailand	3
Indonesia*	22	South Africa	3	Colombia	n.c.	Korea	2
Turkey	32	Thailand	3	Indonesia	n.c.	South Africa	2
China	n.c.	Argentina	4	Mexico	n.c.	Poland	-3
Venezuela	n.c.	Philippines	4	Russia	n.c.	Chile	-4
Hong Kong	n.c.	Colombia	n.c.	Hong Kong	n.c.	Hong Kong	n.c.
Singapore	n.c.	Hong Kong	n.c.	Singapore	n.c.	Singapore	n.c.

n.c. = not covered

* indicates value from 2003.

Sources: Deutsche Bank (column 29), IMF (column 30); Barth, Caprio, and Levine (2005, forthcoming) (columns 31 to 35).

Table 11 Vulnerability to different transition mechanisms

	Bilateral trade	Primary commodity prices	Interest rates and capital flows	Exchange rate overvaluation	Fiscal and monetary policies
1	Hong Kong	Venezuela	Turkey	Czech Republic	Turkey
2	Singapore	Russia	Brazil	Hungary, Turkey	Argentina
3	Malaysia	Philippines	Argentina	Russia	Brazil
4	Venezuela	Chile	Hungary	Venezuela	Venezuela
5	Mexico	Singapore	Mexico	Poland	Hungary