

# The Blind Men and the Elephant<sup>1</sup>

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## 1. Introduction

The problem of global imbalances and the persistence of the U.S. deficit have been the subject of wildly differing interpretations. Among the most prominent are the deficient U.S. savings view, the new economy view, the global savings glut view, and the Sino-American codependency view. These four interpretations have different policy implications and suggest different scenarios for the future of the world economy.

Nouriel Roubini has a paper where he likens the existence of different perspectives to the Kurosawa film *Rashomon*, in which a series of observers give varying accounts of the same set of events.<sup>2</sup> The analogy is suggestive, which is why I cite it here. But the interpretations that I distinguish are not the same as Roubini's. More importantly, I draw different conclusions from the existence of these different perspectives. In Kurosawa's film the competing accounts are all self-serving, a pattern that Roubini suggests carries over to the discussion of global imbalances. Moreover, in Roubini's interpretation there is only one consistent, empirically defensible characterization of the facts. Here, in contrast, I argue that the exponents of different interpretations have all got their fingers on important aspects of the larger reality. Their accounts are not incompatible. But they are partial. Grasping the nature of the problem requires acknowledging that there is some validity to all four views. The right analogy is not *Rashomon*, therefore, but the blind men and the elephant.

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<sup>2</sup> See Roubini (2005).

In Section 2, I build a discussion of this point on the platform of the conventional current account identities. But simply saying that there is some validity to all four views is not very helpful for those concerned with the future. In Section 3 of the paper I therefore address the question of what these scenarios imply for future prospects. Section 4 then draws out then implications for policy.

## **2. Accounting Identities with Analytical Implications**

The simplest way of seeing the compatibility of the different views is to recall that the current account is the difference between savings and investment (S-I) and that the deficit of the United States must equal the surplus of the rest of the world ( $S-I = I^*-S^*$ ).<sup>3</sup> In general equilibrium, shocks to any of these four variables can have implications for all of them. The deficient U.S. savings view that the most important factor in the current situation is low national savings rates in the United States focuses on a negative shock to S. The new economy view that the main factor behind global imbalances is the attractiveness of investment in the United States focuses on a positive shock to I. The global savings glut view that high savings rates in the rest of the world are behind the prevailing pattern of low interest rates and capital flows to the United States focuses on a positive shock to  $S^*$ . And the Sino-American codependency view in which Asian countries have grown more risk adverse since the crisis of 1997-8, causing them to run their economies under less pressure of demand, exhibit lower investment rates, and accumulate reserves to protect themselves from another Asian crisis, all of which leaves them happy to see the U.S. run deficits focuses on the decline in  $I^*$ . Thus, all four variables can be affected by shocks. And shocks to any one will in general affect the other three. There is nothing

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<sup>3</sup> Asterisks denote rest-of-world variables. Published figures yield a global current account discrepancy, but this is a statistical figment that does not undermine the analytical point. It is also small relative to the size of the U.S. current account deficit and global imbalances under consideration here.

incompatible about the four interpretations. There are, however, important differences in emphasis.

**The Deficient U.S. Savings View.** This view focuses on the decline in the U.S. national saving rate since the outset of the present decade and observes that, other things equal, a negative shock to national savings will result in a matching deterioration in the current account. Its proponents observe that U.S. gross national saving has fallen to 13.6 per cent of GDP on the IMF's measure, down by 3.3 per percentage points from the 1983-2000 average and barely half the level prevailing in the rest of the world.<sup>4</sup>

Authors like Roubini and Setser (2004) blame the decline in U.S. savings rates on fiscal policy. They observe that a decline in public saving like that which occurred in the U.S. since 2001, a period which has seen a swing in the fiscal balance from +2.5 per cent of GDP to -3.5 per cent of GDP, will lead to a matching decline in national saving and a matching deterioration in the country's current account balance, other things equal. They observe the temporal coincidence of the decline in gross saving and the rise in the U.S. current account deficit since 2001, the implication being that the "other-things-equal" assumption is not a bad approximation to reality.

Critics of this view object that over the longer run there is only tenuous evidence of strong positive co-movements of the budget and current account balances.<sup>5</sup> In response, others sympathetic to the twin-deficits view observe that the current account balance will also be affected by other shocks (Truman 2004). While a decline in the flow of public saving will tend

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<sup>4</sup> See Roach (2005), p.2.

<sup>5</sup> Some, such as Bernanke (2005), point in particular to the second half of the 1990s, when the U.S. current account position by \$300 billion (between 1996 and 2000, to be precise) despite the fact that the fiscal position was improving. The explanation for this was, of course, that in the second half of the 1990s the U.S. was in the midst of the investment boom associated with the Internet Bubble; this points us to the "new economy" view of U.S. current account deficits discussed in the next subsection.

to increase the flow of foreign saving, other things equal, the two variables need not move in lockstep; their bivariate relationship will also be affected by other variables. More troubling is the fact that econometric studies of the impact of budget deficits on current account deficits find evidence of only a relatively weak correlation between these variables even after controlling for these other factors.<sup>6</sup> Also troubling is the fact that a substantial share of the fall in gross private savings rates in this period has reflected falling personal savings rates that are not directly attributable to the budget deficit – personal savings rates that should have risen according to conventional Ricardian logic. (U.S. personal savings rates peaked in the early 1980s at 11 per cent of GDP and have been trending steadily downward ever since.) Most troubling of all is that the twin-deficits/low-U.S.-savings view implies that U.S. long-term real interest rates should be high, where in fact they are low. The implication at a minimum is that low U.S. saving is not all that is going on.

The obvious reconciliation is that other factors explain the coexistence of low interest rates and low savings. One such argument is that globalization and deregulation have enhanced price flexibility, moderating the pressure on central banks to inflate in response to shocks, subduing inflation expectations and reducing the level of interest rates consistent with any level of savings.<sup>7</sup> Another such argument is that increased credibility of central banks' anti-inflationary commitment has durably reduced the equilibrium level of interest rates. The

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<sup>6</sup> Thus, after controlling for other determinants of the current account, Erceg, Guerrieri and Gust (2005) find that a \$1 billion decline in the U.S. budget deficit produces only a \$200 million improvement in the current account. Using panel data for a group of industrial countries, Chinn and Ito (2005) obtain almost an identical estimate; in contrast, Gruber and Kamin (2005) obtain a smaller and less significant coefficient. Presumably the mechanism responsible for the offset is the reduction in private saving that accompanies the increase in public saving (lower deficits mean lower interest rates, which encourage household borrowing). This appears to be what lies behind Bernanke's view that tightening fiscal policy might reduce the current account deficit somewhat but only at the cost of further inflating the housing bubble. On the other hand, this view would imply a significant further decline in U.S. private saving associated with the 5 per cent of GDP improvement in the fiscal balance between 1992 and 2000, where little further movement in private savings rates occurred.

<sup>7</sup> See Rogoff (2003) for an argument along these lines.

problem in both cases is the inability of these other factors to account for the decline in real interest rates, as opposed to nominal interest rates. They find it equally hard to explain why the shift in the savings-interest-rate schedule should be so much more pronounced in the United States and why it should be concentrated in the last five years. The most convincing argument in this vein, which has the merit of being specific to the United States and to recent years, is that the Fed has aggressively cut interest rates whenever asset prices have shown a tendency to decline. The resulting “Greenspan put” has reduced the perceived riskiness of investment, lowering real interest rates by narrowing the risk premium. More generally, “the Great Moderation” – that is the moderation of business cycle fluctuations, which is similarly attributed to improved monetary policy – has resulted in lower risks and real interest rates.

**The New Economy View.** The new economy view of authors like Cooper (2004), Clarida (2005), and Backus and Lambert (2005) argues that the U.S. deficit reflects the attractions of investing in the United States and the consequent capital inflows that finance the country’s current account deficit. U.S. consumption exceeds U.S. production because Americans stand to benefit disproportionately from the high return on investment in the United States. The anticipated rise in future incomes is captured by the ratio of household stock market wealth to personal disposable income, which rose strongly in the 1990s. Together with the ratio of household residential property wealth to personal disposable income and the yield on a ten-year Treasury bond, this stock market variable can explain most of the variation in U.S. personal savings rate in the last 40 years.<sup>8</sup>

Of course, after 2000 it is the rise in residential property wealth and declining in Treasury yields that do most of the work in explaining the continued fall in personal savings rates, since the stock market ratio gives back the gains of the preceding five years. In addition there is the

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<sup>8</sup> See Lambert (2005).

fact that accelerating productivity growth is only one possible explanation for the rise in the stock market ratio in the 1990s: critics of the new economy view would ascribe stock market trends partly to irrational exuberance and partly to permissive monetary policies. Moreover, for an acceleration in the underlying rate of productivity growth to explain differential savings behavior between the Americans and the residents of other countries along with the ongoing capital flow toward the country, it is necessary not just to have an increase in the productivity of investment but also for this increase to be faster in the United States than the rest of the world. In this connection, observers point to the superior growth and productivity performance of the United States since the mid-1990s compared to Europe and Japan in arguing that both residents and foreign investors are attracted by the rosy economic prospects and expected high returns on investing in the United States, while these same factors discourage them from investing abroad. In accounting for these productivity trends they point to the greater flexibility of U.S. labor, capital and product markets and argue that U.S. market structure is particularly well suited to a period when investors seek to capitalize on the opportunities afforded by revolutionary new information and communication technologies. Thus, Dooley, Folkerts-Landau and Garber (2005) contrast America's flexibility with Europe's rigidity and argue that the dearth of attractive investment opportunities due to stagnant productivity growth there explains why so much of the world's savings flow to the United States.<sup>9</sup>

There may be something to the point. But it is worth recalling that the data on relative productivity trends since the late 1990s, when the large U.S. current account deficit began to emerge, are – how shall we put it? – less than definitive. Compared to Europe, the U.S. exhibits considerably faster productivity growth in the computer-producing sector, but, at 6 per cent of

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<sup>9</sup> As Brad Setser has pointed out, proponents of this view have more difficulty in explaining why capital is flowing from China, where growth is so rapid, to the United States. It is presumably necessary to argue that much recent investment in China will have to be written off, which in turn implies that China's rapid growth is unsustainable.

the economy, that sector alone is too small to much affect aggregate output and productivity growth. The careful calculations of Timmer et al. (2003) suggest at most a ½ per cent economy-wide productivity differential between the U.S. and Europe between 1995 and 2001. (See Table 1.) This is too small to plausibly drive a 6-per-cent-of-GDP swing in the U.S. current account balance.<sup>10</sup> It may also be too small to be statistically reliable.<sup>11</sup> And even if this story holds for the U.S.-Europe comparison, it is not obvious that it carries over to Asia, where productivity growth is also strong.

The critics further object that the vast majority of recent net financing for the U.S. current account deficit has been provided not by private investors, who are presumably motivated by productivity differentials and their implications for investment returns, but by foreign central banks.<sup>12</sup> Purchases of U.S. assets by foreign central banks are still only a small fraction – according to recent data, about 25 per cent – of total foreign purchases of U.S. assets. But the private purchases of U.S. assets by foreigners are largely offset by private purchases of foreign assets by Americans. The preceding points are related: to repeat, it is possible for foreigners to increase their investments in the United States without driving the U.S. current account into deficit so long as Americans are, at the same time, increasing their investments in other countries. That U.S. private investment abroad largely offsets private foreign investment in the United States and that residual current account financing has been almost entirely provided by foreign central banks in recent years sit uneasily with the investment-driven New Economy view of the U.S. current account.

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<sup>10</sup> I develop this point later in this subsection.

<sup>11</sup> Which makes it hard to claim that it must be driving the behavior of investors. There was plausibly great enthusiasm for investment in IT-producing and IT-using sectors in the United States in the period of the Internet Bubble (1995-99), but this cannot explain the emergence of the U.S. deficit, since this begins later.

<sup>12</sup> In 2004 more than two thirds of the external finance required for the U.S. current account deficit came from foreign central banks. Precise fractions depend on what data and classifications are used. See Roubini and Setser (2005).

The critics further contend that in order for a current account deficit of the prevailing magnitude to reflect profit-oriented foreign investment in the United States, American economic growth and the country's profit-generating capacity will have to accelerate dramatically. For a current account deficit of 7 per cent to produce an external debt/GDP ratio below 100 per cent in the steady state – which is still a much higher ratio than ever seen for a large, mature industrial economy – growth in the United States would have to accelerate to 5 per cent (assuming a 2 per cent annual inflation rate). Nominal growth would have to accelerate to an implausible (or inflationary) 12 per cent for a deficit of 7 per cent to be consistent with an external debt/GDP ratio of 50 per cent, the figure that Mussa (2004) regards as a realistic upper bound and which is twice as high as current levels. Even if the new-economy investment-boom interpretation is right, in other words, significant narrowing of the U.S. current account deficit will still be needed in order to avoid unstable debt dynamics.<sup>13</sup>

**The Global Savings Glut View.** In the global savings glut view of authors like Bernanke (2005) and Hubbard (2005), a combination of demographics, rapid growth, high oil prices, and financial development have encouraged saving outside the United States. In Asia ex Japan, low dependency ratios are boosting savings as predicted by the life cycle model.<sup>14</sup> In China, the limited availability of consumer goods and the underdevelopment of financial intermediation lead to high rates of forced saving. In petroleum-exporting countries in the

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<sup>13</sup> These calculations ignore asset valuation effects, except for some effects of inflation (see text). In practice, the differential performance of U.S. external assets and liabilities (the assets typically outperforming the liabilities) has meant that a given current account deficit has not produced a commensurate increase in the country's net external debt (Gourinchas and Rey 2005). The fact that about 70 per cent of U.S. assets abroad are denominated in foreign currencies, while U.S. foreign liabilities are denominated in dollars, means that when the dollar falls in response to a flow deficit, the external financial position has historically returned faster to sustainability. But the country's chronic external deficit and need for dollar depreciation imply that the currency composition of international investment portfolios will not last. As foreigners begin protecting themselves more effectively against the financial consequences of dollar depreciation, these favorable balance-sheet effects will no longer operate as powerfully, if at all. I will have more to say about the implications of balance-sheet effects for the impending U.S. adjustment in Section 4 below.

<sup>14</sup> The life-cycle model emphasizing that working age individuals have relatively high savings rates.



Middle East and elsewhere, high oil prices are similarly fueling high savings rates. In the advanced countries, rapid growth has supported the growth of corporate earnings, in turn encouraging corporate savings. Foreign investors seeking attractive outlets for these funds inevitably channel some of them toward the United States, financing the country's deficit. This inflow of foreign saving puts downward pressure on U.S. interest rates, encouraging Americans to spend. With savings rates so high in other countries, foreign investors and governments are happy to see the United States continuing to run deficits, in effect acting as the world's consumer of last resort.

The problem with this view is that the rest of the world has not uniformly seen sharp increases in savings rates in recent years. (See Table 2.) Not just in the U.S. but in Europe and Japan as well, private savings are falling. In the euro area, net household savings rates have fallen from 14 per cent in the early 1990s to less than 10 per cent today. In Japan, net household savings rates have fallen to 5 per cent, again from about 14 per cent in the early 1990s. Net household savings in Anglo-Saxon countries other than the United States (the UK, Canada, Australia, and New Zealand) have been running at similarly low rates.<sup>15</sup> To be sure, declining interest rates that have increased real estate and stock market wealth may have contributed to this decline in household savings, as noted above, since with rising wealth households are able to attain their financial goals while saving less.<sup>16</sup> But this begs the question of where the lower interest rates came from in the first place. In addition, OECD (2002) shows that in a panel of 15 OECD countries, post-1995 fluctuations in private savings rates can be explained by fundamentals such as rising old-age dependency ratios, fiscal policy (with stronger surpluses

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<sup>15</sup> All these figures are calculated on the standard OECD definition.

<sup>16</sup> This also suggests that savings rates will now presumably rise with the normalization of interest rates and cooling of real estate markets.

leading to less private saving in the second half of the 1990s and then, presumably, more saving in the last five years), and changes in inflation and the terms of trade.<sup>17</sup>

That this OECD study analyzes the determinants of private savings rates, which are the sum of household and corporate savings, and not just personal savings rates, allows us to reject the assumption that the recent pattern of global imbalances has been due to high corporate savings. Moreover, there is the discomfoting fact that the country with the sharpest *rise* in corporate savings rates around the time of the emergence of the large U.S. current account deficit is none other than the United States, which is the opposite of what one would expect if the U.S. deficit was being driven by high *foreign* corporate saving.<sup>18</sup>

Table 2 is the bottom line. At the world level, there has been at most a modest increase in savings rates when saving and investment are aggregated using market exchange rates. The point is even stronger when, as in Obstfeld (2005), one constructs the numerator and denominator using purchasing power parities: now gross savings as a share of GDP was 24 per cent in 1997, 23 per cent in 1999, 23 per cent in 2001, and 24 per cent in 2003.

If changes in global savings rates matter for current accounts, therefore, it must be differential movements in those rates (up in Asia, down in the United States) that are the source of the action. Again, the question is whether recent divergences in savings rates are likely to persist. Here we provide an analysis of the determinants of savings in the principal advanced countries and emerging markets. Our data cover 53 countries and the period 1975-2003; all equations are estimated by Generalized Least Squares with random effects.<sup>19</sup>

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<sup>17</sup> The terms of trade appear to matter especially for oil-exporting countries, for whom higher export prices translate into more resources and more saving.

<sup>18</sup> In the United States, corporate-sector net saving (total corporate-sector gross saving minus gross investment) swung from -5 per cent of GDP in 1996-2000 to about +6 per cent of GDP in 2000-2004. See Loeys et al. (2005).

<sup>19</sup> The data for smaller and poorer developing countries are noisier, rendering estimates like those in the text correspondingly less informative. The countries analyzed here account for upwards of 95 per cent of global savings. A similar analysis has been conducted recently by IMF (2005), although the results there differ in some of their

The results, in Table 3, go some way toward explaining recent patterns in savings rates but also suggest that such pronounced divergences may not persist indefinitely. There is a tendency for countries with higher growth rates to save more, as if some time must pass before consumption demands catch up to higher incomes. The importance of the lagged dependent variable also points in the direction of slow adjustment. With the passage of time, however, this adjustment should take place. In addition, as emerging markets mature and their growth rates converge with those of the advanced countries, there will be a tendency toward convergence of savings rates. The tendency for countries with deeper financial markets, as proxied by the ratio of domestic credit to GDP, may be taken as support for the belief that financial development will further boost consumption spending in emerging markets.<sup>20</sup> Finally, the elderly dependency ratio has a negative effect on saving, as predicted by the life cycle model. Again the implication is that savings rates in Asia may come down with the ageing of populations.

**The Sino-American Co-Dependency View.** Readers will observe from the last four columns of Table 3 that many of these variables have similar effects in savings and investment equations. For example, a higher dependency ratio not only depresses saving but depresses investment as well, something that is not much commented on by, *inter alia*, IMF (2005) but was noted previously by Eichengreen and Fifer (2002). The logic for this result would be that a higher dependency ratio reduces the working-age population available to cooperate with capital, reducing the return on investment. From a statistical standpoint, this result may simply be

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particulars. Note that the sample size is reduced by limited availability of data for some variables. The 53 countries included in our sample are Australia, Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States, Hong Kong SAR, Israel, Korea, Singapore, Taiwan Province of China, Argentina, Brazil, Chile, Colombia, Czech Republic, Hungary, Indonesia, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Thailand, Turkey, Venezuela, Algeria, China, Croatia, Egypt, India, and Morocco.

<sup>20</sup> This effect is not overwhelmingly strong. Chinn and Ito (2005) provide additional reasons to be skeptical about the robustness of the relationship.

another manifestation of the Feldstein-Horioka puzzle – namely, that the difference between national savings and national investment rates is relatively small, so that anything that shifts the saving schedule must necessarily shift the investment schedule in the same direction (or in any case appear to do so in a regression framework). Be that as it may, the economic implication is not in dispute: a higher old-age dependency ratio has a larger negative impact on savings than investment and therefore a positive impact on the current account.<sup>21</sup>

The most significant factor in the emergence of Asia's large current account surpluses in recent years (China notwithstanding to the contrary) has been the decline in investment, not the rise in investment. For Asia ex China and Japan, investment rates fell by 8.7 per cent of GDP between 1996 and 2004.<sup>22</sup> China is an exception, of course: while savings rates have risen, investment rates have risen nearly as fast. But China is still only one part of the Asian and world economies. For Asia overall, the last four columns of Table 3 shows a sharp fall in investment following the 1997-8 crisis that is not evident in other regions and cannot be explained by the other variables included in the analysis.

Some see the decline in investment rates in Asia as a temporary phenomenon resulting from the sharp economic downturn, domestic financial-sector disruptions, and political uncertainties following on the Asian crisis. But the fact that investment rates in Asia ex Japan and China remain significantly below 1996 levels nearly ten years after the onset of the crisis suggests that more than a one-time business cycle fluctuation is at work. Some of those who regard Asia's lower investment rates as permanent see much of the investment of the period preceding the crisis as poorly allocated and uneconomical. They conclude that Asia is now better off without it. By this interpretation, Asian governments have been wise to move away

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<sup>21</sup> This also being the finding of Gruber and Kamin (2005).

<sup>22</sup> See Macfarlane (2005) and Rajan (2005).

from policies aggressively promoting investment. Recall that the policies in question involved running the domestic economy under high pressure of demand, pressure that manifested itself in the form of current account deficits financed by portfolio capital imports (ranging as high as 7 per cent of GDP in the case of pre-crisis Thailand). But Asian governments, burned by the crisis, have become more risk adverse. They prefer less dependence on capital inflows and current account surpluses to deficits, which they obtain by subjecting their economies to less pressure of demand. They prefer relying more on exports to supply the demand for domestic production. Heightened risk aversion renders them happy to accumulate a large cushion of international reserves.

The negative effect of the Asian crisis on investment in Asian countries comes through clearly in the final column of Table 3, where following Aizenman and Lee (2005) we include variables for the period following the Mexican crisis interacted with a dummy variable for Latin America and for the period following the Asian crisis interacted with a dummy variable for Asia. There is a strong negative coefficient for investment by Asian countries in the post-1997 period, which is simply the counterpart of their rapid reserve accumulation (given the absence of a savings effect). This result is consistent with the findings of Gruber and Kamin (2005), who also show that it is necessary to include a variable representing financial crises in order to explain developing Asia's swing into surplus since 1997.

A key question, as noted, is whether this fall in investment rates in Asia is temporary or permanent. In an attempt to shed further light on this issue, we added a further interaction term, constructed as the product of the previous interaction (of the period since the Asian crisis with an Asian country dummy) and a time trend. The new interaction term entered with a coefficient of 0.005 and a t-statistic of 1.95. This suggests a tendency for the decline in investment due to the

crisis to die out over time and that ten years will be required to fully eliminate the initial negative effect. Skeptics will observe, of course, that the effect is only marginally significant.

This brings us to the Bretton Woods II hypothesis, the idea that the trans-Pacific balance persists because Asian countries are happy to see it do so (Dooley, Folkerts-Landau and Garber 2003, 2004, Dooley and Garber 2005). This view has a number of variants. Since Asian countries, and China in particular, see export demand the an engine of economic growth, they maintain an undervalued exchange rate against the dollar in order to stimulate exports. The result is persistent current account surpluses for Asia and, given the overvaluation of the dollar, deficits for the United States. The U.S., for its part, is equally happy with this state of affairs, since it is able to live beyond its means. Or since the United States possesses a more efficient financial sector than China, it imports Chinese savings in the form of short-term capital which it then transforms and re-exports in the form of foreign direct investment. (More precisely, it re-exports a fraction less than one of that capital inflow.) Or China accumulates U.S. treasury bills and other financial claims in the United States as a way of posting collateral against the foreign direct investment by U.S. corporations that is the mechanism for technology transfer.

The most familiar variant of this story is that China wishes to undervalue its exchange rate because doing so stimulates exports, which are the source of technological and organizational learning. Distortions affecting the economy justify the imposition by the government of another distortion, in the form of an undervalued exchange rate that pushes more resources into this sector than would the operation of market forces. The distortion in question might be the fact that much of the learning associated with producing for export is external to the firm, providing inadequate incentive to shift resources into the sector absent other interventions. It might be an inefficient financial system that prevents Chinese savings from underwriting

adequate investment in the export sector. It might be a shortage of organizational knowledge that is complementary with exports and can only be augmented by export-linked FDI that transfers organizational knowledge from abroad. To absorb the more than 200 million workers still to be shifted from rural underemployment to the modern manufacturing sector, China will wish to maintain rapid export growth, an undervalued exchange rate and large current account surpluses for a decade and more. And the U.S. will gladly accept an overvalued dollar and large current account deficits because it is happy living beyond its means.

Although such arguments provide a rationale for undervaluing the exchange rate, they do not provide an argument for undervaluing the dollar exchange rate in particular or for maintaining a 0.3 per cent daily limit on renminbi-dollar fluctuations. Nor do they imply the indefinite persistence of imbalances on the current scale. Chinese managers and entrepreneurs are rather quickly gaining the organizational knowledge needed to run modern, export-oriented manufacturing firms. They no longer need foreign investment partners to help them organize themselves (or at least they need them less than they did in the past). The productivity effects from learning by exporting are internal as well as external to the firm, much as in other countries, which weakens the argument for undervaluation as a way of internalizing this externality. In other words, the time may not be very long in coming when these justifications for keeping the exchange rate artificially low are no stronger in China than in a variety of other middle-income countries.

The variant of this story emphasizing the greater efficiency of the U.S. financial system can explain the composition of capital flows: China accumulates its claims on the United States in the form of securities, while the U.S. accumulates its claims on China in the form of FDI. But it cannot explain the pattern of current account imbalances. There is no reason why the country

with the most efficient financial system that is providing intermediation serves to the rest of the world cannot run a balanced current account or, for that matter, a surplus. There is no reason why importing short-term capital and exporting long-term capital should also require it to run a current account deficit, as the United States is doing. The U.S. ran current account surpluses following World War II, when contemporaries referred to it as banker to the world.<sup>23</sup> Britain ran persistent current account surpluses before World War I when it was similarly acting as banker to the world. Being an international financial center and providing maturity transformation services to the rest of the world does not doom a country to deficits.

This leaves the variant of the Sino-American codependency view in which the U.S. acts as custodian to the world and the trans-Pacific imbalance reflects China's purchase of custodial services. In other words, the United States holds the collateral against which countries like China borrow. China can attract foreign direct investment because if it ever decides to nationalize U.S. or other private assets, the U.S. will then default on the U.S. official liabilities held by the Chinese government. This variant fits into the identity between the current account balance and the difference between savings and investment, since it emphasizes China's need for high-quality investment and argues that the way for China to get it, in the form of inward FDI, is by saving even more than it invests at home ( $S^* > I^*$ ) and posting the difference as net collateral in the United States.

A problem is that this story is China specific, whereas the accumulation of reserves and chronic surpluses vis-à-vis the United States is pan-Asian. No one worries that Japan, South Korea or Taiwan will expropriate U.S. investments, yet they too hold massive claims on the United States. I am not aware of U.S. corporate executives who have pointed to China's large dollar reserves as a form of collateral justifying their decision to invest there. Nor am I aware of

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<sup>23</sup> See Depres, Kindleberger and Salant (1966).



statements by Chinese officials in which they explain that they are accumulating U.S. Treasuries as a way of posting collateral for FDI inflows. In addition, the timing is wrong: U.S. FDI in China rises starting around 1992, where the massive reserve accumulation comes only a decade later. Then there is the fact, emphasized by Goldstein and Lardy (2005), that the U.S. accounts for only a small fraction – perhaps 4 per cent – of FDI in China. Thus, one must assume that the United States would be willing to go to bat not just on behalf of U.S. private foreign investors but also those from other countries. Finally, the way that foreign investments in China have been expropriated historically is through the surreptitious stripping of assets by Chinese managers and joint-venture partners, not through overt nationalization. It is hard to imagine that the U.S. government would risk tarnishing its public credit in response to more such instances.

Testing the foreign-reserves-as-collateral-for-FDI argument suggests regressing reserves on their standard determinants – per capita income as a measure of economic development, the ratio of imports to GDP as an indicator of the need for reserves to smooth the volume of trade transactions, a measure of exchange rate volatility, and other controls – and adding net FDI stocks as an additional explanatory variable. The specification here is the one analyzed by Aizenman and Lee (2005), with the addition of FDI, of course.<sup>24</sup> As in Aizenman and Lee, all equations are again estimated by Generalized Least Squares with random effects. The results, in Table 4, show a positive correlation between FDI and reserves, consistent with the hypothesis. When reserves are scaled by GDP, the FDI measure is positive and significantly different from zero at the 99 per cent level. When they are scaled by broad money, the significance level drops to 90 per cent.

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<sup>24</sup> Reserves are measured here net of gold and scaled by either broad money or GDP. The sample here is different from that of Aizenman and Lee; where they limit themselves to advanced countries and the principal emerging markets, here we include as many countries as possible (subject to the constraint of data availability). The data are annual and cover the period 1980-2003. Of the 192 countries we collected data on, about 160 countries have sufficient data for the analysis.

But one can imagine any number of shocks to the disturbance term in this equation that not only cause countries to hold more reserves, for quite independent reasons, but also lead them to accumulate more FDI.<sup>25</sup> We therefore instrument the FDI ratio using a vector of economic, institutional and demographic variables suggested by the literature on foreign investment. We use a measure of corruption on the grounds that higher a level of corruption makes FDI less attractive (Wei 2000).<sup>26</sup> We include the tax rate on foreign investment income for its incentive effects (Hines and Rice 1994, Desai and Hines 1997).<sup>27</sup> As an additional control, we include the log of GDP on the grounds that countries with large domestic markets are more attractive to foreign investors. The first stage regressions, using estimates of the tax rate for alternative years, fit the data relatively well. In the second stage regressions, in Table 5, we now find that the FDI variable switches sign to negative is no longer significant. The appropriate conclusion would appear to be that the positive correlation evident in the naïve regressions is spurious. Many factors help to explain the accumulation of reserves by emerging markets in recent years. The desire to hold them as collateral against FDI is not one.

### **3. Future Prospects**

Removing the blinders, one discovers that the elephant has not only feet but also a trunk, tail, torso and ears. A complete account of its emergence and persistence of the U.S. external deficit therefore must include roles for: the budget deficit and other policies making for low national savings rates at home; rapid productivity growth (if not the reality then at least the hope) in attracting investment finance and encouraging Americans to spend; demographic, financial

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<sup>25</sup> Indeed, the possibility of simultaneity is intrinsic to the argument motivating the specification.

<sup>26</sup> The corruption measure is drawn from Transparency International (<http://www.transparency.org/surveys/index/html#cpi>).

<sup>27</sup> The estimates of tax rates, based on data from Price Waterhouse, are for 1983 and cover 82 countries.

and macroeconomic factors making for high savings rates in the rest of the world; and increased risk aversion following the crisis of 1997-8, which led Asian countries to run their economies under less pressure of demand while relying more on net exports for economic growth.

The fact that the causes are not simply a productivity miracle that has permanently increased the appetite of U.S. and foreign investors for claims on the U.S. economy implies that there will have to be adjustment.<sup>28</sup> The only question is whether this adjustment will be adequately cushioned by supportive changes in the rest of the world. Here there are some grounds for optimism. The demographic factors supporting extraordinary high savings rates in Asia will not persist indefinitely. In China the share of working age individuals in total population will peak as early as 2010.<sup>29</sup> The dependency ratio will then rise rapidly – more rapidly than has been the case in virtually any other country – as members of the workforce begin to retire and are succeeded by the smaller cohort bequeathed by the country’s one-child policy. If Chinese and other Asian (and European) households consume more, as predicted by the lifecycle model, then the slowdown in demand growth that is integral to U.S. current account adjustment need not precipitate a recession.

Similarly, as China and other Asian countries develop their financial markets, it will become easier for households to borrow to finance purchases of real estate, consumer durables, and higher education, relieving them of the need to accumulate large nest eggs in order to pay the entire bill up front.<sup>30</sup> As structural change becomes more predictable and the state does more to defray the transitional costs of unemployment, households will have less incentive to maintain

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<sup>28</sup> The same conclusion follows from the simple debt dynamics discussed in Section 2 of the adjustment needed to stabilize U.S. external indebtedness as a share of U.S. GDP or as a share of non-U.S. world wealth. I return to this aspect momentarily.

<sup>29</sup> Some estimates suggest 2015.

<sup>30</sup> The cost of education may be becoming a major factor in savings behavior in China, with the government encouraging state schools and universities to raise tuition fees (in an eerie echo of the situation in California...).

high savings rates as protection from the effects of job insecurity. Changes in real exchange rates that raise consumer spending power, whether through a more rapid increase in Chinese wages or continued appreciation of the renminbi, can further contribute to ongoing changes in spending and saving patterns. Governments can support demand by investing more in health care, public pensions, and public housing. Meanwhile, private investment in Asia may begin to recover toward the higher levels of the early 1990s. If Japan is finally now on the verge of a sustainable recovery, both consumption and investment spending will begin to rise. Someday – who knows – structural reform may even boost investment rates in Europe.

For all these reasons,  $S^*-I^*$  is likely to trend downward, increasing net demand outside the United States.  $I-S$ , its U.S. equivalent, will similarly shrink as a simple matter of arithmetic.

This is the rosy scenario. It suggests that growth and demand in the rest of the world will pick up just as growth and demand slow in the United States. This scenario is one of gradual adjustment, since ROW savings and investment rates are likely to adjust toward their new equilibrium levels gradually over time, reflecting the slow movement of demographic variables and the development of financial markets. Such gradual adjustments are relatively unlikely to disrupt the operation of financial markets and disturb consumer confidence.

The grim scenario is one in which, before the factors lying behind these smooth adjustment dynamics have had time to make their influence felt, foreigners lose patience with the United States. Foreign financing evaporates, causing U.S. bond prices to fall and long-term interest rates to rise. The dollar depreciates abruptly, creating fears of import-price inflation that force the Fed to raise policy rates faster than expected. Higher interest rates suck the air out of the real estate bubble and more generally depress asset valuations.

What presumably causes foreign investors to pull the plug is information leading them to conclude that U.S. external indebtedness is or will become unsustainable. If new information suggests that the U.S. productivity miracle is a mirage – or simply that it is quantitatively less impressive than suggested by earlier estimates – foreigners may conclude that, with slower U.S. growth, the country’s external indebtedness is on an unsustainable path.<sup>31</sup> They may fear that the circle will be squared by higher inflation, since higher inflation that means higher nominal income growth is one way of reconciling a larger current account deficit with the limited willingness of foreign investors to increase the share of their portfolios devoted to U.S. securities. Ultimately, of course, they will refuse to absorb additional U.S. securities unless they are compensated with higher interest rates, which will negatively impact U.S. consumption and investment, as described above.<sup>32</sup>

Foreign central banks could leap into the breach – or, more accurately, remain in the breach – if they fear that sharp appreciation of their currencies against the dollar would kill the golden goose of export-led growth. But, as I have argued elsewhere, this confuses their collective and individual interests.<sup>33</sup> Asian monetary authorities will not go on indefinitely accumulating low-yielding claims on the U.S. that are subject to risk of capital loss. Each central bank has an incentive to curtail its further accumulation of claims on the U.S., and to diversify its reserve portfolio out of dollars before others do likewise, especially if it can do so surreptitiously – that is, without causing the dollar to fall against Asia’s currencies. This is a classic cartel problem. It is likely to end like all classic cartel problems – that is, badly for those whose welfare depends on the cohesion of the cartel.

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<sup>31</sup> One can imagine that the way reconstruction expenses associated with Hurricane Katrina are financed may be the straw that breaks the camel’s back.

<sup>32</sup> Since U.S. absorption falls due to these now-higher interest rates, so does the current account deficit, which is the difference between absorption and production. Under this scenario, this is how external adjustment comes about.

<sup>33</sup> See Eichengreen (2004).

If so, the abrupt termination of foreign finance may precipitate a sharp recession in the United States, not unlike that experienced by other countries that have had to compress large current account deficits abruptly. Edwards (2005) finds that the typical current account reversal (where a reversal is defined as a 4 per cent of GDP decline in the deficit) leads to a 3.6 to 5.0 per cent slowdown in the rate of growth of GDP per capita in the first year of the adjustment. Three years after the beginning of the adjustment, GDP growth rates are still below their long-term trend.<sup>34</sup> This is the essence of the grim scenario.

To be sure, the U.S. differs in important respects from previous countries that have run large external deficits and experienced abrupt current account reversals. Working in the country's favor is the fact that so much U.S. debt is denominated in dollars while U.S. foreign assets are denominated in foreign currencies. This means that the adjustment, to the extent that it is associated with a falling exchange rate, will be cushioned by favorable balance-sheet effects. Debelle and Galati (2005) show that these worked to ease current account adjustment in the United States in the 1980s.<sup>35</sup> Working against the U.S. is the fact that the country is large relative to the world economy, which means that a U.S. recession will apply recessionary pressure to the rest of the world, and slower growth in the rest of the world will then rebound to deepen the slowdown in the United States. Which of these two effects working in opposite

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<sup>34</sup> Similar results are reported in Freund (2000). Freund and Warnock (2005) find that output losses due to reversals in industrial countries are larger when the initial current account deficit is larger. It is important to note that a number of other studies have reached different conclusions, to wit that output losses from current account reversals are minimal (Milesi-Ferretti and Razin 1997).

<sup>35</sup> Where "ease" means minimizing the output losses associated with compression of the current account deficit. A third factor sometimes cited in this connection is the credibility of monetary policy. Gagnon (2005) shows that, historically, sharp falls in the exchange rate have not been associated with sharply higher interest rates in the case of the United States, a happy outcome that he ascribes to the credibility of monetary policy. But there are a number of reasons for worrying that this conclusion will not apply to the case under discussion here. When the reason for the exchange rate's collapse is the curtailment of foreign financing rather than a domestic recession, and when the depreciation is permanent rather than temporary, it is precisely a central bank concerned with anti-inflationary credibility that will come under the most pressure to raise interest rates. In my view, that sharp falls in the dollar have not precipitated significantly higher interest rates in the United States in past episodes reflects that those dollar movements have been temporary rather than permanent and have reflected domestic rather than international factors.

directions will operate more powerfully is uncertain. Until we know, there are no grounds for complacency that an abrupt fall in foreign financing for the U.S. deficit will be easier to accommodate than in the previous cases studied by Edwards.<sup>36</sup>

Recall that the happy scenario occurs when adjustment gradually narrows the U.S. external imbalance starting at a relatively early date – specifically, before foreigners grow antsy and pull the plug, precipitating a sharp and disruptive adjustment. Governments in each of the three major regions can take steps to facilitate this early and gradual adjustment.

- Emerging Asian countries can permit their currencies to appreciate against the dollar.

The same real appreciation could also be achieved by domestic inflation, fueled by more expansionary monetary policy, but this is undesirable. It is preferable that Asian countries not allow inflation to become entrenched. To sustain demand while currency depreciation slows the rate of growth of exports, they can initiate a modest fiscal expansion (centered, in China's case, on health and education spending). In doing so they can sustain the rate of growth of global demand even while demand growth in the U.S. begins to slow.

- European countries and Japan can resuscitate investment spending by redoubling their efforts at structural reform and adopting a more investment-friendly policy mix. In Europe's case this presupposes fiscal consolidation that will in turn give the ECB the confidence it needs to reduce interest rates.

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<sup>36</sup> A third factor sometimes cited as distinguishing the U.S. and other high-income countries from emerging markets undergoing sharp current account adjustments is the strength of the financial system. The argument here is that the robustness of the financial system limits the risk that sharp changes in market conditions will lead to a credit crunch, bank failures and disintermediation, thereby aggravating the downturn. At the same time, there are real questions about whether the extent of off-balance-sheet (derivative) exposures, which are greater in more sophisticated financial systems, raise the probability of such disruptive outcomes. That is why this argument is relegated to a footnote.

- Most importantly, the United States can address its fiscal imbalance. Even if reducing the budget deficit does not reduce the current account deficit one for one, fiscal consolidation can still make a contribution, especially under current circumstances. In addition, the argument for fiscal adjustment is strong quite independent of pressures stemming from the current account. There are reasons to expect increased spending going forward on both terrorism/homeland security and health care for an ageing population. The political reaction to Hurricane Katrina suggests a growing public demand for social programs. If these pressures for increased public spending are permanent, it is suboptimal to finance them by running deficits.<sup>37</sup> This is not the way to make fiscal policy. Fortunately, the demoralizing subject of U.S. fiscal policy is the subject of a different paper.

#### **4. Conclusion**

This paper has reviewed the competing explanations for the pattern of global imbalances and the magnitude of the U.S. deficit, presented new evidence relevant to some of them, and explored the policy implications. Its argument is that, far from being incompatible, existing explanations are all in fact parts of the larger story. The decline in savings rates in the United States has played an important role in the emergence of global and U.S. imbalances. While rising budget deficits play an important part in the deterioration of the country's national savings rate, in addition there is a role for monetary policy and accelerating productivity growth. The key question, of course, is whether these trends will persist, especially as monetary conditions

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<sup>37</sup> Theories of optimal taxation suggest that tax rates should be smoothed. This means that temporary increases in spending should be financed by borrowing and that the resulting debt should be paid down by running surpluses when the need for additional spending passes. In contrast, permanent increases in spending should be accompanied by permanent increases in taxation. On no account should they be accompanied by tax cuts, either temporary or "permanent."



tighten and interest rates normalize. Favorable productivity trends have made the U.S. a more appealing place to invest, attracting foreign savings that help to underwrite U.S. investment and finance the current account. To the extent that faster productivity implies higher future incomes and higher current asset valuations in the United States, it encourages higher rates of spending, which is another side of the deficit coin. The question here is the magnitude and sustainability of the increase in productivity and profitability, absolutely and relative to other countries. The so-called global savings glut is a factor in the global imbalance insofar as it supports capital flows to and investment in the United States. But the name is a misnomer in that the development of excess savings, in Asia in particular, reflects declining investment at least as much as rising saving. Here the key question is whether investment rates in Asia ex China will revert to earlier levels and whether savings rates in China will begin falling. Finally, the Sino-American co-dependency view emphasizes how Asian countries, owing to a combination of heightened risk aversion following the 1997-8 crisis and their continued commitment to export-led growth, are happy with a situation where export demand is disproportionately important relative to domestic demand, a position that is sustained by undervalued exchange rates and reflected in rapid U.S. import growth. It emphasizes how the U.S., for its part, is happy to live beyond its means. The question once more is how long this situation can persist in the face of rapidly rising U.S. external indebtedness.

One thing we can say with confidence is that the four sets of factors supporting the global imbalance and the U.S. deficit will not last forever. There will have to be adjustment, the question being whether it will come sooner or later and whether it will be orderly or disorderly. An orderly adjustment is one that occurs gradually, but in order to occur gradually it must start before the burden of U.S. external debt grows too heavy, in turn requiring a sharp adjustment in

goods and asset prices that would be disruptive to confidence, financial stability, and economic growth.

Just as the U.S. deficit has no single cause, it is unlikely to have a single solution. In other words, all of the countries implicated in this situation can take steps to maximize the likelihood that adjustment begins soon and unfolds gradually. Emerging Asian countries can allow their currencies to appreciate against the dollar while building stronger financial markets and enlisting fiscal policy to sustain demand. Europe and Japan can resuscitate investment spending by pursuing structural reforms and adopting a more investment-friendly policy mix. Most importantly, the United States can correct its fiscal imbalance. The clock is ticking.

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**Table 1. Sources of Labor Productivity Growth, United States and EU-15**

	1980-1995	1995-2001
<b>EU-15</b>		
Average labor productivity	2.33	1.37
Contribution of capital deepening	1.21	0.90
Information technology	0.32	0.42
Noninformation technology	0.88	0.48
Total factor productivity	1.13	0.46
Production of IT		0.27
Other		0.19
Total IT contribution		0.69
<b>U.S.</b>		
Average labor productivity	1.37	1.85
Contribution of capital deepening	0.67	1.05
Information technology	0.48	0.72
Noninformation technology	0.19	0.32
Total factor productivity	0.70	0.80
Production of IT		0.44
Other		0.36
Total IT contribution		0.62

Source: Timmer et al. (2003).

Table 2. Global Savings and Investment Trends  
(as a percentage of GDP)

	Average 1990-99	Average 2000-02	2003	2004	<i>Memo:</i> 1991- 2004
World saving	22.9	23.4	23.9	24.9	1.7
Advanced economies	21.3	20.6	19.1	19.4	-2.8
United States	16.3	16.2	13.5	13.7	-2.5
Euro area	21.5	21.3	20.3	20.9	-1.1
Japan	31.6	27.8	27.1	27.6	-6.8
Emerging economies	25.3	27.2	29.8	31.5	6.9
Developing Asia	31.0	32.6	36.5	38.2	9.5
China	40.3	39.9	45.5	48.0	9.6
Latin America	18.3	17.8	20.0	21.0	1.9
Central and eastern Europe	20.6	18.8	18.6	19.1	-7.0
World investment	24.0	23.2	23.5	24.6	0.1
Advanced economies	21.8	21.0	20.0	20.7	-2.5
United States	18.7	19.4	18.4	19.7	1.1
Euro area	21.1	20.9	19.5	20.2	-2.9
Japan	29.3	25.3	23.9	23.9	-9.0
Emerging economies	27.2	26.1	27.9	29.2	2.8
Developing Asia	32.2	30.8	33.6	35.5	5.1
China	38.5	37.9	42.4	43.9	9.7
Latin America	20.9	19.8	19.0	19.8	0.3
Central and eastern Europe	23.3	23.1	23.2	23.8	-2.9

Source: BIS Annual Report (2005).



**Table 3**  
**Global Saving and Investment: Panel Regressions, 1975-2003**

Variable	Saving to GDP				Investment to GDP			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lagged saving to GDP	0.92 (56.96)	0.87 (38.99)	0.89 (43.37)	0.89 (41.98)	0.89 (39.11)	0.87 (32.03)	0.85 (30.12)	0.84 (29.31)
Growth of GDP per capita	0.07 (3.52)	0.10 (4.11)	1.00 (4.04)	0.10 (3.88)	0.06 (2.63)	0.12 (4.52)	0.12 (4.46)	0.12 (4.57)
Interest rate	0.09 (0.40)	0.24 (1.02)	0.22 (0.94)	0.21 (0.90)	-0.18 (0.73)	-0.02 (0.07)	-0.03 (0.13)	-0.01 (0.03)
Private credit to GDP	0.01 (1.66)	0.00 (0.37)	0.00 (0.26)	0.00 (0.01)	0.00 (0.33)	0.00 (0.33)	0.00 (0.05)	0.00 (0.14)
Δ Private credit to GDP	0.02 (1.24)	-0.01 (0.26)	-0.01 (0.37)	0.00 (0.06)	-0.02 (0.87)	-0.08 (3.26)	-0.08 (3.45)	-0.10 (4.09)
Elderly dependency ratio	-0.05 (2.68)	-0.06 (1.93)	-0.05 (2.06)	-0.05 (1.99)	-0.02 (0.98)	-0.02 (0.84)	-0.04 (1.26)	-0.05 (1.74)
Fiscal deficit to GDP	-0.02 (0.81)	0.00 (0.09)	0.00 (0.08)	0.00 (0.10)	0.00 (0.15)	0.01 (0.30)	0.00 (0.10)	0.00 (0.10)
Terms of trade growth	0.05 (3.70)	0.07 (4.75)	0.07 (4.59)	0.07 (4.59)	-0.04 (2.29)	-0.03 (1.64)	-0.03 (1.94)	-0.03 (1.99)
M2 to GDP		0.01 (1.07)	0.01 (1.18)	0.01 (1.11)		0.00 (0.35)	0.01 (0.85)	0.02 (1.63)
Domestic credit to GDP		-0.01 (2.52)	-0.01 (2.39)	-0.01 (2.60)		-0.01 (1.82)	-0.01 (1.88)	-0.01 (1.91)
<i>Mexican-crisis dummy applied to:</i>								
Emerging market			0.00 (0.76)				0.00 (0.70)	
Asia				0.00 (0.04)				0.01 (1.21)
Latin America				0.01 (0.58)				0.01 (0.87)
<i>Asian-crisis dummy applied to:</i>								
Emerging Markets			-0.01 (1.25)				-0.02 (3.59)	
Asia				0.00 (0.46)				-0.04 (4.95)
Latin America				-0.02 (1.57)				-0.02 (1.87)
Number of observations:	452	350	350	350	453	351	351	351
Wald Chi2:	4694.19	2983.19	3987.56	3984.54	2150.83	1835.68	1719.06	1680.36

Note: z-statistics in parentheses.

Source: see text.

**Table 4**  
**Random Effects GLS Regressions of Reserves on FDI**

Variables	Reserves to Broad Money		Reserves to GDP	
	(1)	(2)	(3)	(4)
<b>FDI/GDP</b>	<b>9.24</b>	<b>10.56</b>	<b>0.01</b>	<b>0.01</b>
	<i>(1.76)</i>	<i>(1.99)</i>	<i>(6.38)</i>	<i>(5.58)</i>
Log population	30.81	-3.56	0.02	0.01
	<i>(1.01)</i>	<i>(0.24)</i>	<i>(5.71)</i>	<i>(0.75)</i>
Log income per capita	-3.92	-3.19	0.04	0.02
	<i>(0.12)</i>	<i>(0.25)</i>	<i>(9.38)</i>	<i>(4.59)</i>
Import to GDP	13.15	-48.46	0.05	0.04
	<i>(0.15)</i>	<i>(1.10)</i>	<i>(8.11)</i>	<i>(5.43)</i>
Exchange rate volatility	0.01	0.02	0.01	0.01
	<i>(0.07)</i>	<i>(2.11)</i>	<i>(1.34)</i>	<i>(1.61)</i>
Trend growth of exports		-2.94		-0.02
		<i>(0.03)</i>		<i>(2.06)</i>
Real undervaluation		-0.01		-0.01
		<i>(0.47)</i>		<i>(1.38)</i>
Constant	-466.73	256.59	-0.72	-0.24
	<i>(0.64)</i>	<i>(0.7)</i>	<i>(9.69)</i>	<i>(2.77)</i>
Number of observations	2,916	1,947	3,071	2,064
<i>Wald Chi2</i>	4.33	8.73	290.19	114.52

Note: z-statistics in parentheses.

Source: see text.

**Table 5**  
**Random Effects Instrumental Variables Regressions of Reserves**  
**on FDI**

Variables	Reserves to Broad Money	Reserves to GDP
<b>FDI/GDP</b>	<b>-6.62</b> <i>(1.39)</i>	<b>-0.03</b> <i>(0.18)</i>
Log population	-5.09 <i>(1.64)</i>	-0.02 <i>(0.96)</i>
Log income per capita	-2.80 <i>(2.01)</i>	0.03 <i>(0.19)</i>
Import to GDP	3.94 <i>(0.76)</i>	0.05 <i>(1.10)</i>
Exchange rate volatility	0.05 <i>(0.80)</i>	0.00 <i>(1.51)</i>
Trend growth of exports	-1.05 <i>(0.47)</i>	-0.05 <i>(1.44)</i>
Real undervaluation	-4.57 <i>(0.87)</i>	-0.01 <i>(0.90)</i>
Constant	0.11 <i>(1.88)</i>	0.13 <i>(0.30)</i>
Number of observations	273	294
<i>Wald Chi2</i>	5.7	42

Note: z-statistics in parentheses.

Source: see text.