Rebalancing Global Growth

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The global imbalances of the last decade were, everyone now realizes, a decidedly mixed blessing. They enabled China and other emerging-market economies to export their way to higher incomes. They allowed those economies' central banks to protect themselves from capital flow volatility by accumulating vast war chests of foreign reserves. They supported buoyant asset markets and rising consumption in the advanced economies despite what were, in many cases, slowly growing or stagnant real wages. By 2004, observers were characterizing this situation as a happy complementarity of interests—as a stable and socially desirable equilibrium that might run for another 10 or 20 years (Dooley, Folkerts-Landau, and Garber 2003; Dooley and Garber 2005).

With benefit of hindsight, we now know that the prospects were not so happy.[1] Capital inflows fed excesses in U.S. financial markets that ultimately destabilized banking systems and economies on both sides of the Atlantic (Darvas and Pisani-Ferry 2010; Obstfeld and Rogoff 2009). Those excesses bequeathed an overhang of debt and financial problems that now create the prospect of a decade of no growth or slow growth across much of the advanced industrial world.

Although the implications for emerging markets have been more positive, there, too, are indications that what worked in the past won't work in the future. Large export surpluses and low consumption rates are likely to give way in the face of demands for higher wages and living standards, and not just in China. A manufacturing-centered growth model that makes heavy use of cheap labor, voraciously consumes raw materials, and has a large carbon footprint is unlikely to be sustainable for another 10 or 20 years (Roach 2009).

That it is now necessary to rebalance the global economy to create a sustainable basis for economic growth is a commonplace. But this frequent observation is too infrequently accompanied by specifics. This chapter attempts to provide some.

Its first half describes the specific policy challenges facing the principal national and regional economies. The second half adds some numerical precision by analyzing how much adjustment in current account imbalances to expect in the short and long run. Given the finding that emerges from this analysis—that rebalancing is likely to be an extended process, with significant imbalances persisting in the short term—the chapter concludes by suggesting measures that can make imbalances safe for growth during the transitional period while they are being resolved.

Policy Challenges and Responses

A first observation is that global imbalances do not merely involve the United States and China. As figure 2.1 shows, China was responsible for only a relatively small fraction of total global current account surpluses, especially toward the beginning of the decade. Even at its peak in 2007–08, the Chinese surplus accounted for only about one-fourth of total global surpluses. More important previously were the European surplus countries, led by Germany.

Equally important in the critical 2005–08 period were the oil-exporting surplus countries. The other surplus countries of emerging Asia made a smaller but still persistent and visible contribution. In this period as well, there was again a significant contribution from Northern Europe (primarily Germany).

On the deficit side, in contrast, one country—the United States—consistently dominates. Given recent events, however, it is impossible to

Figure 2.1 Current Account Balances, 1996–2016
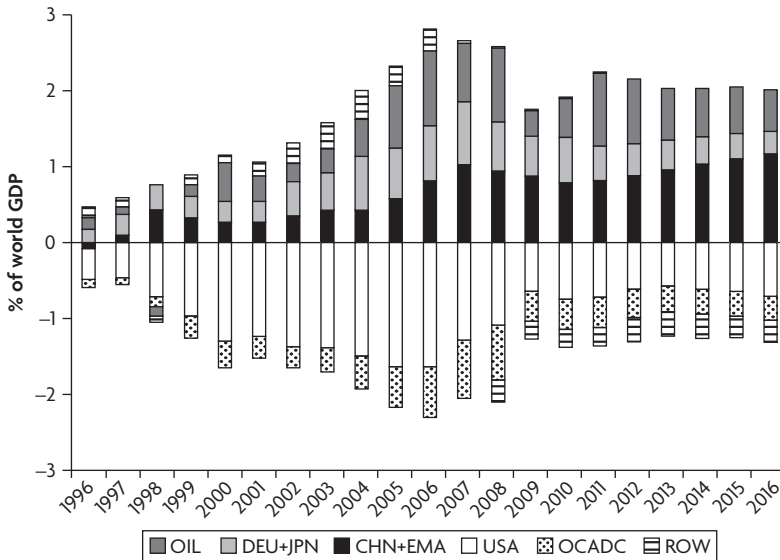
Source: IMF 2011.

Note: Data for 2010–16 are projections. OIL = oil-exporting countries. DEU+JPN = Germany and Japan. CHN+EMA = China and other emerging Asia. USA = United States. OCADC = other current account deficit countries. ROW = rest of the world.

ignore the evidence in figure 2.1 of substantial deficits (in recent years, approaching half of U.S. levels) in the now-troubled Southern European bloc. In hindsight, again, more attention should have been paid to this aspect of the problem before 2010.

The same basic message emerges from the top and bottom halves of figure 2.1. Although the United States plays a disproportionately large role in the problem of global imbalances, the task of rebalancing global growth is not simply a U.S. story or even a U.S. and China story. A substantial number of countries, advanced and emerging, participated in the development of these imbalances. Therefore, a substantial number, advanced and emerging, will also have to contribute if rebalancing is to be compatible with the resumption of economic growth in the advanced countries and its maintenance in emerging markets.

United States

The U.S. current account deficit has fallen from its peak of 6 percent of gross domestic product (GDP) in 2006 to 5 percent in 2008 and 3 percent

in 2009. With the onset of the financial crisis and recession, there has
been a sharp swing in the private savings-investment balance, as shown
in figure 2.2.

Measured household saving has risen from near zero to close to 8
percent. Private investment, meanwhile, has dropped sharply because of
recession and financial distress. The partially offsetting factor (also shown
in figure 2.2) is the public saving-investment balance, or the mirror image
of the fiscal stimulus that has been used to stabilize demand in the face of
the crisis. In an arithmetic sense, the change in the current account bal-
ance is the difference between the rise in the net private savings ratio and
the fall in its public counterpart, all expressed as shares of GDP.

The argument that this shift in the current account is more than
transitory goes like this: First and foremost, given that consumption is
70 percent of U.S. GDP, the change in household saving is likely to be
permanent or at least persistent. Deleveraging by the financial sector will

Figure 2.2 U.S. Saving, Investment, and Current Account, 1968–2011
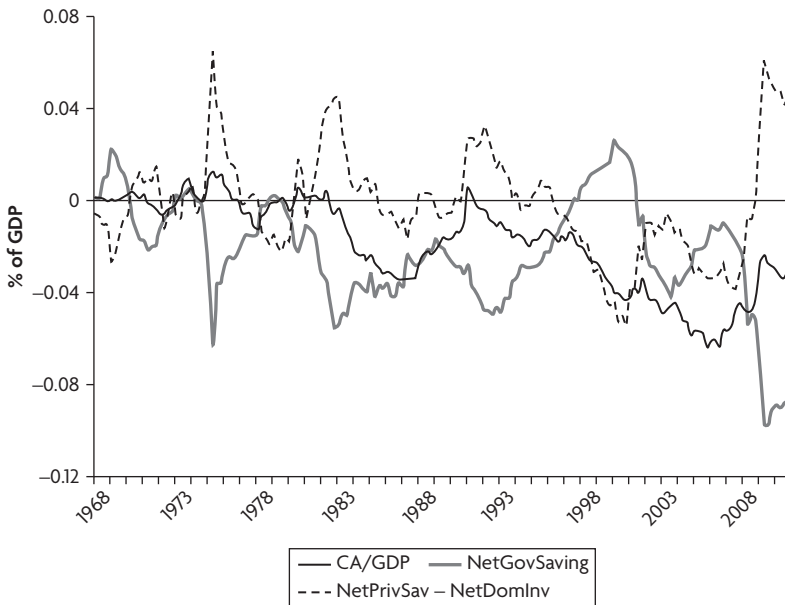
Sources: U.S. Bureau of Economic Analysis; authors' calculations.
Note: Data normalized by GDP. CA = current account. NetGovSaving = net government saving. NetPrivSav−
NetDomInv = net private saving − net domestic investment.

make access to credit more difficult. Households will face a continuing need to rebuild their retirement wealth; they are unlikely to see again anytime soon the large capital gains on real estate and equity portfolios on which they banked in the low-savings years. With the end of the Great Moderation, Americans have been reminded that the world is a risky place, encouraging more to engage in more precautionary saving. Recent research provides some support for this view (for example, Carroll and Slacalek 2009; Mody and Ohnsorge 2010).

Second, a public sector deficit on the order of 10 percent of GDP cannot persist indefinitely. Exactly how and when that deficit will be narrowed is to be seen, but it is hard to dispute that it is subject to Stein's Law.[2] One thing on which it is possible to agree is that there is no single solution to the problem of restoring fiscal balance. A combination of tax increases, entitlement reforms, and reductions in discretionary spending surely will be required.[3]

There has been substantial debate about the impact of fiscal restraint on the current account. The results presented here, and discussed in the next section, suggest that there is indeed a noticeable (and statistically significant) impact—on the order of 0.3 to 0.4 percentage points' current account improvement for each percentage point of increase in the budget balance. This result suggests that fiscal consolidation over the medium to long term can contribute significantly to global rebalancing.

Third and finally, one can imagine a subsidiary contribution to restoring current account balance from a modestly lower investment rate if, as some observers suspect, the crisis has permanently damaged the growth potential of the economy and rate of return on capital.[4] Financial regulation that increases the cost of intermediation, and thereby the cost of capital, will work in the same direction.

With the United States saving more relative to what it produces, its net exports will have to rise. The historical rule of thumb, neglecting autonomous changes in foreign demand, is that a 1 percent improvement in the U.S. current account requires a 10 percent fall in the real trade-weighted dollar exchange rate to price the additional U.S. goods into foreign markets and shift domestic spending away from imports. This is the result that obtains in the Organisation for Economic Co-operation and Development's economic model.[5] Some will say that

the requisite shift is now larger because the U.S. manufacturing sector has been allowed to atrophy, reducing the country's export base.[6]

Stronger growth in the demand abroad for U.S. goods (think China) would moderate the magnitude of the necessary fall, while weaker growth in such demand abroad (think Europe) would accentuate it. Obstfeld and Rogoff (2007) and Eichengreen and Rua (2010) simulate these adjustments, distinguishing demands for traded and nontraded goods and making different assumptions about the rate of growth of foreign demand. According to Eichengreen and Rua (2010), halving the size of the U.S. current account deficit requires a 15 percent fall in the dollar real exchange rate, assuming an increase in demand in the rest of the world that offsets the posited reduction in U.S. demand equaling 3 percent of U.S. GDP (which is the posited change in the U.S. saving-investment balance). As the increase in foreign demand grows smaller, or even as the same increase in foreign demand is concentrated in a smaller subset of countries, the requisite depreciation of the dollar grows larger.

On balance, it is hard to avoid the conclusion that more is needed to achieve a sustainable reduction in the U.S. current account deficit. As of early summer 2011, the fall from the November 2005 local peak in the Federal Reserve's Price-Adjusted Major Currencies Dollar Index was around 19 percent.[7] Following the outbreak of the subprime crisis and then the Bear Stearns and Lehman Brothers shocks, the dollar strengthened as investors fled to the safe haven of the U.S. Treasury market. With the outbreak of financial turbulence in Europe in 2010, this experience was repeated: the dollar strengthened again, both against the euro and on an effective basis.[8]

So long as the dollar exchange rate continues to be driven more by capital flows than by the correlates of the current account, and so long as the U.S. Treasury market continues to be seen as a safe haven, it is hard to see how the halving of the U.S. current account deficit can be sustained. One can imagine that, as continued capital inflows lead to mounting U.S. external indebtedness, the dollar's safe-haven status will be called into question.[9] But it is hard to know when.

In the short run, then, it seems all but inevitable that as U.S. investment picks up and as additional investment feeds more growth and demand, the U.S. current account deficit will widen again. The International Monetary Fund (IMF) forecasts that this widening will be

limited to no more than half a percent of GDP over the next five years (IMF 2010a). That projection is either overly optimistic or it is making additional, unspecified assumptions about dollar decline or strong demand growth abroad.[10]

Europe

For present purposes, the European continent can be divided into two parts: Northern Europe (primarily Germany) and Southern Europe (Greece, Italy, Portugal, Spain, and the honorary member, Ireland)— each of which will have to make very different contributions to rebalancing.[11] As figure 2.3 shows, Germany's surplus and the PIIGS'[12] deficits are now more or less offsetting (as they also were, more or less, for much of the preceding decade).

Because Europe as a whole has not been in large current account surplus or deficit, it is hard to argue that the continent played a major role in the buildup of global imbalances.[13] Where this pattern of intra-European

Figure 2.3 Current Account Balance as a Percentage of Euro Area GDP, 1995–2010
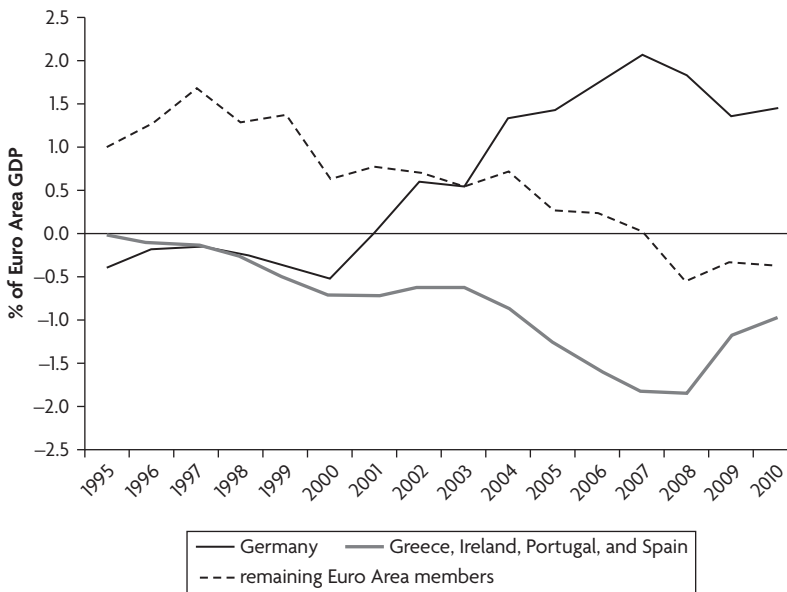
Source: IMF 2011.

imbalances clearly did play a role was in the buildup of vulnerabilities within Europe (which, as already seen, will have implications for what happens going forward).

With the decline in borrowing costs attendant on the European Monetary Union, there was a large rise in consumption spending across Southern Europe (see, for example, Jaumotte and Sodsriwiboon 2010). In some countries (such as Spain), this spending was mainly private dissaving; in others (Greece and Portugal), government took an active part. Partly as a result of the concurrent shift to current account surplus in Germany, the resulting Southern European deficits were freely financed. The 2008–09 crisis was then the straw that broke the camel's back. Governments had no choice but to support demand with additional public spending, even while employment and export supply declined. The result was the growth of twin deficits, culminating in 2010 in fears of a regionwide sovereign debt crisis.

Euro Area Deficit Countries. One consequence is the need now for significant fiscal consolidation across the crisis countries. Table 2.1 shows that planned budget reductions in 2010 ranged from 7 percent of GDP in Greece to 3 percent in Ireland and 2.5 percent in Portugal and Spain.

Table 2.1 Fiscal Adjustment in Euro Area, 2010–11

	Proportion of Euro Area GDP (%)	Discretionary budget cuts (% of GDP)	
	2010	2010	2011
France	21.3	0.0	0.6
Germany	26.8	−1.5	0.4
Greece	2.6	7.0	4.0
Ireland	1.8	3.0	2.0
Italy	16.9	0.5	0.8
Portugal	1.8	2.5	3.1
Spain	11.7	2.5	2.9
Others	16.9	−0.4	0.5
Euro Area	**100.0**	**0.2**	**1.0**

Source: Economist 2010, drawing on Barclay's Capital.

These reductions were to be followed by somewhat smaller adjustments in the same direction in 2011 (except in Spain and Portugal at the time of writing, where the projected fiscal adjustments are projected to increase). With not just public but also private spending likely to be weak, current account deficits will tend to narrow.

Were Southern Europe to swing sharply toward current account balance, that would increase the difficulty of engineering the same shift in the United States. In fact, the IMF expects the current account deficits across Southern Europe to shrink only gradually: table 2.2 shows that of Greece falling only from 10 percent of GDP in 2010 to the 7–8 percent range thereafter, that of Italy falling by barely 1 percent of GDP, that of Portugal falling not at all before 2012 and after that by only 1 percentage point of GDP, and that of Spain falling by barely a fourth of a percentage point of GDP.

Table 2.2 Actual and Projected Current Account Balances in Euro Area, 2008–16
percentage of GDP

Country	2008	2009	2010	2011	2012	2013	2014	2015	2016
Austria	4.86	2.91	3.17	3.06	3.11	3.31	3.33	3.28	3.15
Belgium	–1.90	0.84	1.20	1.02	1.20	1.50	1.88	2.31	2.40
Cyprus	–17.20	–7.55	–7.03	–8.86	–8.66	–8.45	–8.35	–8.01	–7.99
Finland	2.85	2.35	3.13	2.76	2.57	2.63	2.74	2.80	2.84
France	–1.91	–1.93	–2.05	–2.78	–2.70	–2.42	–2.25	–2.22	–2.19
Germany	6.73	5.00	5.31	5.14	4.56	4.34	4.26	3.99	3.62
Greece	–14.69	–10.99	–10.45	–8.16	–7.06	–6.64	–5.49	–4.39	–3.85
Ireland	–5.65	–3.04	–0.72	0.19	0.59	0.24	0.16	0.13	0.13
Italy	–2.93	–2.08	–3.50	–3.37	–2.96	–2.97	–2.98	–2.73	–2.41
Luxembourg	5.26	6.70	7.72	8.54	8.70	8.93	9.15	9.24	9.29
Malta	–5.56	–6.94	–0.62	–1.05	–2.31	–3.24	–3.84	–3.63	–3.30
Netherlands	4.26	4.57	7.13	7.88	8.23	7.84	7.24	6.60	6.05
Portugal	–12.61	–10.93	–9.87	–8.73	–8.53	–6.62	–6.43	–6.03	–5.65
Slovak Republic	–6.62	–3.59	–3.45	–2.83	–2.74	–2.55	–2.66	–2.60	–3.13
Slovenia	–6.67	–1.49	–1.16	–2.00	–2.10	–2.10	–2.20	–2.42	–2.62
Spain	–9.74	–5.53	–4.49	–4.78	–4.55	–4.11	–3.89	–3.68	–3.47

Source: IMF 2011; data for 2011–16 are staff projections.
Note: The table does not include figures for Estonia, which was admitted to the Euro Area in 2011.

These April 2011 forecasts assume that private spending and growth will be maintained and that investment (the current account deficit being the excess of investment over saving) will not take a sustained hit.

Subsequent events however, call these rosy forecasts into question.[14] To reassure financial markets, governments have been compelled to adopt even larger discretionary cuts to their budgets. Uncertainty about implementation and about the prospects for European economic growth is likely to have a more powerful negative impact on private spending. With deeper recessions, current accounts will move toward balance more quickly. They will move not as a result of Southern European countries exporting more (the absence of a national exchange rate ruling out devaluation to jump-start exports, and the dependence of these economies on intra-European exports limiting the benefits of euro depreciation) but as a result of their importing *less*. Deeper recessions and less spending on imports will mean less support for global rebalancing.

Measures to reduce uncertainty and otherwise limit the depth of the recessions associated with these fiscal consolidation measures would encourage investment. More investment would both help the countries in question and contribute to global rebalancing—objectives that point to the importance of solidifying political support for fiscal consolidation where it is fragile. It means making the necessary consolidation as growth-friendly as possible by relying more heavily on cutting public expenditure than on increasing taxes. It means relying more on cuts to current, rather than capital, expenditure (where the latter often proves temporary) and, where tax increases are needed, relying on less-distortionary taxes (increases in value added taxes and sin taxes).[15] It means restructuring debts where they are unsustainable (such as in Greece). It means coming clean about the adequacy of the capitalization of European banks holding the debts that must be restructured. It means supplementing fiscal consolidation with structural (labor-market and other regulatory) reform to address these economies' supply-side weaknesses and attract the foreign capital needed to finance current account deficits that will only be wound down slowly.

And it means reiterating the commitment of other European countries to temporarily provide this finance if markets fail. Alas, these seem like formidable prerequisites for ensuring mild recessions and modest support from this region for global rebalancing.

Euro Area Surplus Countries. Support from the Euro Area surplus countries—Germany and its smaller compatriots (Austria, Finland, and the Netherlands)—would make life for Southern Europe easier and also contribute to global rebalancing. According to the forecasts shown above in table 2.2, the current account surplus of the dominant member of this group, Germany, will remain stable through 2011, the government doing little if any budget cutting until then (and the economy still feeling a positive discretionary impulse in 2010, reflecting the phased implementation of earlier stimulus measures). Subsequently, the projection shows Germany's current account surplus shrinking by 1 percent of its GDP by 2013 and another 1 percent by 2015. Even then, however, German current account surpluses remain substantial. The euro now having fallen significantly, further boosting German exports, one can reasonably ask whether this vision of a progressively narrowing German surplus is overly optimistic.[16]

This adjustment would be aided by measures that boosted German investment relative to saving. German commentators regularly bemoan the country's low rate of domestic investment, which is running at only 16 percent of GDP—lower than in France, lower than in Italy, and lower than the Euro Area average (19 percent, according to European Central Bank data for the first quarter of 2010). Investment tax credits can be used to encourage investment at home. Product market deregulation and the elimination of red tape can encourage investment in the underdeveloped service sector. These measures would be consistent with the pro-growth agenda of the German government and also contribute to global and intra-European rebalancing.

Operating on the savings side of the savings-investment imbalance would be harder. Standing in the way of continued public dissaving in Germany are (a) a constitutional amendment requiring the government to run a quasi-balanced budget and (b) a powerful collective psychology. If policy initiatives to promote investment result in faster economic growth, this could lead to a temporary decline in saving and increased household spending in anticipation of higher future incomes. But the experience of the last decade does not suggest that this mechanism works powerfully in Germany.

Non–Euro Area Countries. What about non–Euro Area Europe? In terms of global imbalances, non–Euro Area Europe means mainly the United

Kingdom. (Denmark, Norway, and Sweden have been running surpluses, but they are small economies. In Eastern Europe, only the Southeastern European economies, which are even smaller, are now running substantial current account deficits.)

The United Kingdom is running a current account deficit of 1.7 percent of GDP, which the IMF foresees as shrinking only marginally. The question is whether that external deficit could now fall more sharply because of the weakness of sterling and because of the new government's deep budget cuts, which could slow public spending, private investment, and growth. Such a result would not be helpful from the rebalancing point of view.

In sum, the picture in Europe is mixed because Europe is mixed. That Southern Europe and possibly the United Kingdom will substantially reduce their current account deficits seems fairly certain. Whether Germany and other countries will take up the slack is less clear.

China

Most of the attention devoted to China's high savings rate (approaching 45 percent of GDP and producing a substantial current account surplus despite the country's high level of investment) focuses on household saving. Chinese households have good reason for precautionary saving. The structure of the economy is changing rapidly, with uncertain implications for people's livelihoods. With the declining relative importance of state companies, the social safety net has been effectively downsized. There is limited scope for borrowing to pay for health care, education, and other costs. Public support for retirees is similarly limited.[17]

The policy recommendations that flow from this analysis are familiar: China should develop its financial markets as well as its education, rural health care, and public pension systems. Those recommendations also have implications for global rebalancing. Building financial markets and a social safety net will take time; these are not institutional reforms that can be carried out in a few years. With the determinants of household savings rates changing only gradually, China's current account surplus will narrow only gradually.[18] There may be hope for a contribution to global rebalancing in the medium term but not much in the short run.

In fact, household savings rates in China have been declining in recent years, which makes it hard to blame them for the growth of the Chinese

surplus (Prasad 2009). They are not unusually high by the standards of other emerging markets. Savings, as conventionally measured, amount to only some 35 percent of household income, which is not extraordinary. Moreover, household saving accounts for, at most, half of national saving. The other half is undertaken by enterprises and (until recently) government.

One explanation for the high level of corporate saving is that the strong performance of Chinese exports has given export-oriented enterprises more profits than they can productively invest.[19] Some commentators move from this observation to the conclusion that the government should revalue the currency to reduce this profitability. This is an uncomfortable argument; it suggests that the authorities should want to make the leading sector of their economy less profitable and efficient—and especially that they would want to subject that sector to a sharp shock to profitability in the form of a step revaluation. From this point of view, it is understandable that Chinese officialdom has been reluctant to see more than gradual appreciation of the renminbi, which, other things equal, would be unlikely to make more than a gradual impact on global imbalances.

On the other hand, if the 2010 upsurge in labor unrest and double-digit wage increases (prominently at Foxconn and Honda but also more broadly) indicate that previous policy amounted to an effort to artificially hold down the real exchange rate that is now abruptly unraveling, there could be a more discontinuous adjustment. Wage increases of 20 percent would not be unlike a 20 percent revaluation in their effect on exporters' competitiveness. If the upsurge in labor militancy is general, the impact on global imbalances could be significant (see also Kroeber 2010). Deutsche Bank (2010) uses a multisector computable general equilibrium model to estimate the impact of a 20 percent wage increase and concludes that this would raise consumption and investment by 3.9 percent of domestic production (equivalently, net exports fall by 3.9 percent of GDP). In other words, a 20 percent wage increase would be enough to cut the Chinese surplus by about half.

But the high savings of Chinese enterprises is more than simply a matter of the real exchange rate. In addition, it likely reflects the under-development of financial markets as borrowing-constrained enterprises accumulate funds in anticipation of future investment needs.[20] Tyers

and Lu (2009) suggest that the high corporate savings rate also reflects the market power and extraordinary profits of a handful of state-owned firms that dominate key industries such as mining, petroleum refining, steel manufacturing, and transport and communications. Their situation contrasts with that of the textile, footwear, and processed agricultural products industries, where private firms dominate, entry is relatively free, and rates of return on capital (profitability) have been lower.

This diagnosis is not universally accepted.[21] If it is correct, however, potential solutions include passing state-owned enterprises' (SOE) dividend payments to the state on to consumers through a commensurate reduction in labor income taxes. Another solution involves using competition policy to encourage entry and reduce oligopoly rents. The government has embraced the practice of offsetting dividend receipts with reductions in labor taxes, although its dividend receipts remain limited. Entry (especially into heavy industry) sufficient to eliminate oligopoly profits is likely to take time, however.

Meanwhile, an alternative would be the imposition of price caps in sectors where market power is pervasive—a step in the direction of the undistorted equilibrium. It would reduce corporate savings, other things equal, but other things would *not* be equal in practice. The excessive markups associated with oligopoly power in China are concentrated in the sheltered sector. (This makes sense: exporters face the pressure of foreign competition.) Reducing the prices of the intermediate inputs they supply without reducing their quantity could end up making exports—of non-labor-intensive manufactures such as metals and motor vehicles— more competitive and could offset, in part, the reduction in national saving and in the current account surplus. In any case, all these policies run up against the constraint that the SOE sector is politically influential.

Finally, Green (2010) points to the contribution of government to national saving. The 2009–10 period was an exception; China rolled out a massive fiscal stimulus, the largest relative to GDP of any country, and the budget of the consolidated public sector swung into a deficit of roughly 3 percent of GDP. But this occurred against the backdrop of a steadily growing government budget surplus. Flow-of-funds data (arguably superior to the official budget figures in that they capture off-budget sources of revenue, including those from land sales) show that revenues of all levels of government as a share of national income rose

by half between 1994 and 2007—from 16 percent to 24 percent—while spending failed to keep up. Green's data show that government saving, including revenue from land sales, contributed nearly half as much as either the household or corporate sectors to overall national saving.

Although the government's contribution to national saving could presumably be adjusted more quickly than the nongovernmental component, there are limits. Spending on infrastructure, among other things, would be difficult to ramp up further. The authorities are already making every effort to ramp up the rural health care system. They would like to fund three additional years of compulsory schooling, but training qualified teachers takes time. At the same time, the government could cut business taxes, on the underdeveloped service sector in particular. Such a tax cut would have the complementary effect of encouraging the reallocation of resources toward the production of nontraded goods, which would be helpful for global rebalancing.

The IMF sees the Chinese current account surplus as rising slightly, from 6.2 percent to 7.3 percent of GDP by 2013 and to 8 percent of GDP in 2015. Although China avoids an external surplus in excess of 10 percent of GDP (the 2007–08 average), only in that sense does it contribute to global rebalancing. Significant rebalancing would require it to do more. The analysis here suggests that this could be achieved only through a broad combination of policies.[22]

Other East Asian Countries

The recipe for moving Japan closer to current account balance is well known: ending deflation and restoring growth would (a) encourage investment by firms anticipating higher prices and profits, and (b) encourage consumption by households anticipating higher incomes.

Reactions to the recent recession illustrate the point. In the 2009 downturn, the sizable increase in the fiscal deficit (discretionary fiscal measures were some 1.4 percent of GDP in 2009, and the total budget deficit increased to 4.9 percent of GDP) could have substantially reduced the current account surplus. That increased deficit, however, was offset by an increase in the household financial surplus of 2.8 percent of GDP and an increase in nonfinancial and financial corporations' financial surplus of another 2.8 percent of GDP as both households and firms cut back on their spending.[23]

The trend in household savings rates was downward in the past decade, reflecting a rising old-age dependency ratio and predictable life-cycle effects (Kawai and Takagi 2010). Most of the leverage for policy is thus likely to come from measures designed to stimulate corporate investment, not personal consumption. Getting spending going again is far from impossible, but it is something the authorities have been attempting to do, without noticeable success, for the better part of two decades. Given Japan's on-again, off-again fiscal stimulus and buildup of public debt, the scope for further fiscal measures is limited. Quantitative easing to push down the yen has never been particularly successful, for whatever reason.

By process of elimination, strong demand for Japanese capital goods and sophisticated intermediate inputs by China and other emerging East Asian countries holds out the most promise for encouraging corporate investment. To encourage this, Kawai and Takagi (2010) recommend currency appreciation in China and elsewhere in the region, together with active efforts to further liberalize intra-Asian trade.

Consistent with this view, Thorbecke (2010) finds that currency appreciation by non-China and non-Japan Asia would stimulate imports by developing Asian countries of both consumption and capital goods, from Japan and generally. Appreciation would likewise induce a significant reduction in exports to the United States.

Labor-intensive exports would be affected most dramatically—making it important that governments, when allowing their currencies to appreciate, take proactive measures to stimulate labor-intensive employment elsewhere, namely in the service sector.[24] Encouraging investment in this sector would both hold out the potential for employment-rich growth and be a step toward correcting the saving-investment imbalance that shows up as chronic current account surpluses in emerging Asia.

On the savings side, authors including Aziz and Lamberte (2010) recommend the same policy reforms as in China—building social safety nets and developing financial markets—although for countries such as Indonesia, the Philippines, and Thailand, they don't hold out hope for fast-enough progress to make a significant dent in imbalances.

In addition, the loss of exports by individual countries is less, but the overall contribution to reducing global imbalances is greater, when the

countries of the region jointly appreciate their currencies (Thorbecke 2010). Moving together limits each individual Asian country's loss of competitiveness in the United States and other extra-Asian markets. In addition, joint appreciation would presumably be accompanied by measures to encourage consumption spending regionwide, opening up additional export opportunities within Asia.

The other constraint on rebalancing in emerging Asia—aside from concern with exports, employment, and overall economic growth—is reserve adequacy. Emerging Asian countries have run persistent current account deficits since 1997–98, partly in the desire to accumulate larger buffers of foreign exchange reserves, which they see as useful for insulating their economies from capital flow volatility. There is the distinct possibility that they will conclude from the experience of 2008–09 that still-larger reserve cushions are desirable. Supplements to national reserve holdings would therefore increase those countries' willingness to contribute to rebalancing.

The alternatives here include the following:

- Establishment of an effective, quick-disbursing, lightly conditioned facility at the IMF, together with the willingness of Asian governments to access it
- A network of currency swap lines and credits outside the IMF, as proposed by the government of the Republic of Korea in its capacity as Group of 20 (G-20) chair
- Regional reserve pooling arrangements, which could perhaps operate in conjunction with the IMF.

Of these three options, the third appears to be the most viable. Asian governments remain reluctant to approach the IMF, and the IMF's principal shareholders, for their part, would be reluctant to create a global system of currency swaps and credits that was tantamount to a shadow IMF. ASEAN+3 has made progress in strengthening and multilateralizing its Chiang Mai Initiative, which operates in conjunction with the IMF.[25] The implication for policy is that the participants now need to show a readiness to actually use the mechanism. The implication for the empirical work here is that reserve levels may be an important determinant of global imbalances, at least for certain countries and regions.

Oil-Exporting Nations

In the focus on China's external surpluses, it is sometimes forgotten that in 2008 the combined current account balance of the oil-exporting nations (as previously shown in figure 2.1) exceeded that of China and emerging East Asia. Of course, in 2009 the oil exporters' surpluses fell precipitously—from 1.08 percent to 0.34 percent of world GDP. This volatility in their current account balances is largely, but not wholly, driven by the volatility in petroleum prices.

Individual oil exporters can do little to mitigate the wide variation in their current account balances. Furthermore, it makes sense for some of these countries to save a large proportion of the oil revenue increases that are due to price increases (IMF 2008, box 6-1). Hence, substantial responsibility for these movements in current account balances devolves upon the consuming nations, including the United States and China. The former is the largest single importer of oil (2009 oil imports accounted for 86 percent of the total U.S. trade deficit), while the latter has contributed the largest increment to world oil imports in recent years. Small variations in demand conditions in these two countries, combined with relatively low price elasticities of supply and demand, explain a large share of the global imbalances in 2006–08.

The preceding discussion suggests that a concerted effort to reduce the pace of oil-demand increases in both the United States and China would moderate global imbalances. Increasing the relative price of oil would thus have a positive impact on efforts to rebalance. The United States, with its relatively low energy taxes, would be a prime candidate for progress here (Chinn 2005).

Empirics

This section offers a simple analytical and forecasting model of current account balances, building on the work of Chinn and Ito (2007). The analysis includes data for the crisis period, enabling an examination of whether the relationship between the current account and its proximate determinants changed around the time of the crisis.

These and earlier data are used to conduct in- and out-of-sample forecasting exercises. The analysis considers several familiar, not necessarily mutually exclusive, hypotheses and arguments that have been offered

to explain global imbalances. These include the twin deficit hypothesis (Chinn 2005): the saving glut hypothesis (Greenspan 2005a, 2005b; Bernanke 2005; Clarida 2005): and the asset bubble-driven explanation of current account balances (Aizenman and Jinjarak 2009; Fratzscher and Straub 2009).

Following Chinn and Prasad (2003), Chinn and Ito (2007), and Ito and Chinn (2009), the authors estimate the following models:

Model 1

$$y_{i,t} = \alpha + \beta_1 BB_{i,t} + \beta_2 FD_{i,t} + X_{i,t}\Gamma + u_{i,t} \qquad (2.1)$$

Model 2

$$y_{i,t} = \alpha + \beta_1 BB_{i,t} + \beta_2 FD_{i,t} + \beta_3 LEGAL_i + \beta_3 KAOPEN_{i,t}$$
$$+ \beta_4(FD_{i,t} \times LEGAL_{i,t}) + \beta_5(LEGAL_{i,t} \times KAOPEN_{i,t})$$
$$+ \beta_6(KAOPEN_{i,t} \times FD_{i,t}) + X_{i,t}\Gamma + u_{i,t} \qquad (2.2)$$

where

$y_{i,t}$ refers to three dependent variables: the current account balance, national saving, and investment, all expressed as a share of GDP;

FD is a measure of financial development, for which private credit creation (PCGDP) is usually used;

KAOPEN is the Chinn and Ito (2006) measure of financial openness;

LEGAL is a measure of legal or institutional development— the first principal component of law and order (LAO), bureaucratic quality (BQ), and anticorruption measures (*CORRUPT*);[26] and

$X_{i,t}$ is a vector of macroeconomic and policy control variables that include familiar determinants of current account balances such as net foreign assets as a ratio to GDP, relative income (to the United States), its quadratic term, relative dependency ratios on young and old populations, terms-of-trade (TOT) volatility output growth rates, trade openness (exports + imports/GDP), dummies for oil-exporting countries, and time fixed effects.

Panels of nonoverlapping five-year averages are used for all explanatory variables except when noted otherwise. All variables, except for net foreign assets to GDP, are converted into the deviations from their

GDP-weighted world mean before the calculation of five-year averages; net foreign asset ratios are sampled from the first year of each five-year panel as the initial conditions.[27] The data are extracted mostly from publicly available datasets such as the *World Development Indicators*, *International Financial Statistics*, and *World Economic Outlook* (for details, see annex 2.1).

In-Sample Results

The sample includes annual data for 23 industrial and 86 developing countries covering the four decades of 1970–2008.[28] The authors regress current account balances, national saving, and investment on the same set of regressors separately for industrial countries (IDC), less-developed countries (LDC), and emerging-market economies (EMG).[29]

Table 2.3 shows the results for model 1 (equation 6.1).

Note first that these results are consistent with the twin deficits hypothesis: budget surpluses and current account surpluses move together, other things equal. A coefficient of less than 1 suggests, however, that they move together less than proportionately.[30] Larger net foreign assets, which should generate a stronger income account, affect the current account balance positively, as anticipated. The relative income terms, which tend to be jointly if not always individually significant, show that higher-income countries generally have stronger current accounts (as if capital tends to flow from higher- to lower-income countries). Countries with higher dependency ratios (and, by the life-cycle hypothesis, slower savings rates) generally have weaker current accounts.[31] Oil-exporting countries have stronger current accounts, other things equal. All this is as expected.

The Caballero, Farhi, and Gourinchas (2008) hypothesis—that countries with more-developed financial markets should have weaker current accounts (capital flows from China, with its underdeveloped capital markets, to the United States, which has a comparative advantage in producing safe financial assets)—finds weak support in the full sample (leftmost column of table 2.3).[32] The pattern is the same, but the significance of the effect vanishes when disaggregating industrial and developing countries. This is perhaps not surprising in that the hypothesis in question emphasizes flows between industrial and developing countries, not among members of the two subgroups.

Table 2.3 Current Account Regression without Institutional Variables

	Current account			
	(1)	(2)	(3)	(4)
	Full	IDC	LDC	EMG
Government budget balance	0.283 [0.064]***	0.414 [0.086]***	0.28 [0.068]***	0.119 [0.065]*
Net foreign assets (initial)	0.039 [0.006]***	0.089 [0.014]***	0.029 [0.007]***	0.024 [0.013]*
Relative income	0.058 [0.015]***	0.023 [0.017]	0.097 [0.020]***	0.241 [0.092]***
Relative income squared	0.073 [0.019]***	−0.104 [0.082]	0.073 [0.018]***	0.161 [0.083]*
Dependency ratio (young)	−0.046 [0.015]***	0.012 [0.023]	−0.034 [0.017]**	−0.02 [0.018]
Dependency ratio (old)	−0.025 [0.009]***	0.013 [0.017]	−0.025 [0.011]**	−0.054 [0.019]***
Financial development (PCGDP)	−0.016 [0.011]	−0.025 [0.016]	0.013 [0.013]	−0.008 [0.016]
TOT volatility	0.007 [0.020]	−0.100 [0.053]*	−0.009 [0.022]	−0.003 [0.024]
Average GDP growth	−0.184 [0.121]	0.056 [0.173]	−0.209 [0.132]	0.028 [0.121]
Trade openness	−0.001 [0.006]	−0.013 [0.013]	−0.014 [0.008]*	−0.018 [0.010]*
Oil-exporting countries	0.034 [0.013]***	— —	0.033 [0.013]***	0.057 [0.016]***
Dummy for 2001–05	0.014 [0.011]	0.023 [0.010]**	0.018 [0.018]	0.04 [0.017]**
Dummy for 2006–08	0.007 [0.013]	0.010 [0.011]	0.016 [0.020]	0.023 [0.021]
Observations	670	180	490	256
Adjusted R-squared	0.45	0.50	0.47	0.42

Source: Authors' calculations.
Note: IDC = industrialized countries. LDC = less-developed countires. EMG = emerging-market countries. PCGDP = ratio of private credit to GDP. TOT = terms of trade. — = not included. Time fixed effects are included in the estimation, but only those for the 2001–05 and 2006–08 periods are reported in the table.
Significance level: * = 10 percent, ** = 5 percent, *** = 1 percent.

Two dummy variables for the 2001–05 and 2006–08 subperiods look to the question of whether recent experience has been unusual. Emerging-market economies appear to have run unusually large surpluses in the first subperiod, consistent with the idea that they were

fixated on minimizing financing vulnerabilities and accumulating reserves following the Asian crisis. Such behavior is not evident for emerging markets as a group in 2006–08, when the contribution of emerging markets to global imbalances was increasingly a China story.[33] Surprisingly, the industrial countries as a group ran larger surpluses in the same 2001–05 period than their other characteristics would lead one to expect. Evidently the United States was an outlier in this respect.[34]

Table 2.4 then reports estimates of the models for savings and investment separately.

A few results of note:

- Government budget deficits affect primarily national saving (in the same direction as government saving, contrary to Ricardian equivalence stories).
- Dependency ratios affect both savings and investment (as emphasized in Eichengreen and Fifer 2002).
- Financial development has a more consistent impact on investment than on saving (something that would not be obvious a priori).

Other variables that do not appear to have a significant impact on the current account balance in table 2.3—such as growth, trade openness, and terms-of-trade volatility—nonetheless affect both savings and investment significantly; they just affect them in the same direction.

Tables 2.5 and 2.6 add the institutional variables. (Here, only the results for the current account balance in table 2.5 are discussed.)

The principal result of interest is the coefficient on the interaction between capital account openness and financial development (together with the financial development effect discussed above). For the full sample, the results again support the Caballero, Farhi, and Gourinchas (2008) interpretation of global imbalances. Among emerging markets, those with better-developed financial markets and open capital accounts similarly have weaker current account balances, as if they were on the receiving end of inflows (or experience the least tendency for capital to flow out). Among the industrial countries, however, this pattern is no longer evident.

A number of alternative specifications yielded similar results. One of interest involved adding foreign reserves as a percentage of GDP, lagging one five-year period, as an additional explanatory variable.[35] Lagging

Table 2.4 National Saving and Investment Regression without Institutional Variables

	National Saving				Investment			
	(5) Full	(6) IDC	(7) LDC	(8) EMG	(9) Full	(10) IDC	(11) LDC	(12) EMG
Government budget balance	0.411 [0.111]***	0.582 [0.081]***	0.413 [0.113]***	0.246 [0.078]***	0.033 [0.035]	0.139 [0.060]**	0.028 [0.036]	0.026 [0.064]
Net foreign assets (initial)	0.024 [0.013]*	0.078 [0.011]***	0.015 [0.014]	0.053 [0.016]***	-0.006 [0.004]	-0.008 [0.007]	-0.005 [0.005]	0.014 [0.013]
Relative income	-0.007 [0.033]	0.003 [0.021]	0.025 [0.038]	-0.070 [0.096]	-0.043 [0.014]***	-0.042 [0.021]*	-0.043 [0.019]**	-0.268 [0.067]***
Relative income squared	0.048 [0.042]	-0.170 [0.093]*	0.065 [0.033]**	-0.174 [0.101]*	-0.009 [0.019]	-0.001 [0.093]	0.004 [0.019]	-0.316 [0.066]***
Dependency ratio (young)	-0.091 [0.018]***	-0.066 [0.023]***	-0.055 [0.020]***	-0.038 [0.019]**	-0.054 [0.012]***	-0.094 [0.022]***	-0.033 [0.014]**	-0.037 [0.018]**
Dependency ratio (old)	-0.030 [0.014]**	-0.042 [0.017]**	-0.010 [0.016]	-0.062 [0.018]***	-0.006 [0.009]	-0.046 [0.017]***	0.011 [0.010]	-0.007 [0.017]
Financial development (PCGDP)	0.031 [0.016]**	0.000 [0.012]	0.100 [0.026]***	0.031 [0.024]	0.033 [0.008]***	0.019 [0.007]***	0.061 [0.014]***	0.042 [0.016]***
TOT volatility	-0.009 [0.038]	0.243 [0.060]***	-0.058 [0.043]	-0.080 [0.033]**	0.026 [0.020]	0.335 [0.054]***	-0.002 [0.022]	-0.030 [0.030]

Table 2.4 (continued)

	National Saving				Investment			
	(5) Full	**(6) IDC**	**(7) LDC**	**(8) EMG**	**(9) Full**	**(10) IDC**	**(11) LDC**	**(12) EMG**
Average GDP growth	0.593 [0.173]***	0.193 [0.217]	0.547 [0.179]***	1.071 [0.161]***	0.908 [0.098]***	0.397 [0.302]	0.900 [0.101]***	1.134 [0.122]***
Trade openness	0.024 [0.007]***	0.029 [0.016]*	0.011 [0.009]	0.010 [0.011]	0.021 [0.005]***	0.029 [0.011]***	0.022 [0.007]***	0.027 [0.008]***
Oil-exporting countries	0.079 [0.018]***	— —	0.088 [0.019]***	0.053 [0.015]***	0.046 [0.012]***	— —	0.053 [0.011]***	0.017 [0.015]
Dummy for 2001–05	−0.015 [0.011]	−0.059 [0.011]***	0.047 [0.016]***	0.047 [0.019]**	−0.034 [0.014]**	−0.090 [0.019]***	0.019 [0.014]	−0.003 [0.018]
Dummy for 2006–08	0.007 [0.014]	−0.052 [0.012]***	0.082 [0.021]***	0.054 [0.026]**	−0.017 [0.014]	−0.070 [0.018]***	0.039 [0.015]**	0.019 [0.019]
Observations	670	180	490	256	670	180	490	256
Adjusted R-squared	0.44	0.61	0.47	0.55	0.32	0.43	0.37	0.49

Source: Authors' calculations.

Note: IDC = industrial countries. LDC = less-developed countries. EMG = emerging-market economies. PCGDP = ratio of private credit to GDP. TOT = terms of trade. — = not included. Time fixed effects are included in the estimation, but only those for the 2001–05 and 2006–08 periods are reported in the table.

Significance level: * = 10 percent; ** = 5 percent; *** = 1 percent.

Table 2.5 Current Account Regression with Institutional Variables

	Current account			
	(1) **Full**	**(2)** **IDC**	**(3)** **LDC**	**(4)** **EMG**
Government budget balance	0.295	0.289	0.278	0.090
	[0.058]***	[0.086]***	[0.063]***	[0.055]*
Net foreign assets (initial)	0.037	0.078	0.028	0.028
	[0.006]***	[0.008]***	[0.007]***	[0.012]**
Relative income	0.090	0.018	0.135	0.302
	[0.018]***	[0.022]	[0.022]***	[0.096]***
Relative income squared	0.056	0.020	0.048	0.182
	[0.018]***	[0.094]	[0.017]***	[0.085]**
Dependency ratio (young)	−0.033	0.004	−0.029	−0.030
	[0.015]**	[0.025]	[0.017]*	[0.019]
Dependency ratio (old)	−0.018	0.057	−0.021	−0.068
	[0.010]*	[0.021]***	[0.011]**	[0.020]***
Financial development (PCGDP)	−0.027	−0.020	0.002	−0.117
	[0.014]*	[0.010]*	[0.029]	[0.038]***
Legal development (LEGAL)	−0.009	0.015	−0.015	−0.019
	[0.005]*	[0.005]***	[0.007]**	[0.012]
PCGDP × LEGAL	−0.011	−0.014	−0.007	−0.033
	[0.008]	[0.012]	[0.008]	[0.014]**
Financial openness (KAOPEN)	0.002	0.008	−0.008	−0.008
	[0.005]	[0.004]*	[0.008]	[0.009]
KAOPEN × LEGAL	0.003	0.012	−0.001	0.003
	[0.001]***	[0.003]***	[0.002]	[0.003]
KAOPEN × PCGDP	0.002	0.028	0.003	−0.019
	[0.007]	[0.010]***	[0.008]	[0.010]*
TOT volatility	0.001	0.028	−0.010	0.025
	[0.023]	[0.047]	[0.024]	[0.025]
Average GDP growth	−0.097	0.178	−0.092	0.067
	[0.091]	[0.178]	[0.099]	[0.116]
Trade openness	−0.001	−0.001	−0.005	0.000
	[0.006]	[0.011]	[0.010]	[0.012]
Oil-exporting countries	0.028	—	0.025	0.045
	[0.013]**	—	[0.012]**	[0.016]***
Dummy for 2001–05	0.025	0.015	0.034	0.041
	[0.009]***	[0.009]*	[0.015]**	[0.017]**
Dummy for 2006–08	0.017	0.002	0.033	0.021
	[0.011]	[0.010]	[0.018]*	[0.022]
Observations	620	174	446	249
Adjusted R-squared	0.49	0.63	0.52	0.45

Source: Authors' calculations.

Note: IDC = industrial countries. LDC = less-developed countries. EMG = emerging-market economies. PCGDP = ratio of private credit to GDP. LEGAL = legal development. KAOPEN = financial openness. TOT = terms of trade. — = not included. Time fixed effects are included in the estimation, but only those for the 2001–05 and 2006–08 periods are reported in the table.

Significance level: * = 10 percent, ** = 5 percent, *** = 1 percent.

Table 2.6 National Saving and Investment Regression with Institutional Variables

	National Saving				Investment			
	(5) Full	(6) IDC	(7) LDC	(8) EMG	(9) Full	(10) IDC	(11) LDC	(12) EMG
Government budget balance	0.430 [0.113]***	0.476 [0.087]***	0.417 [0.123]***	0.192 [0.071]***	0.032 [0.034]	0.304 [0.126]**	0.021 [0.033]	0.014 [0.061]
Net foreign assets (initial)	0.023 [0.014]	0.072 [0.008]***	0.019 [0.015]	0.057 [0.015]***	−0.007 [0.004]	−0.014 [0.010]	−0.002 [0.005]	0.013 [0.014]
Relative income	0.015 [0.034]	0.000 [0.027]	0.035 [0.043]	−0.017 [0.088]	−0.037 [0.018]**	−0.006 [0.032]	−0.051 [0.021]**	−0.252 [0.076]***
Relative income squared	0.057 [0.034]*	−0.176 [0.116]	0.068 [0.029]**	−0.191 [0.092]**	0.002 [0.018]	−0.225 [0.155]	0.022 [0.017]	−0.326 [0.073]***
Dependency ratio (young)	−0.060 [0.018]***	−0.088 [0.025]***	−0.035 [0.022]	−0.058 [0.020]***	−0.050 [0.013]***	−0.097 [0.026]***	−0.032 [0.015]**	−0.046 [0.018]**
Dependency ratio (old)	−0.017 [0.015]	−0.017 [0.021]	−0.004 [0.017]	−0.082 [0.020]***	−0.005 [0.009]	−0.058 [0.020]***	0.007 [0.010]	−0.013 [0.019]
Financial development (PCGDP)	0.020 [0.017]	0.017 [0.011]	0.080 [0.059]	−0.092 [0.053]*	0.037 [0.008]***	0.026 [0.012]**	0.078 [0.031]**	0.046 [0.043]
Legal development (LEGAL)	−0.012 [0.007]*	0.011 [0.006]*	−0.018 [0.012]	−0.037 [0.015]**	−0.002 [0.004]	−0.010 [0.006]*	0.008 [0.008]	−0.016 [0.014]
PCGDP × LEGAL	−0.021 [0.008]**	−0.028 [0.013]**	−0.015 [0.014]	−0.047 [0.018]**	0.000 [0.004]	−0.003 [0.012]	0.014 [0.010]	0.000 [0.015]
Financial openness (KAOPEN)	−0.004 [0.006]	−0.004 [0.005]	−0.012 [0.012]	−0.002 [0.010]	−0.011 [0.003]***	−0.010 [0.003]***	−0.015 [0.006]**	−0.006 [0.007]

	(1)	(2)	(3)	(4)	(5)	(6)
KAOPEN × LEGAL	−0.004	−0.005	0.003	−0.003	0.003	−0.002
	[0.003]	[0.002]**	[0.005]	[0.001]***	[0.004]	[0.001]
KAOPEN × PCGDP	0.003	−0.002	−0.003	−0.001	−0.010	0.008
	[0.012]	[0.008]	[0.011]	[0.005]	[0.014]	[0.009]
TOT volatility	−0.051	−0.003	0.252	0.018	−0.062	−0.023
	[0.031]*	[0.025]	[0.045]***	[0.022]	[0.035]*	[0.039]
Average GDP growth	1.139	0.940	0.380	0.951	1.118	0.692
	[0.127]***	[0.097]***	[0.268]	[0.094]***	[0.168]***	[0.166]***
Trade openness	0.035	0.026	0.023	0.021	0.033	0.023
	[0.009]***	[0.008]***	[0.012]*	[0.005]***	[0.012]***	[0.007]***
Oil-exporting countries	0.010	0.059	—	0.049	0.032	0.078
	[0.014]	[0.011]***	—	[0.012]***	[0.017]*	[0.018]***
Dummy for 2001–05	−0.004	0.013	−0.080	−0.028	0.049	0.007
	[0.018]	[0.014]	[0.021]***	[0.014]*	[0.020]**	[0.013]
Dummy for 2006–08	0.015	0.034	−0.058	−0.009	0.049	0.029
	[0.020]	[0.016]**	[0.020]***	[0.015]	[0.026]*	[0.015]*
Observations	249	446	174	620	249	620
Adjusted R-squared	0.50	0.40	0.46	0.36	0.57	0.46

Source: Authors' calculations.

Note: IDC = industrial countries. LDC = less-developed countries. EMG = emerging-market economies. FD = financial development. PCGDP = ratio of private credit to GDP. LEGAL = legal development. KAOPEN = financial openness. TOT = terms of trade. — = not included. Time fixed effects are included in the estimation, but only those for the 2001–05 and 2006–08 periods are reported in the table.

Significance level: * = 10 percent, ** = 5 percent, *** = 1 percent.

the reserves variable is designed to address the concern that the current account balance and contemporaneous reserves are simultaneously determined (that is, positive shocks to the current account will translate into positive shocks to reserves). Reserve-adequacy arguments suggest that, other things equal, larger reserves should mean less incentive for reserve accumulation and a weaker current account. For the industrial countries, the coefficient on this variable is negative and significant, as hypothesized. For emerging-market economies, it is insignificant. For developing countries, it is positive and significant, contrary to the hypothesis.[36]

Out-of-Sample Projections for Selected Countries

These estimated relationships now help to construct out-of-sample projections as a way of forecasting the prospects for global rebalancing. The forecasts of the independent variables cover 2011–15, with the estimates used to project values for the current account. The forecasts start with 2011, omitting the crisis years 2009–10, when behavior was unusual.[37] The assumptions and the data for the out-of-sample projections are explained in annex 2.2.

For the United States, the results suggest modest movement in the direction of rebalancing, as shown in figure 2.4.[38]

Figure 2.4 shows the same for the United Kingdom, whose deficit is projected to shrink over the 2011–15 period. However, the narrowing of current account deficits over the period is limited; substantial deficits remain, even in 2015.

The news for the surplus countries we consider—China, Germany, Japan, and Singapore—is even less reassuring. The forecasts suggest that their surpluses will remain stable or rise further, absent additional policy changes. One interpretation is that the circle will be squared by other countries that will run smaller surpluses and offset the United States' smaller deficits. A less reassuring interpretation is that the parts don't add up under current forecasts and that even partial rebalancing will require further policy changes. Either way, it seems clear that imbalances will persist.

Further exercises can be undertaken on the basis of these forecasts— for example, using data only through 2005 to see how the model does in tracking current accounts in 2006–08 (figure 2.5).

Figure 2.4 Out-of-Sample Current Account Predictions for Selected Countries, 2011–15
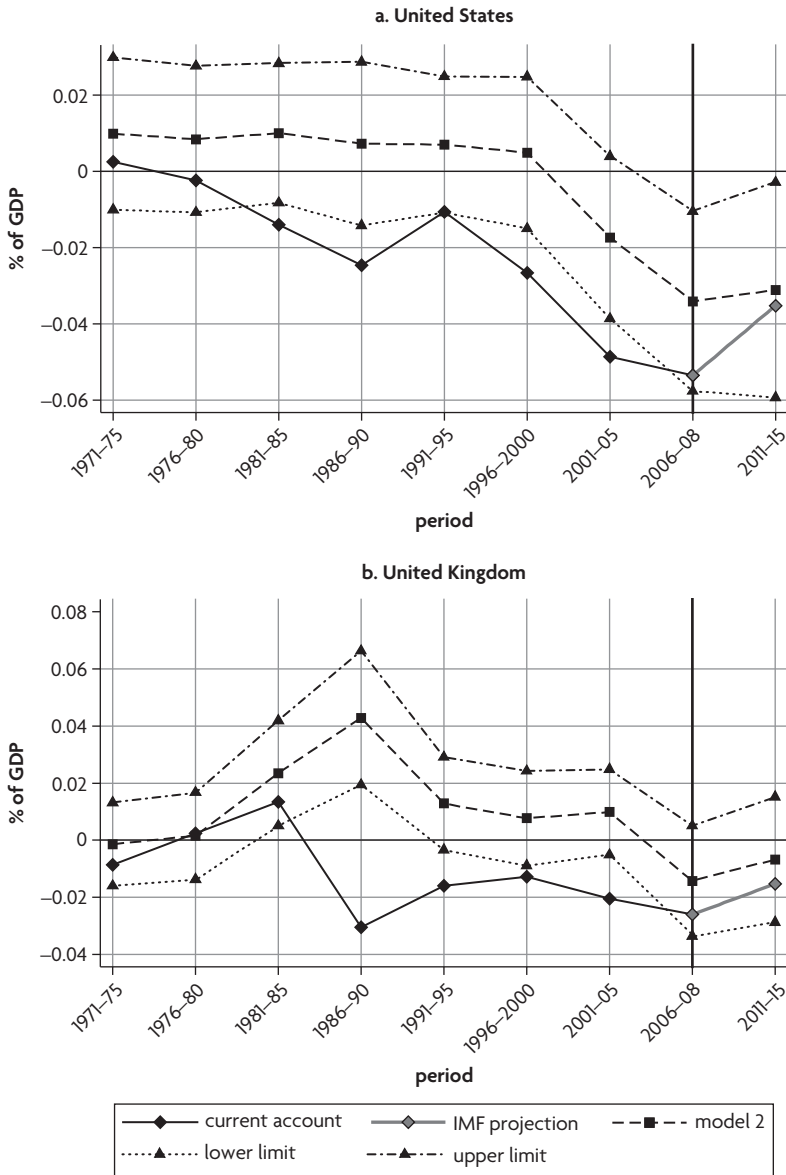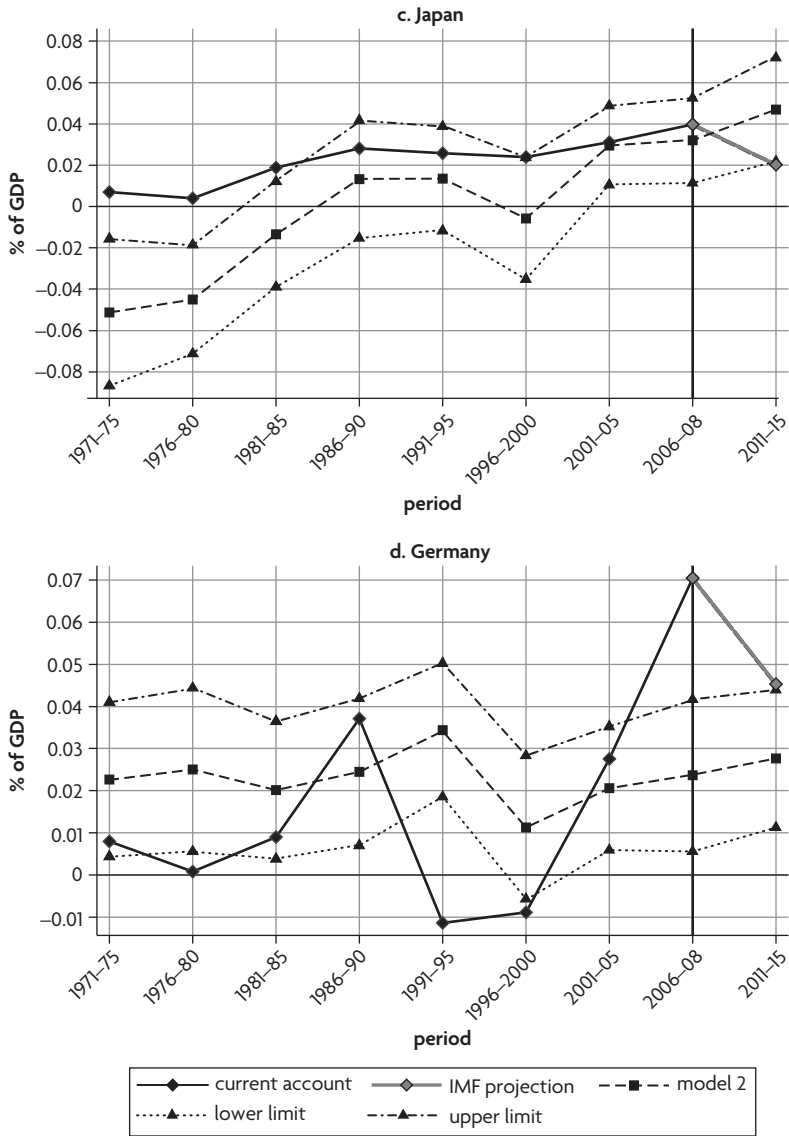
a. United States

b. United Kingdom

Legend:
- ◆— current account
- ◆— IMF projection
- - ■ - - model 2
- ······▲······ lower limit
- - · ▲ - · upper limit

(continued next page)

Figure 2.4 (continued)

c. Japan

d. Germany

(continued next page)

Figure 2.4 (continued)

e. Singapore

f. China
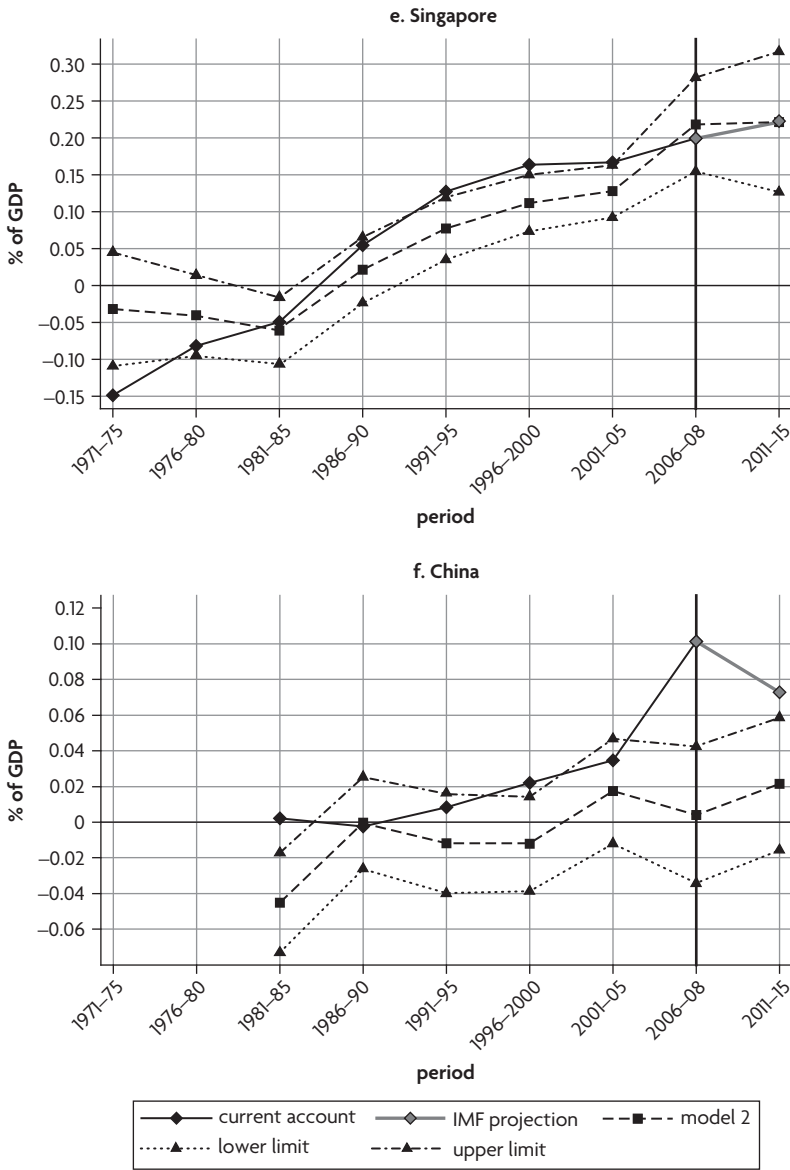
Source: IMF 2010a and authors' calculations.
Note: Predictions are based on data to 2008. Data for the financial crisis years, 2009–10, are excluded.

Figure 2.5 Out-of-Sample Current Account Predictions for Selected Countries, 2006–08 and 2011–15
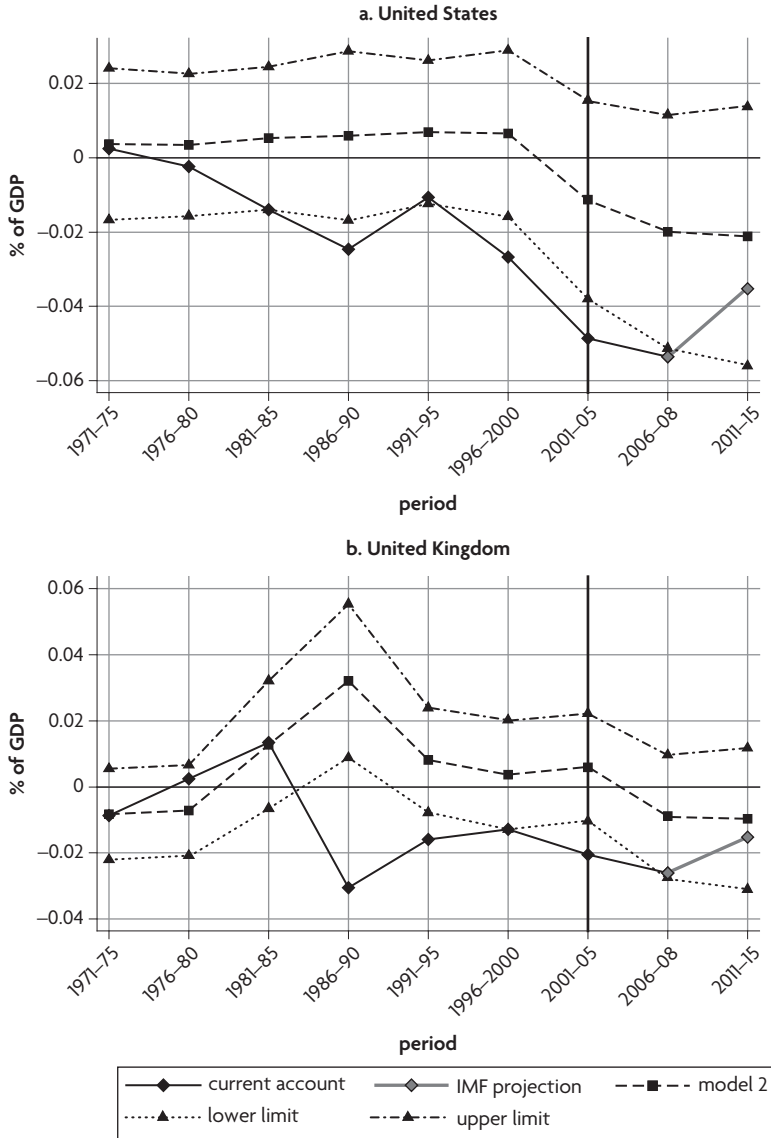
a. United States

b. United Kingdom

(continued next page)

Figure 2.5 (continued)

c. Japan

d. Germany

(continued next page)

Figure 2.5 (continued)

e. Singapore

f. China
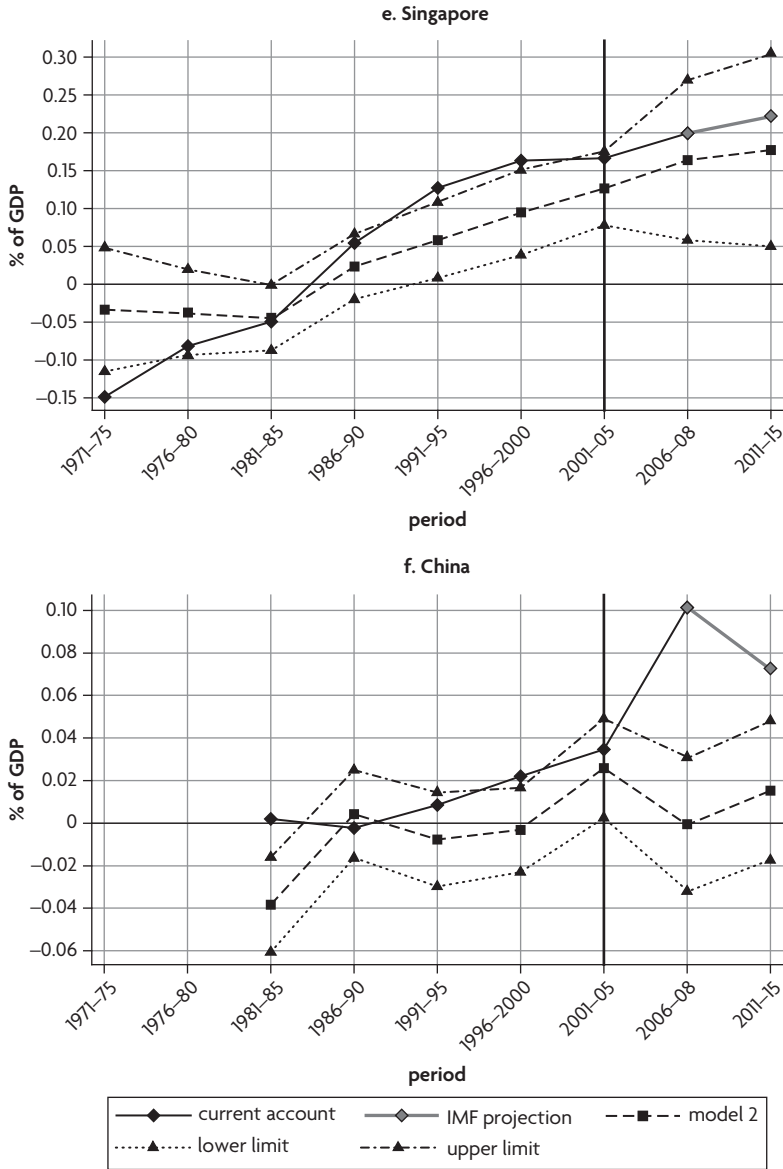
Source: IMF 2010a and authors' calculations.
Note: Predictions are based on data to 2005. Data for the financial crisis years, 2009–10, are excluded.

In the figure, the extent of imbalances of major current account deficit countries (United Kingdom and United States) or surplus countries (China and Germany) in the 2006–08 period is beyond what the model can predict using data up to 2005, signifying the pervasiveness of the global imbalances in the period. The 2011–15 forecasting also shows only modest rebalancing.
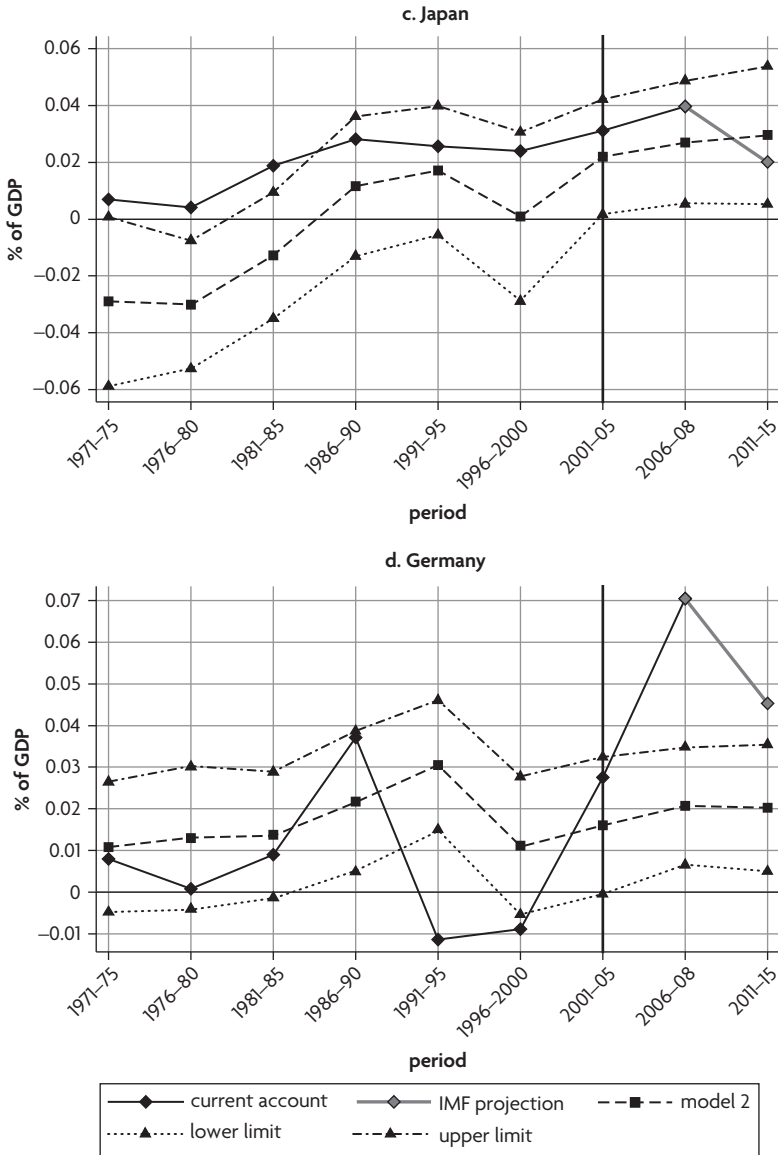
Both models persistently underpredict U.S. current account deficits, again suggesting that the United States is an outlier. In fact, when reestimating current account balances for the full sample, including the dummy for the United States, the coefficient on the country dummy is found to be significantly negative, with a magnitude of -0.031 (model 1) to -0.036 (model 2). This is consistent with the view that the United States has some special characteristic that allows it to run persistent current account deficits of some 3 percent of GDP: presumably its status as the issuer of the international vehicle currency (Gourinchas and Rey 2007).

United States: Alternative Scenarios

One of the big issues of macroeconomic management in coming years will be fiscal consolidation. The industrial countries will be required to reduce budget deficits without nipping the green shoots of recovery. How will global imbalances evolve under different fiscal scenarios?

Figure 2.6 presents different out-of-sample predictions for U.S. current account balances in the 2011–15 period depending on three different scenarios about its budget balances:

- *The baseline scenario*, based on the IMF (2010a) projection (see annex 2.2)
- *The optimistic scenario*, in which the average of the U.S. budget balances for the 2011–15 period is higher than the average based on the IMF projection (-6.5 percent of GDP) by 3 percentage points[39]
- *The pessimistic scenario*, in which the 2011–15 average is lower than the IMF projection by 3 percentage points.

Figure 2.6 shows that a 3 percentage point difference from the baseline scenario would change the predicted current account balance by half a percentage point, indicating that rebalancing cannot be accomplished through fiscal policy alone.

Figure 2.6 U.S. Current Account Projections under Three Scenarios
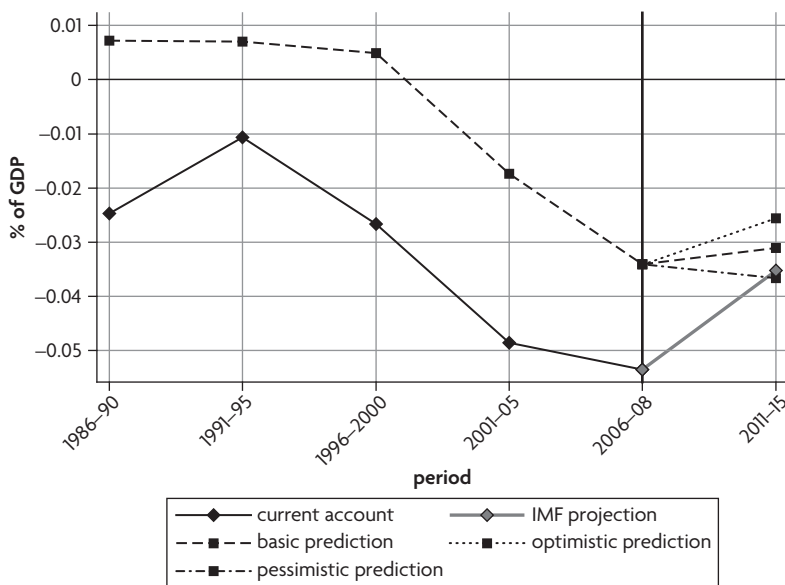
Note: Data for the financial crisis years, 2009–10, are excluded.

China: Alternative Scenarios

Similarly, figure 2.7 presents alternative scenarios for financial development and capital account liberalization in China.

Panel A shows, for comparison, the same projection as shown previously in figure 2.4. Panel B shows the forecast if China's level of financial openness increases moderately—to the level of Thailand in 2008. In this case, the current account surplus falls significantly. Panels C and D show what happens when financial liberalization proceeds to the Brazilian and Mexican levels, respectively.[40] Again, this scenario leads to further declines in the current account surplus.

Figure 2.8 makes alternative assumptions about financial development.

Recall that financial development is measured by the average ratio of domestic credit to GDP, which fell, relative to the world average, between the 2001–05 and 2006–08 periods.[41] A modest assumption about Chinese financial development over the next five years is that this ratio returns to its 2001–05 levels. Placing this assumption with Mexican levels of financial openness, this is enough to eliminate China's surplus.

Figure 2.7 Chinese Current Account Projections under Liberalization of Financial Markets

a. Maintain 2008 Level

b. Increase KAOPEN to 2008 Thai Level
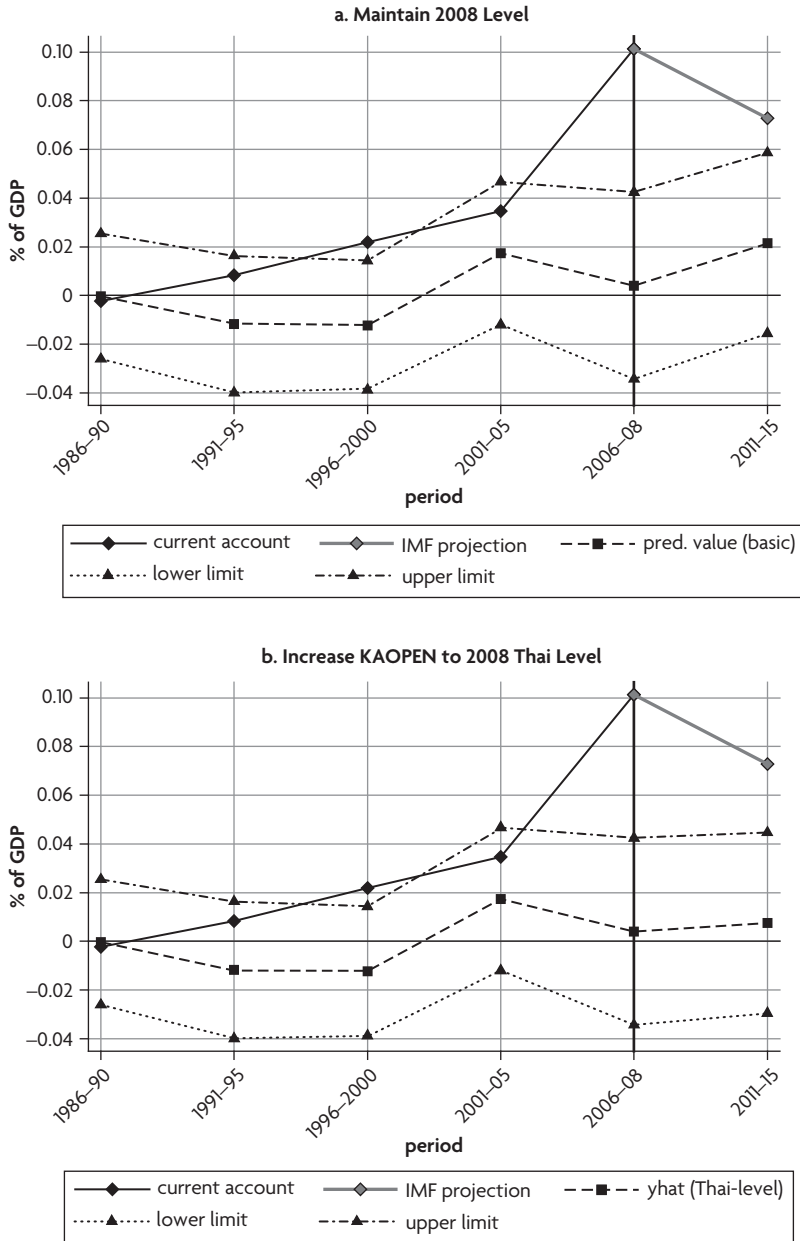
(continued next page)

Figure 2.7 (continued)

c. Increase KAOPEN to 2008 Brazilian Level

d. Increase KAOPEN to 2008 Mexican Level
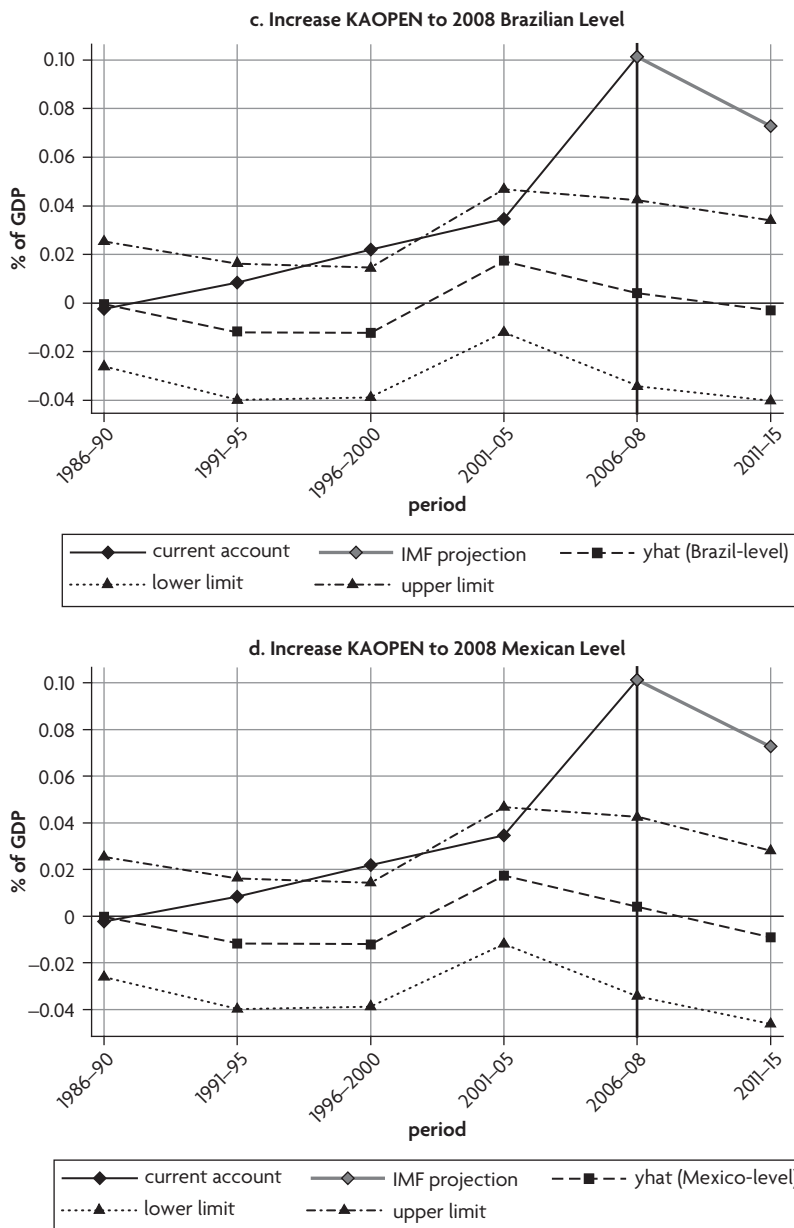
Source: IMF 2010a and authors' calculations.
Note: KAOPEN = financial openness. Data for the financial crisis years, 2009–10, are excluded.

Figure 2.8 Chinese Current Account Projections under Liberalization and Development of Financial Markets

a. Maintain 2008 Level

b. Regain 2001–05 FD
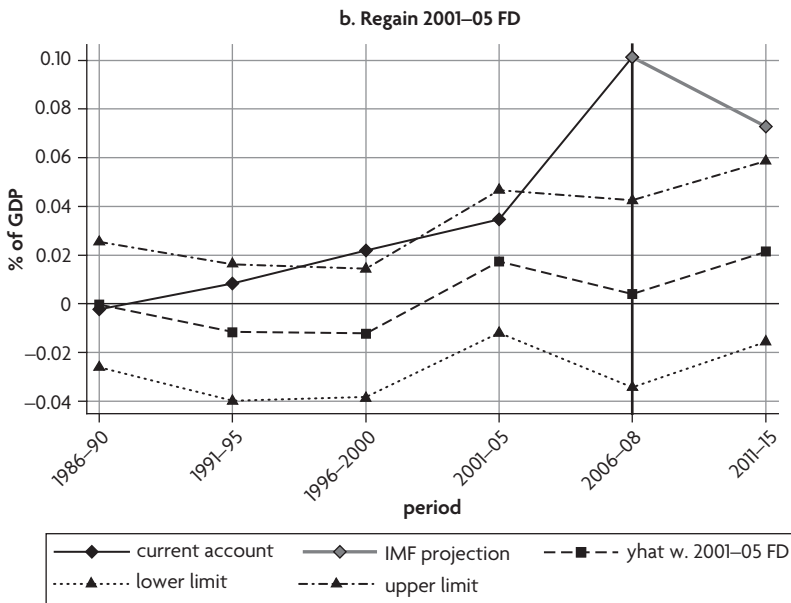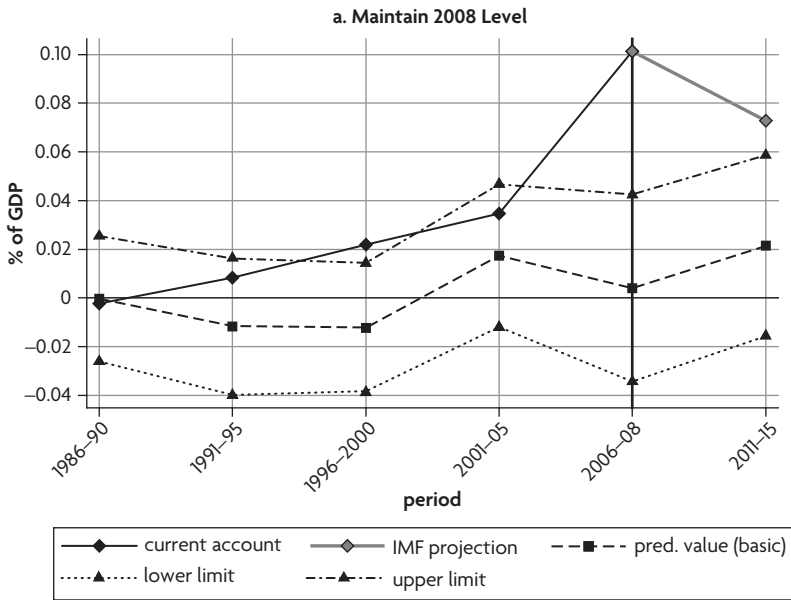
(continued next page)

Figure 2.8 (continued)

c. Regain 2001–05 FD and increase KAOPEN to 2008 Thai level

	current account	IMF projection	yhat (FD & Thai-level)
	lower limit	upper limit	

d. Regain 2001–05 FD and increase KAOPEN to 2008 Mexican level

	current account	IMF projection	yhat (FD & Mexico-level)
	lower limit	upper limit	
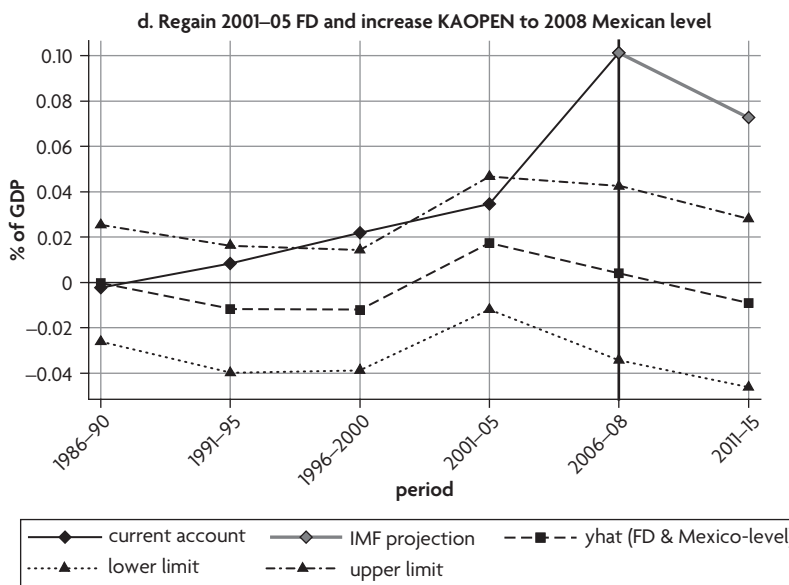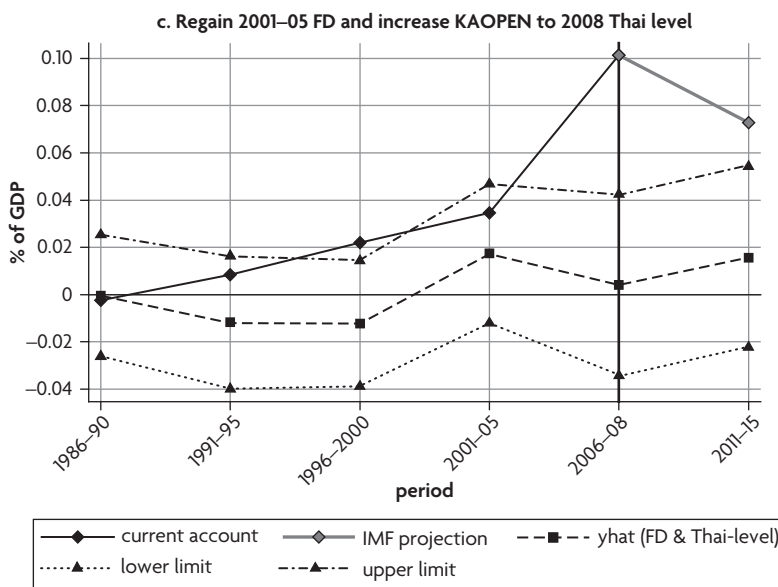
Source: IMF 2010a and authors' calculations.

Note: FD = financial development. KAOPEN = financial openness. Data for the financial crisis years, 2009–10, are excluded.

As a caution, note that the model—based on average behavior in a cross-section of emerging markets—underpredicts the Chinese surplus in recent years. That the surplus *disappears* in 2015 under this scenario is at least as much an artifact of this underprediction as it is a consequence of the financial liberalization and development.

But the point remains: how quickly China narrows its surplus will be a function, in part, of how much progress it makes in financial liberalization and development. Furthermore, given that (a) the return of PCGDP to the 2001–05 level alone (panel B of figure 2.8) hardly changes the predicted current account level, and (b) the predicted level declines only when financial development is coupled with financial liberalization, one can surmise that financial liberalization would be more effective than financial development in reducing China's current account surplus.[42]

Living with Imbalances over the Transition

Large flows of capital across borders can both cause and be influenced by excessive risk taking and leverage. Had U.S. current account deficits resulted only in a consumption binge in the private and public sectors, the crisis of 2007–09 would have been more manageable. However, excessive capital flows induced a search for yield that made the financial sector extremely vulnerable to movements in asset prices. The lack of regulation, and heady optimism surrounding financial innovation, also pulled capital into the United States. This synergy means that it is futile to ascribe all the blame to global imbalances, but it would also be unwise to ignore the return of widening imbalances, exactly because none of the causes has thus far been addressed, either nationally or globally.

The out-of-sample forecasts presented above suggest that global imbalances are likely to wind down only very gradually. Intuitively, many of the policies that are their determinants, such as government budget balances, are themselves likely to adjust only gradually (discontinuous adjustments being painful and difficult). Even more obviously, there will be gradual adjustment of the structural determinants of current account balances—from relative per capita incomes to dependency ratios and levels of financial development. With time, these variables

will tend to converge across countries, in turn creating a tendency for imbalances to shrink. But their movement is likely to be limited and hence to have limited impact in the short run.

The immediate task is thus to make the world safe for global imbalances. It is to prevent the continuing imbalances from derailing the maintenance and resumption of growth in the emerging and advanced economies, respectively. This objective points to the need for a concrete set of policy actions:

- *Redouble regulatory reform efforts.* To the extent that global imbalances contributed to financial excesses, it is important to accelerate regulatory reform to strengthen supervision and regulation while correcting incentive problems in financial markets. Analysts disagree about whether global imbalances were a central cause of the financial crisis, but there is no disagreement that those imbalances poured fuel on the flames. To say that crises like the recent one disrupt growth and should therefore be avoided is to understate the point. The authors do not subscribe to the idea that financial markets have learned their lesson and that—as the U.S. current account deficit widens again and more capital flows toward the United States—there is no danger that this capital will be used to finance dangerously speculative transactions. History tells us that financial market participants have short memories.
- *Coordinate financial reform internationally.* Individual countries are moving forward with their financial reform efforts. At this writing, the United States is putting the finishing touches on the regulations that must be issued to implement its financial reform bill, for example. But some aspects of financial reform will be effective only if coordinated internationally. Here much more needs to be done. It is uncertain whether the Basel Committee's negotiations on revising capital and liquidity ratios will be successfully completed in 2011, and there is talk of significant delay in phasing them in. This would be a mistake given the absence of progress on a global resolution regime for big financial conglomerates whose operations extend across borders. If imbalances persist and contribute to the recovery of leverage in financial markets to earlier levels, the threat to growth would be very real.
- *Apply regulation more countercyclically.* A lesson of the crisis is that regulators must do more to raise capital and liquidity requirements

when large amounts of foreign capital are flowing in and financing large current account imbalances. This is when banks, seeing their capitalization rising, will most aggressively expand their balance sheets. Once upon a time, the Bank of Spain was praised for having responded to these dynamics with countercyclical provisioning. We now know that its response, however admirable in principle, was inadequate in practice.

- *Monitor and limit foreign-currency-denominated borrowing.* Countries where the foreign finance associated with inflows is denominated in foreign currency should also be attentive to the mismatch problem. Hungary, which ran substantial current account deficits in the first half of the decade, now sees them causing serious problems for growth because the foreign finance for those deficits was in euros and Swiss francs; this created difficulties when the forint weakened against the two Western European currencies. The Hungarian authorities have now promulgated regulations limiting foreign-currency-denominated borrowing by the corporate and household sectors, but the horse has long since left the barn.

- *Redefine the central banks' role.* Similarly, central banks should now take greater account of imbalances and asset prices in the formulation of monetary policy. The old conventional wisdom was that imbalances were relevant to the decision of how to set policy rates only insofar as they had implications for the output gap and expected inflation. The new conventional wisdom, informed by the crisis, is that growth can be disrupted if external deficits are allowed to create systemic financial vulnerabilities or are apt to be compressed suddenly. Central banks need to think of themselves not only as inflation targeters but also as macroprudential supervisors, given that other supervisors are not always up to the task.[43] This redefined role is likely to mean using monetary policy to lean harder against the early signs of asset bubbles associated with persistent imbalances.

- *Adjust fiscal policy more proactively.* The new conventional wisdom is the same as the old conventional wisdom: as current account deficits widen and capital inflows rise, it is important for the fiscal authorities to tighten policy—again, to prevent a buildup of threats to financial stability and growth. This is a lesson that emerging markets in Asia and Latin America learned from their earlier crises. It would have been the

appropriate response in the Baltics and in Southern Europe during the past decade. One concrete step toward making fiscal policy more proactive is to recognize that, for the advanced economies, it is urgent to run a fiscal policy that sets the cyclically adjusted budget balance near zero over the medium term. That calculation should include contingent liabilities as well; as resources become tighter, governments will be tempted to stimulate the economy by using guarantees for loans or for pensions.

- *Hasten correction of global imbalances.* The preceding analysis suggests that countries should redouble their efforts to speed the correction of global imbalances. Coordinated fiscal action is one obvious way of doing so; countries with large current account surpluses, such as China and Germany, can expand while those with large deficits and questionable prospects for financing them (particularly in Southern Europe) consolidate. If coordinated, these adjustments can help correct global imbalances while continuing to support global demand.[44] As these and related measures are taken, there will have to be adjustments in either relative inflation rates or exchange rates to clear markets, as discussed previously in the "Policy Challenges and Responses" section. Herein lies the case for more currency flexibility in China as a concomitant of other policies to speed the correction of imbalances.

- *Slow foreign exchange reserve accumulation.* The chronic surpluses of emerging markets also reflect the demand for still greater foreign exchange reserves as insurance against financial volatility—suggesting that the other policies suggested in this section to reduce volatility could also pay off in terms of correcting imbalances insofar as they also limit the appetite for reserves. In addition, the following steps would help to further moderate this appetite:

  - Regional reserve-pooling arrangements
  - Institutionalization of bilateral swap lines and credits
  - Creation of a quick-disbursing, lightly conditioned facility at the IMF that emerging markets would finally feel comfortable about accessing.

These options are addressed in the G-20 agenda for strengthening the international financial architecture. The success of these efforts is important, therefore, both to accelerate the correction of global imbalances and to make the world safe for growth in the meantime.

Annex 2.1 Data

Table 2A.1 lists the mnemonics for the variables used in the analysis, descriptions of those variables, and the source(s) from which the primary data for constructing those variables were taken.

Table 2A.1 Mnemonics for Variables in Analysis

Mnemonic	Variable description	Source
CAGDP	Ratio of current account to GDP	*WDI*, *WEO*
NSGDP	Ratio of national saving to GDP	*WDI*, *WEO*
KFGDP	Ratio of capital formation to GDP	*WDI*, *WEO*
GOVBGDP	Ratio of general government budget balance to GDP	*WDI*, *IFS*, *WEO*
NFAGDP	Ratio of stock of net foreign assets to GDP	LM
RELY	Relative per capita income, adjusted by PPP exchange rates, measured relative to the United States (range of 0 to 1)	PWT
RELDEPY	Youth dependency ratio, relative to mean across all countries (population under 15 / population between 15 and 65)	*WDI*
RELDEPO	Old dependency ratio, relative to mean across all countries (population over 65 / population between 15 and 65)	*WDI*
YGRAVG	Average real GDP growth	*WDI*
TOT	Terms of trade	*WDI*
OPEN	Openness indicator (ratio of exports plus imports of goods and nonfactor services to GDP)	*WDI*
PCGDP	Banking development (ratio of private credit to GDP)	WBFS
KAOPEN	Capital account openness	CI
BQ	Quality of bureaucracy	*ICRG*
LAO	Law and order	*ICRG*
CORRUPT	Corruption index	*ICRG*
LEGAL	General level of legal development (first principal component of BQ, LAO, and CORRUPT)	Authors' calculation
IR	Ratio of international reserves (excluding gold) to GDP	WDI

Source: Authors' compilation.

Note: PPP = purchasing power parity. CI = Chinn and Ito 2006 and updates. *ICRG = International Country Risk Guide.* IFS = IMF *International Financial Statistics.* LM = Lane and Milesi-Ferretti 2006. OECD = *OECD Economic Outlook Database.* PWT = Penn World Table 6.4. WBFS = World Bank Financial Structure Database. *WDI = World Development Indicators. WEO = World Economic Outlook* (IMF 2010a, 2010b).

Annex 2.2 Assumptions of Out-of-Sample Forecasting Exercise

Table 2A.2 Assumptions of Out-of-Sample Forecasting Variables

Variables	Assumptions
Government budget balance	*World Economic Outlook (WEO)* projections are used (IMF 2010a). In the *WEO*, the budget balance data and their projections are available only for 33 countries. However, the sum of output (in US$) for these countries accounts for 85–90 percent of total world output. Hence, the 33 countries' data are used to calculate the world-weighted average. The data are also used for U.S. projections. China's budget balance data are not available. We assumed the 2011–15 average of budget balances will be −2 percent, a reasonable assumption given information in other sources.
Net foreign assets (initial)	The level of net foreign assets is assumed to be unchanged as in 2004 (the last year for which data are available).
Relative income	The relative income series (originally based on Penn World Tables) is extrapolated using growth rates calculated from the *WEO*'s series of per capita income in international PPP.
Youth and old dependency ratios	Forecasts from the United Nations' World Population Prospects database are used.
Financial development (PCGDP)	This is a difficult variable to project. The global crisis must surely have made private credit creation smaller for many countries, but this may not be the case for some (for example, China). Also, GDP (the denominator for this variable) shrank for many countries, which can make the variable PCGDP relatively stable even for countries whose private credit also shrank. We use the average of the variable (though as deviations from the world-weighted averages) during the 2001–08 period. For China, we consider a range of alternative assumptions.
Legal development (LEGAL)	We assume no change.
Financial openness (KAOPEN)	For Germany, Japan, Korea, the United Kingdom, and United States, we assume the level of KAOPEN as of 2011–15 to be the same as in 2008. For China, we consider a range of alternative assumptions.
TOT volatility	We assume no change.
Average GDP growth	We use the data from the *World Economic Outlook* (IMF 2010a).
Trade openness	We assume no change.
Dummy for 2011–15	Because we have no estimated coefficient on the dummy for the 2011–15 period, we use the average of the time fixed effects for the other previous panels.

Source: Authors' compilation.
Note: TOT = terms of trade. PPP = purchasing power parity.

Notes

1. Don't say that you weren't warned (Eichengreen 2004).
2. That is, if something can't go on forever, it won't.
3. Given the small share of discretionary spending on the expenditure side, the combination will consist primarily of the first two components.
4. One can imagine, for example, that the additional debt bequeathed by the crisis will have to be serviced by levying higher taxes—including higher capital taxes, which will modestly discourage investment. Or one can imagine that long-term unemployment has adversely affected capital-labor complementarities.
5. However, it takes a few years for the full effect to be felt (Herve et al. 2010).
6. These observers may, of course, be underestimating the scope for expanding exports of services.
7. The downswing in the dollar began with the peak in February 22, 2002; the dollar has depreciated in real terms by 33 percent since then.
8. The dollar strengthened not just because of the weakness of the euro but also because some emerging-market economies such as China were reluctant to allow their currencies to appreciate against the dollar until the global implications of the crisis in Europe became clear.
9. Bertaut, Kamin, and Thomas (2009), projecting trends in the U.S. net international investment position, suggest that this process still has a considerable distance to run.
10. In the second half of the chapter, the authors present their own projections of the prospective widening of the U.S. current account deficit.
11. The United Kingdom, owing to its separate currency, may be able to follow a separate strategy—a topic further discussed below.
12. The acronym PIIGS refers to the five Euro Area nations that were considered weaker economically following the financial crisis: Portugal, Italy, Ireland, Greece, and Spain.
13. Of course, insofar as it was not net capital flows but gross capital flows (European banks taking risky positions in structured investment products associated with the growth of the subprime mortgage market in the United States being the flip side of U.S. purchases of European securities), neither can the Europeans and their investments be exonerated of all blame for the crisis.
14. IMF (2010b) reports no change in projected year-on-year growth rates in 2010 and a reduction of 0.2 percentage points in 2011.
15. This is the approach to which Greece has committed.
16. Again, the authors offer their own projections of the German current account balance in the second half of the chapter.
17. A more novel argument is that the sex imbalance encourages saving by single men as a way of signaling their attractiveness as marriage partners (Du and Wei 2010).
18. The view that gender imbalance contributes to Chinese saving similarly cautions against expecting much progress because the gender ratio similarly changes only slowly with time.

19. Since 2008, some state-owned enterprises have been required to make limited dividend payments to their state owners, but this only adds to government savings (as noted elsewhere).

20. See Herd, Hill, and Pigott (2010) for a status report on Chinese financial reform.

21. Ma and Yi (2010) question it on the grounds that market share and profits have been rising most rapidly not among state-owned firms but rather among smaller, private enterprises.

22. The authors' projections of the Chinese current account are in the second half of the chapter.

23. There was also a negative change in the income account owing to a lower return on foreign investments, so the shift in the current account was not simply the sum of the change in the net financial positions of the three sectors.

24. Note that these pieces do, in fact, fit together. Revaluation by emerging Asia against Japan and the other advanced economies implies an increase in exports by capital-abundant economies and a decline in those of their more labor-abundant counterparts.

25. The Association of Southeast Asian Nations (ASEAN) Plus Three, commonly abbreviated as ASEAN+3, coordinates cooperation between ASEAN and the three East Asian nations of China, Japan, and Korea. The Chiang Mai Initiative (CMI) established a multilateral currency swap among the ASEAN+3 countries to manage regional short-term liquidity issues after the 1997 Asian financial crisis. The CMI also facilitates other international financial arrangements, including ASEAN+3's work with the IMF.

26. *LAO*, *BQ*, and *CORRUPT* are extracted from the *International Country Risk Guide* database. Higher values of these variables indicate better conditions.

27. The variables for terms-of-trade volatility (TOT), trade openness (OPN), and legal development (LEGAL) are averaged for each country; that is, they are time-invariant.

28. The five-year panels are 1971–75, 1976–80, and so on. However, the last panel is composed of only three years: 2006–08.

29. The emerging-market economies are those that the International Financial Corporation classified as either emerging or frontier during 1980–1997, plus (a) Hong Kong SAR, China, and (b) Singapore.

30. These estimates are similar to those in Abbas et al. (2010), who find that the elasticity of the current account balance with respect to the fiscal balance is on the order of 0.2–0.3. Erceg, Guerrieri, and Gust (2005) also show simulation results that yield the coefficient of the budget balance to be around 0.2.

31. However, this result does not show up for the industrial countries.

32. The *p*-value is 15 percent.

33. This is confirmed by adding a dummy variable for China in the post-2005 period. Its coefficient is positive and significant at the 1 percent level, while the coefficient for emerging markets as a group in this subperiod continues to be zero.

34. This conclusion is confirmed by adding a dummy variable for the United States in the 2001–05 subperiod; its coefficient is negative, and adding it does not eliminate the significant positive coefficient for 2001–05 in the industrial-country column. Not surprisingly, when all countries are included (in the leftmost column), these period dummy variables are insignificant because, by definition, current accounts should sum to zero.
35. The results are not shown in the table.
36. These estimates are based on model 2 (see equation 6.2), including the institutional variables.
37. The forecasts are based on model 2 (including the institutional variables) and the separate estimates for industrial and emerging-market economies.
38. The confidence intervals for 2011–15 are those of predictions, not those of forecasting. The implicit assumption is that the economy of concern faces the exact conditions as assumed in annex 2.2. Once the uncertainty of the explanatory variables in the period is incorporated, the confidence intervals can surely widen.
39. Three percentage points are equivalent to 1.5 standard deviations in the distribution of U.S. budget balances in the 1969–2008 period.
40. The countries are ranked, by level of financial openness in 2008, as follows: Mexico (69.2 on the 100-point scale), Brazil (58.8), Thailand (40.3), and China (16.1). The average KAOPEN of the LDC group as of 2008 is 50.2, whereas that of the EMG group is 60.9.
41. Recall that in the empirical model all variables are normalized by the world average.
42. This conclusion relies upon the proxy of financial development—the ratio of private credit creation to GDP—accurately representing financial development. It would be preferable to use a broader measure of financial development such as the composite bond, equity, or bank indicators used in Ito and Chinn (2009), but the data are not yet available for that exercise.
43. And given that, when things go wrong, it is the central bank that will be forced to make them good.
44. Where the United States fits in this equation is not so clear. The desire to speed the correction of global imbalances suggests faster budget-deficit cutting. However, the need to support global demand and the still-low interest rates that suggest the existence of fiscal space suggest instead further fiscal stimulus to support global demand.

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