

When foreign capital surges into countries, there are two possible means of adjustment: financial adjustment through increases in resident capital outflows or reserves accumulation, or real adjustment through a larger current account deficit. Historically, surges in capital inflows to emerging market economies tended to lead to domestic booms and current account deficits and, when the flows reversed, as they almost inevitably did, painful adjustments and sometimes financial crisis. The global financial crisis, however, marked a change from the past. While some countries experienced the classical boom-and-bust cycle in response to volatile international capital flows, many did not. Rather, as international capital flows dried up, domestic residents stepped in to replace them by drawing down their own foreign assets. This pattern of buffering foreign capital flows with offsetting resident flows was a key contributor to these economies being more resilient to fluctuations in foreign capital inflows. This chapter examines the underlying explanations for this behavior and assesses whether it is possible for policymakers to encourage such behavior in countries where it may not currently occur.

Capital flows to emerging market economies are a source of particular and enduring concern to many policymakers. These concerns stem from bitter experience, best exemplified by the 1997–98 Asian crisis, when surges in capital inflows fueled excessive credit growth, expanded current account deficits, appreciated exchange rates, and a loss of competitiveness. When the inflows reversed, there was a painful adjustment characterized by severe financial disruptions.¹ The experience of the past decade has only intensified these concerns as inflows have increased in magnitude and volatility (Figure 4.1). A surge in inflows—greater even than the surge preceding the Asian crisis—halted abruptly with the global financial crisis. But the rebound was rapid, in part because of low interest rates in advanced economies. Yet now that economic prospects in the United States are picking up, flows seem poised to reverse—again.

Such volatile capital inflows create many challenges for emerging market policymakers. For example, when low interest rates in advanced economies stimulate capital flows to emerging markets, tightening of monetary policy or sterilized intervention can lead to even larger

capital inflows, thus boosting rather than dampening credit growth and widening the gap between domestic demand and output. Furthermore, calibrating policy to deal with temporary rather than structural fluctuations, such as those that occur when markets oscillate between “risk on” and “risk off” episodes, adds another layer of difficulty to the policymaker’s task.²

What, then, can policymakers do? One approach that has enjoyed increased support in recent years is intervention to reduce the volatility of capital inflows and the associated effects on the exchange rate. Recent research has provided a rationale for the use of capital controls (“capital flow management measures”) and foreign exchange intervention, and the IMF has supported this approach in particular circumstances as part of a comprehensive economic management approach.³ And a number of countries, including Brazil, India, and Indonesia, have actively used these tools.

Such intervention is not, however, universal. For example, Chilean Central Bank Governor Rodrigo Vergara observed in January 2013 that “We’ve seen inflows but mostly aimed at [long-term] investments and this has been offset somewhat by outflows as Chilean

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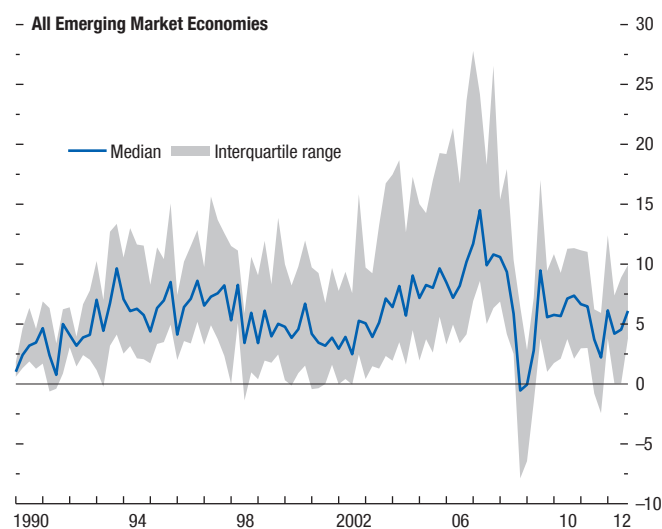
¹See Cardarelli, Elekdag, and Kose (2009) for a more comprehensive assessment of the effects of net capital inflow surges.

²Risk on and risk off refer to changing global investment behavior driven by shifting perceptions and tolerance of risk. A risk off episode occurs when perceptions of risk are high or tolerance of risk is low and global investors tend to retreat from investments, such as those in emerging markets, perceived to be higher risk.

³See Ostry and others (2010, 2011), Korinek (2011), and IMF (2012).

Figure 4.1. Gross Capital Inflows
(Percent of GDP)

Capital inflows to emerging market economies have shown substantial variability over the past decade. Median flows peaked at about 15 percent of GDP just prior to the global financial crisis before dropping to zero. They have since rebounded but continue to demonstrate significant volatility. As seen in the interquartile range, this pattern is common to most emerging market economies.



Sources: IMF, *Balance of Payments Statistics*; and IMF staff calculations.

companies and private pension fund managers invest abroad.⁴ Chile's policy response—careful monitoring but limited direct intervention—reflects the relatively benign domestic effects of these flows. More broadly, only some countries that experience strong capital inflows experience unsustainable booms, current account blowouts, and subsequent painful adjustments.

These differences in behavior and experience point to an important distinction among countries. From the balance of payments identity we know that a surge in capital inflows can be absorbed either via current account deterioration (“real” adjustment) or via offsetting capital outflows (“financial” adjustment). In some economies there is a tendency for strong capital inflows to fuel booms that, particularly when the flows reverse, require traumatic real adjustment. It is these experiences that have stimulated the extensive body of research on how best to moderate the flows of capital. In other economies, however, capital inflows lead to financial adjustment that tends to buffer those inflows and lower the required real adjustment. We show

⁴*Wall Street Journal*, January 23, 2013 (<http://online.wsj.com/article/BT-CO-20130123-709695.html>).

that this difference has been associated with greater economic resilience to capital inflows. Thus, instead of asking what emerging market economies can do to stem the flow of capital, an area of research that has been covered extensively previously, we focus on the related and complementary question: Given volatile capital inflows, how can countries encourage stabilizing financial adjustment that minimizes the required real adjustment? In particular this chapter explores the following questions: Are these economies really more resilient? What are the policies and characteristics of countries where financial adjustment helps minimize real adjustment? How might this financial adjustment work? And how did these economies become resilient?

To answer these questions, this analysis first categorizes emerging market economies into two broad groups based on whether they experience more or less real adjustment in response to capital inflows. Examination of GDP, consumption, and unemployment in these two groups of countries after the global financial crisis reveals that, on average, countries that experienced less real adjustment were indeed more resilient. The chapter then looks in more detail at the policies and characteristics of these two groups. This investigation reveals some surprisingly clear distinctions. The more resilient emerging market economies have (1) more countercyclical fiscal policy and better monetary policies; (2) better institutions; (3) more flexible exchange rate regimes; and (4) more stable net capital flows because of greater financial adjustment that reflects private rather than official buffering of capital inflows. Also of interest are the dimensions along which the groups do not differ: (1) Both groups had approximately the same share of resources and manufacturing. (2) Both had similar levels of real GDP per capita. And most notably (3) both faced a similar level and volatility of gross capital inflows.

The chapter then briefly considers various theories that may explain the findings. It appears that, when domestic and international financial markets are relatively free of distortions, the natural consumption-smoothing behavior of domestic investors tends to offset and buffer volatile foreign capital flows with financial adjustment rather than real adjustment.⁵

While it is helpful to identify the defining characteristics of these more resilient economies, it is

⁵Such as might result from either misaligned exchange rates and impediments to the free flow of capital or by the tendency toward imprudent boom-and-bust behavior in poorly developed or poorly regulated capital markets.

equally important to understand how these countries acquired these characteristics and which characteristics appear to promote resilience rather than being merely a consequence of resilience. Thus, the second half of this chapter examines how some currently resilient economies have developed this quality. In particular, it focuses on the experiences of three countries that have considerably increased their resilience to swings in capital inflows: Chile, the Czech Republic, and Malaysia. While each of these countries took a somewhat different path, their greater resilience can be linked to a mix of policy measures that included better prudential regulation and financial supervision, more countercyclical fiscal and monetary policy, greater exchange rate flexibility, and a more liberal regime for capital outflows. Overall, the success of these countries has been based on embracing these reforms in a comprehensive manner. Incomplete reforms tended to be associated with destabilizing effects—too rapid financial development or premature opening to capital flows without appropriate prudential regulation can still lead to financial crisis.

Financial Adjustment and Resilience

The starting point for this empirical investigation is to divide countries into two broad groups based on whether they experience more or less real adjustment in response to capital inflows. The expectation is that the extent to which these countries adjust to capital inflows with real or financial adjustment corresponds with how resilient they are to those inflows—in other words, the extent to which they are prone to large current account movements and corresponding economic dislocation. Building on the discussion above, the categorization is based on the relationship between capital inflows and current account fluctuations. In particular, it is helpful to consider the following version of the balance of payments identity:

$$\begin{aligned} \text{Gross inflows} &= \text{current account deficit} \\ &+ \text{gross outflows} + \text{reserves accumulation.} \end{aligned}$$

This identity shows how changes in gross inflows must be absorbed through changes in either the current account or in gross outflows and reserves.⁶ In some countries, but not in others, surges in capital

⁶To be precise, we should add to the left side of this equation the net capital account and errors and omissions. These terms are, however, generally small and therefore are included in gross inflows.

inflows are largely associated with increases in current account deficits that, as history demonstrates, can require painful adjustments when these inflows reverse. To distinguish countries that absorb swings in gross inflows more through changes in gross outflows and reserves than through the current account, we regress the current account on gross inflows for each country in a sample of 38 emerging market economies.⁷ The countries are ranked according to the estimated relationship between inflows and the current account, and the sample is split at the median. We refer to the group of countries with larger positive coefficients, for which changes in gross inflows are associated with large changes in the current account deficit, as less resilient and to those with a lower or negative coefficient as more resilient.⁸ As with any such metric, the exact allocation of countries between the groups may be affected by a number of confounding factors. And, since there may be only small differences between individual countries close to the median, undue weight should not be attached to the particular group any given country falls into. The division is designed to highlight the broad characteristics of the group of countries that display more or less financial adjustment in response to gross capital inflows rather than to precisely characterize any given country as more or less resilient.

Is Financial Adjustment Associated with Economic (“Real”) Resilience?

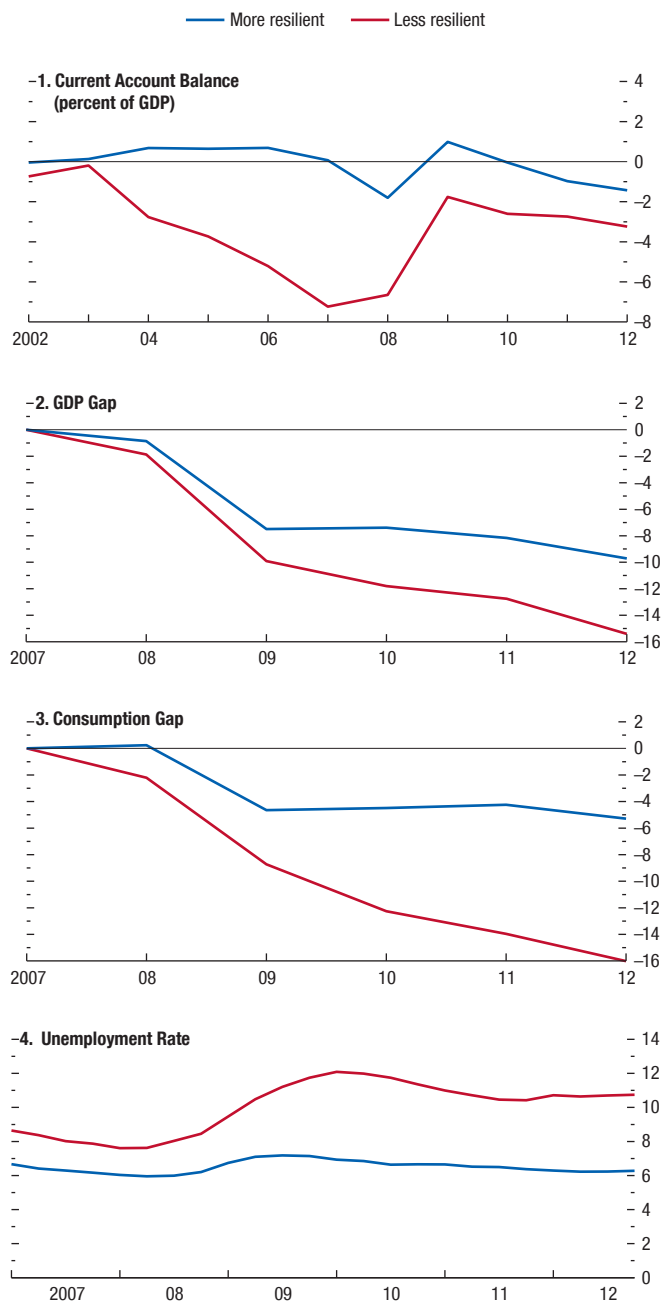
While the historical experience has been that countries that undergo large current account corrections gener-

⁷The regression uses annual data from 2000 to 2012, and both the current account and capital inflows are expressed as a percent of GDP. The sample consists of the group of countries identified as emerging market economies in Chapter 4 of the April 2011 *World Economic Outlook* (WEO) minus countries affected by the Arab Spring, large oil exporters (countries where oil exports have averaged over 25 percent of GDP for the past three years), offshore financial centers, and countries that by 2000 were classified in the WEO as advanced economies. Among these countries are still some that have subsequently been reclassified as advanced economies. They are retained in the sample because their experiences, including the fact that they have transitioned to advanced economy status, are instructive.

⁸The high-coefficient group comprises Argentina, Belarus, Bulgaria, the Dominican Republic, Ecuador, Estonia, Hungary, India, Indonesia, Jordan, Latvia, Lithuania, Morocco, Pakistan, Romania, the Slovak Republic, South Africa, Turkey, and Venezuela. The low-coefficient group comprises Brazil, Chile, China, Colombia, Croatia, the Czech Republic, El Salvador, Guatemala, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Slovenia, Sri Lanka, Thailand, Ukraine, and Uruguay.

Figure 4.2. Current Account, GDP, Consumption, and Unemployment
(Percent, mean)

Less resilient countries witnessed a large deterioration of the current account in the years preceding the global financial crisis and a subsequent sharp reversal. Those countries also experienced a much stronger contraction of GDP and consumption relative to precrisis trends and a larger increase in unemployment.



Source: IMF staff calculations.

ally suffer large real consequences, it is important to check whether this remained the case for our sample of countries in recent years.⁹ To do this we look at these countries' experiences with the capital inflow surge prior to the global financial crisis and the sudden stop associated with its onset. Figure 4.2 (panel 1) shows the evolution of the current account in the two groups of countries over the past decade. It is in line with the anticipated patterns. The countries where more of the adjustment to capital inflows occurred on the current account were also the countries that, on average, experienced a large blowout and correction during the 2000s. The subsequent panels trace the path of adjustment to the large current account corrections that occurred between 2007 and 2009. Panels 2 and 3 show the deviation of GDP and consumption from the precrisis trend (calculated from 2002 to 2007), and panel 4 shows the average unemployment rate for the two groups of economies. The relative performance of the less resilient group as a whole was clearly worse than that of the more resilient group. GDP was lower than precrisis trends in both groups, but the drop was larger for the less resilient group. The difference is even more dramatic for total consumption (private plus public) and unemployment. While domestic consumption was about 5 percent lower than precrisis trends in the more resilient group by 2012, it was 16 percent lower in the less resilient group. Similarly, unemployment rose by approximately 4 percentage points in the less resilient group, and is still higher than before the global financial crisis, whereas it was barely affected in the more resilient group.

Overall, these indicators suggest that countries whose current account was less responsive to capital inflows were more resilient in the face of both the surge in capital inflows experienced through the mid-2000s and the large decline in capital inflows during the global financial crisis. They faced less real adjustment, as reflected in more stable current accounts and better postcrisis GDP, consumption, and unemployment levels; instead, they undertook much more financial adjustment.

How Are the More Resilient Economies Different?

We now examine in more detail why some emerging market economies are more resilient to capital inflow

⁹See Cardarelli, Elekdag, and Kose (2009).

fluctuations. We consider how the more and less resilient groups differ in terms of their monetary and fiscal policy mix, institutions, capital flows, and other indicators of their economic structure. To benchmark our findings, the two groups in our sample are also compared with a selected group of small open advanced economies: Australia, Canada, Denmark, New Zealand, Norway, and Sweden. This analysis compares averages over the past 10 years for flow variables and the latest observation for stock variables. For example, the net international investment position as of 2010 (the latest available value) is used for comparisons across countries, while gross capital inflows are averaged over the past 10 years.

Policies and Institutions

Figure 4.3 shows that the more resilient economies have more flexible exchange rates but no meaningful or significant differences in capital account openness (at least as measured by the available, but admittedly imperfect, de jure measures). Monetary and fiscal policies appear to be better in the more resilient economies to the extent that inflation is significantly lower and fiscal policy is more countercyclical.¹⁰ Finally, as measured by a very broad metric of institutional quality, which captures things like the quality of the bureaucracy and the rule of law, the more resilient economies have significantly better economic institutions.¹¹

External Financial Integration

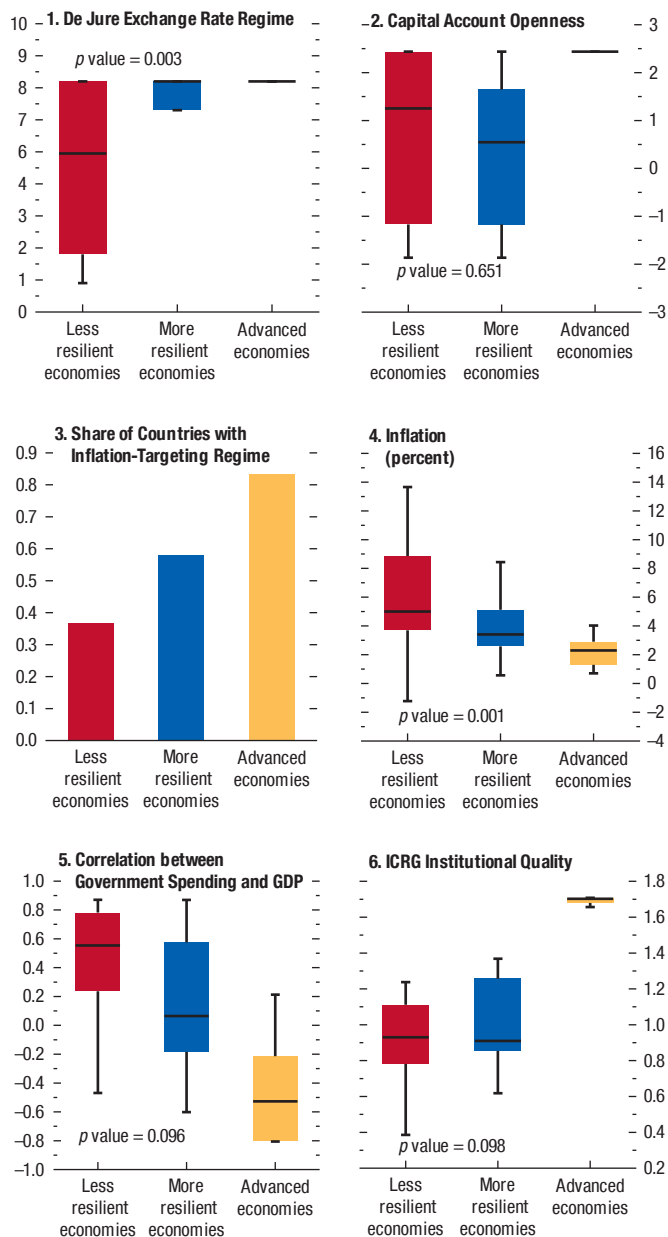
Although this analysis divides countries on the basis of the pass-through from gross inflows to the current account, there are a number of ways the pass-through could play out. For example, countries with low pass-through may also experience smaller or more stable inflows. Panels 1 and 2 of Figure 4.4 show that, in fact, the level and volatility of gross capital inflows are similar between the two groups. It is also interesting to note that advanced economies experience even more volatility in gross inflows than either of the two

¹⁰The cyclicality of fiscal policy is measured by the correlation between the cyclical deviations in real primary government expenditure and the cyclical deviations in real GDP. This is one of the measures of fiscal policy cyclicality used by Frankel, Végh, and Vuletin (2011).

¹¹This index corresponds to the average of four variables from the International Country Risk Guide data set: investment profile, corruption, law and order, and bureaucratic quality.

Figure 4.3. Policies and Institutions

Policies and institutions in more resilient economies are generally stronger than in less resilient economies. There is a higher share of inflation-targeting central banks, and inflation is generally lower and fiscal policy more countercyclical. More resilient economies tend to have more flexible exchange rates than less resilient economies, although there is no significant difference in de jure measures of capital account openness.

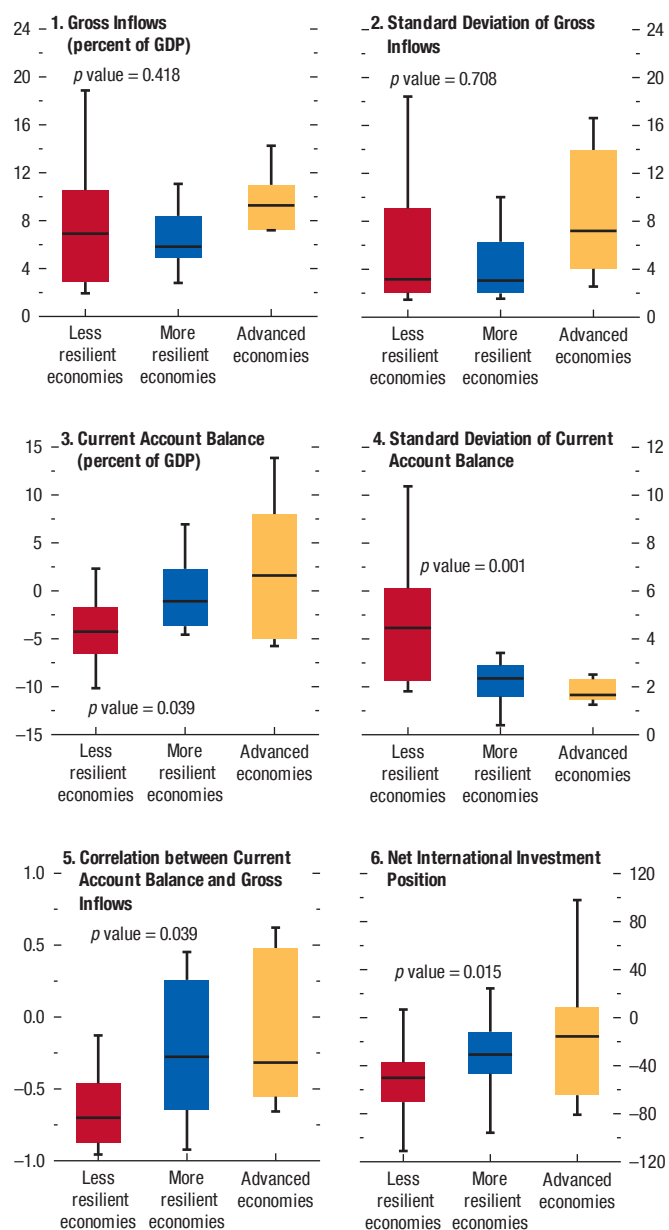


Sources: Chinn and Ito (2006) updated to 2010; IMF, *Annual Report on Exchange Arrangements and Exchange Restrictions*; PRS Group, Inc., *International Country Risk Guide (ICRG)*; and IMF staff calculations.

Note: The horizontal line inside each box is the median within the group; the upper and lower edges of each box show the top and bottom quartiles. The distance between the black lines (adjacent values) above and below the box indicates the range of the distribution within that generation, excluding outliers. p value indicates the significance of the difference in distributions between less resilient economies and more resilient economies, based on the Kolmogorov-Smirnov test.

Figure 4.4. External Financial Integration

More resilient economies experienced gross inflows and gross inflow volatility similar to less resilient economies. However, reflecting greater buffering of these inflows with offsetting gross outflows, more resilient economies had smaller and more stable current account balances on average over the past 10 years. This is reflected in a better, although not on average positive, net international investment position.



Sources: IMF, *Balance of Payments Statistics*; Lane and Milesi-Ferretti (2007) updated to 2011; and IMF staff calculations.

Note: The horizontal line inside each box is the median within the group; the upper and lower edges of each box show the top and bottom quartiles. The distance between the black lines (adjacent values) above and below the box indicates the range of the distribution within that generation, excluding outliers. *p* value indicates the significance of the difference in distributions between less resilient economies and more resilient economies, based on the Kolmogorov-Smirnov test.

groups of emerging market economies in our sample. Panels 3 and 4 of Figure 4.4 confirm that, as suggested by Figure 4.2, net capital flows are larger and more volatile in the less resilient group.¹² In other words, there is much more stabilizing financial adjustment taking place in the more resilient economies. A different way of looking at this relationship is to note that there is a lesser correlation between gross inflows and the current account in the more resilient group (Figure 4.4, panel 5). In principle, financial adjustment can be performed by either the private sector or the official (public) sector through reserves management. In practice, most financial adjustment was undertaken by the private sector. In particular, between 2007 and 2009, when gross inflows to emerging market economies fell significantly, approximately 20 percent of the financial adjustment in both groups was accommodated with changes in reserves and 80 percent through changes in private flows. Finally, this analysis also finds that the more resilient economies have less negative net foreign asset positions (Figure 4.4, panel 6—although there are no significant differences in the average levels of assets or liabilities separately).

Income, Reserves, and Industrial Structure

Interestingly, there are few differences between the two groups of emerging market economies in terms of industrial structure or income levels (Figure 4.5). Both have the same average level of resources and manufacturing, and there is no significant difference in the average level of income. For example, more resilient economies do not appear to be those with greater mineral wealth or higher incomes. This analysis does, however, find that the resilient economies have somewhat higher levels of reserves. However, as mentioned above, at least during the global financial crisis, there was little difference in the use of reserves between the two groups, and the majority of the financial adjustment was actually performed by the private sector.¹³

¹²Given the balance of payments identity, net capital flows are equivalent to the current account.

¹³These observations are consistent with the findings of Alberola, Erce, and Serena (2012), who find that large holdings of international reserves prevent capital flight by domestic residents during global financial stress and make them more willing to repatriate capital invested overseas.

Summary

The main findings are that resilient emerging market economies have more flexible exchange rates, lower inflation, more countercyclical fiscal policy, better economic institutions, and more stable current accounts (net capital flows). Furthermore, the majority of the financial adjustment in resilient economies is through private rather than official flows. It should be understood, however, that identifying these characteristics does not address the question of causality: how countries became resilient and whether these characteristics explain their resilience or are simply consequences or indicators of resilience. The case studies that follow, however, by focusing on the sequence of events and development of these characteristics, allow clearer inferences about causality and provide some answers to the questions about why these countries are more resilient today. A comprehensive analysis of this evidence is presented in the final section of this chapter.

What Explains Financial Adjustment?

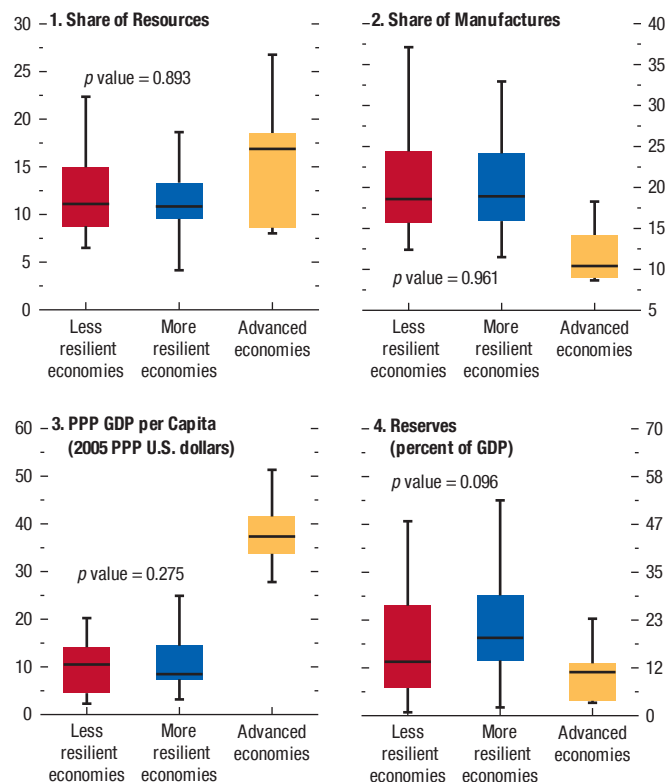
To provide some background before analyzing the different country experiences, we discuss some theoretical explanations for why capital outflows may move in the ways indicated by the data. In particular, we look at what might explain the fact that, in practice, the majority of financial adjustment is undertaken by the private sector.

At its simplest, financial adjustment is simply the embodiment of Adam Smith's invisible hand. When an investor withdraws money from a country, this tends to create forces that raise domestic interest rates and lower the exchange rate. And these changes tend to create incentives for others to step in. Impediments to the operation of these equilibrating mechanisms may prevent this adjustment from operating automatically. For example, in countries where exchange rates are fixed and, through the use of capital controls, domestic interest rates are independent of world interest rates, capital outflows must be met with changes in official reserves—the hand of the public sector replaces the invisible hand of the market. While either the public or the private sector can undertake financial adjustment, our analysis indicates that the majority of the adjustment observed over the past decade has been undertaken by the private sector.

The theory behind the financial adjustment mechanism discussed does not, however, say anything about the identity of the private investors on each end of such transactions. The important feature of how finan-

Figure 4.5. Economic Structure and Reserves

More resilient economies are not clearly or significantly richer or endowed with greater resource wealth than less resilient economies. They do, however, have somewhat higher levels of reserves on average.



Sources: Lane and Milesi-Ferretti (2007) updated to 2011; World Bank, World Development Indicators database; and IMF staff calculations.
 Note: The horizontal line inside each box is the median within the group; the upper and lower edges of each box show the top and bottom quartiles. The distance between the black lines (adjacent values) above and below the box indicates the range of the distribution within that generation, excluding outliers. *p* value indicates the significance of the difference in distributions between the less resilient economies and more resilient economies, based on the Kolmogorov-Smirnov test. PPP = purchasing power parity.

cial adjustment operates in practice is that inflows from foreigners are volatile and that these flows are buffered when residents (rather than other foreigners) step in when foreigners step out. Explaining these aspects of the financial adjustment process is more difficult, but there is nonetheless a growing theoretical and empirical literature that attempts to do so. First, Forbes and War-nock (2012) show that sharp reversals in gross capital flows are mostly associated with changes in global risk aversion rather than domestic factors. They show that episodes of higher global risk aversion are associated with an increase in home bias as evidenced by a contemporaneous reduction in both outflows and inflows. In a theoretical contribution, Tille and van Wincoop

(2012) show, in a relatively standard financial model, that this buffering effect can result from the presence of asymmetric information that allows domestic investors to recognize shocks to domestic assets faster than foreigners and for domestic investors to take advantage of that superior information.¹⁴

While recent capital flows appear to have been mostly driven by global shocks, Broner and others (2013) show that, even when a domestic crisis is triggering an outflow of foreign investors' funds, domestic residents still tend to offset those flows. While both foreign and domestic investors may want to reallocate their investment portfolio out of the country during a domestic crisis, domestic consumers have an offsetting incentive to repatriate some of their foreign assets to smooth consumption. In line with this observation, Figure 4.2 shows that consumption was much smoother in the countries in our sample that had more financial adjustment. Alternatively or additionally, Broner, Martin, and Ventura (2010) posit that foreigners are more likely to be defaulted on than domestic residents during a crisis. Consequently, foreigners may have an incentive to sell domestic assets to domestic agents—leading to a reduction in both gross inflows and gross outflows during instability or crisis.

Overall, even though the theoretical models are still immature, they suggest that financial adjustment is the result of ordinary economic forces that tend to create different incentives for residents and nonresidents. That is, underlying these models are assumptions that financial markets are well developed and generally free of distortions. This provides an obvious explanation for the finding above that the countries with the greatest financial adjustment had the freest exchange rate arrangements. The case studies below shed further light on this mechanism and help assess whether more financial adjustment is associated with particular policy decisions.

Case Studies

The analysis above provides some indication of what characteristics are shared by more resilient economies,

¹⁴This is an idea with a long history. Smith (1776), when introducing the idea of the invisible hand, put it this way: "First, every individual endeavours to employ his capital as near home as he can.... He can know better the character and situation of the persons whom he trusts, and if he should happen to be deceived, he knows better the laws of the country from which he must seek redress."

but it does not address the question of whether these characteristics contribute to resilience or merely reflect it. To shed some light on this question we turn to three case studies: Chile, the Czech Republic, and Malaysia.

These three countries had diverse initial conditions and cover the three major geographical regions that are home to emerging market economies. In addition, these economies are different: Chile has a significant resources sector; the Czech Republic has no resources to speak of but does have a large manufacturing sector; and Malaysia has elements of both, with a modest resources sector in addition to significant manufacturing activity. These countries are also among the most resilient, based on the correlation of changes in net and gross capital flows (Chile and Malaysia are in the top quintile) and on their credit default swap spreads (among the lowest in the sample). Furthermore, each country took a different approach in building its resilience—notably, there was much greater government involvement in Malaysia than in the Czech Republic or Chile.

Of additional interest is the fact that these economies were not always resilient. Each of them tried a number of policy mixes over a period of decades, and it is their earlier unsuccessful experiences, as much as their recent resilience, that sheds light on the factors that improve an economy's resilience. Furthermore, tracing the sequence of reform in these countries helps identify which characteristics appear to promote resilience and which reflect it. In particular, we focus on identifying whether the current resilience of these economies seems to be the result of particular policy choices or benign economic conditions and luck.

Chile

Over a period of decades punctuated by crises in the early 1980s and late 1990s, Chile has gradually moved toward a policy mix that combines an inflation-targeting framework, a freely floating exchange rate, a structural balance fiscal rule, and open capital markets with strong prudential and financial market regulation. This policy mix has delivered notable resilience to sometimes large fluctuations in gross capital inflows. Earlier policy mixes that were missing one or more elements of the current policy combination ended in crisis. These crises were, however, the catalyst for changes that resulted in the current policy mix.

In the mid-1970s Chile started deregulating its financial and capital markets as part of a general shift

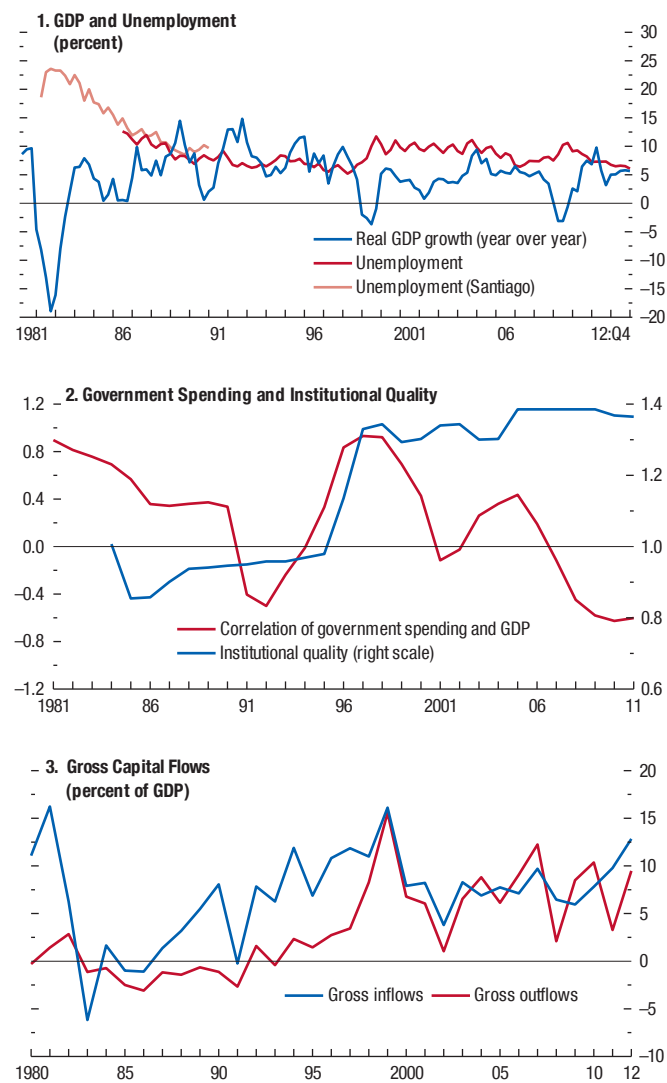
toward free-market policies. Foreign capital flows were allowed, but tightly regulated, and the exchange rate was fixed. But prudential regulation of the domestic financial system was lax, particularly of related lending. The prevailing ethos was one of market discipline rather than explicit regulation. As a consequence, a number of banks collapsed. Furthermore, when financial institutions gained access to foreign capital markets in 1980, they expanded their foreign intermediation activities dramatically and, ultimately, imprudently. When a debt crisis hit in 1982, a large depreciation in the previously fixed exchange rate led to extensive corporate defaults and an ensuing financial crisis (Figure 4.6, panel 1). Weak prudential controls allowed financial and foreign exchange risks to build up, and when the sovereign debt crisis occurred, they compounded the downturn.

After spending much of the 1980s excluded from international capital markets, the government policy mix in the 1990s involved more economic flexibility than in the 1970s and early 1980s, but it was still relatively interventionist. The government pursued an export-led growth model that targeted a stable and depreciated exchange rate managed in a moving band to maintain a sustainable external balance. It was thought that this approach would minimize the country's vulnerability to the kind of financial turmoil that led to the 1982 crisis. The government, however, also wanted the ability to run independent monetary policy to reduce the still-high level of inflation. As a result, capital controls were necessary, and Chile used an unremunerated reserve requirement known as the *encaje* that allowed for a wedge between global and domestic interest rates.¹⁵ In addition, reflecting the lessons learned in the early 1980s financial crisis, prudential regulation was much improved, particularly regarding related lending.

This approach led to many tensions. In line with the trend in other emerging market economies, capital inflows to Chile increased markedly during the 1990s. The exchange rate was consistently pushing against the strong side of the band, requiring extensive sterilized intervention. At the same time, the central bank was trying to maintain high domestic interest rates as it aimed to deliver price stability, which exacerbated the

Figure 4.6. Chile

Since the late 1990s, Chile has followed a policy mix of inflation targeting, a floating exchange rate, and free capital flows. It has also improved its general institutional quality and implemented more countercyclical fiscal policy. The net effect has been that fluctuations in gross capital inflows are buffered by gross capital outflows, and the country has been much less affected by fluctuations in gross inflows than in the past.



Sources: Haver Analytics; IMF, *Balance of Payments Statistics*; IMF, *International Financial Statistics*; PRS Group, Inc., *International Country Risk Guide*; and IMF staff calculations.

¹⁵The empirical evidence on the effectiveness of these capital controls is mixed. Cowan and others (2007), for instance, argue that it did not change the volume of inflows—only their composition.

costs involved in defending the exchange rate.¹⁶ The tensions inherent in Chile's chosen policy framework eventually came to a head with the Russian bond crisis.

Russia's default led to a sharp deterioration in sentiment toward emerging markets in general. Interest rates on Chilean sovereign and commercial debt rose, and the terms of trade deteriorated as the price of copper fell. Now, instead of defending the exchange rate against appreciation, the policy framework required the defense of the exchange rate against depreciation.¹⁷ As a result, monetary policy was tightened, which exacerbated the domestic downturn. Although there was no "sudden stop" in gross capital inflows, there was still a sharp reduction in net inflows that contributed to the strength of the downturn because of a "sudden start" in gross capital outflows. This was partially a result of poor timing: limits on foreign investment by the private pension funds had been gradually relaxed through the 1990s. But, because Chile had been growing strongly and domestic returns were high, these relaxations had not translated into strong outflows. When the crisis started, however, the authorities' attempt to prevent depreciation of the exchange rate provided domestic investors with the strong incentive to move money abroad in order to benefit from a possible depreciation.

The outcome, while better than in 1982, was still not ideal. Unemployment rose from about 6 percent to almost 12 percent, and the economy experienced its first year of negative growth since 1983 (see Figure 4.6, panel 1). The improvement in prudential controls did, however, prevent a financial crisis and any related worsening of the situation.

Reflecting on the 1998 crisis, the authorities recognized that the framework in place required a procyclical monetary policy response and that this framework also encouraged exacerbating private portfolio flows because investors could anticipate exchange rate movements and make one-way bets.¹⁸ The central bank

¹⁶This was because it involved the accumulation of foreign reserves that paid a lower rate of interest than the central bank was paying on its liabilities.

¹⁷Theoretically, the authorities could have allowed the exchange rate to depreciate, but multiple, relatively familiar, justifications were offered for why this would be dangerous. For example, it was suggested that depreciation would raise inflation and undermine the central bank's inflation-targeting credibility and destabilize financial markets, with an adverse effect on those with foreign currency exposure.

¹⁸See Carrière-Swallow and García-Silva (2013).

decided on an inflation-targeting framework under which most capital controls were removed and the exchange rate was allowed to float freely. It was hoped that the increased exchange rate volatility associated with free floating would serve as a natural disincentive to the kinds of short-term capital transactions that were a traditional source of concern. Fiscal policy was also improved with the introduction of a structural balanced budget rule in 2001, which made fiscal policy more countercyclical than in the past. (The effect can be seen in Figure 4.6, panel 2.)

The regulatory framework for banks was reformed to encourage financial development. In particular, pension funds were natural counterparties to nonfinancial corporate in the foreign exchange market, and the relaxation of regulations allowed the development of the markets each needed to hedge their foreign exchange risk, with banks acting as intermediaries. Furthermore, with controls on capital outflows relaxed and pension funds free to hold a significant fraction of their assets overseas, gross capital flows in Chile began to behave much more like those in advanced economies, where gross outflows and gross inflows offset each other and generally stabilize net inflows and activity (Figure 4.6, panel 3).

The net result of these policies was that the Chilean economy now seems much more resilient to global shocks and capital flow volatility. Large fluctuations in gross capital flows during the global financial crisis and earlier Latin American crises had less effect on net capital flows. Furthermore, Chile has been able to respond to downturns with countercyclical and stabilizing fiscal and monetary policies, assisted by the automatic stabilizer that a floating exchange rate provides.

Malaysia

During the Asian crisis, faced with the prospect of a sudden stop in capital inflows and capital flight, Malaysia closed its financial account and fixed its exchange rate. Over the following decade, it carefully built financial sector resilience, moved to a flexible exchange rate regime, and gradually relaxed restrictions on capital flows. The improvements in resilience have been such that, despite more open capital markets, highly volatile gross inflows during the global financial crisis did not lead to a sudden stop in net flows or domestic financial instability.

In the early 1990s, Malaysia experienced strong growth characterized by high investment and large current

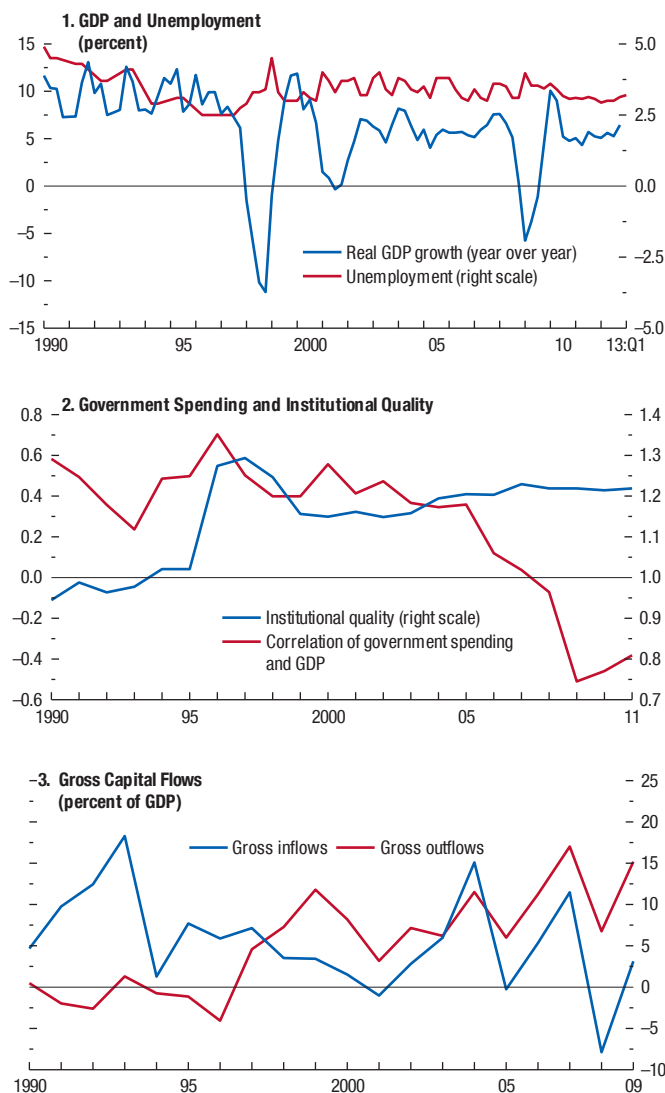
account deficits that reached 10 percent of GDP in 1995 (Figure 4.7, panel 1). The sudden stop of capital inflows in 1998 as part of the Asian crisis led to a dramatic contraction of investment and GDP as well as a sharp reversal of the current account. In order to avoid a hemorrhaging of foreign capital, prevent an even larger depreciation of the currency, and allow for monetary and fiscal easing, Malaysia introduced capital controls and fixed the exchange rate with respect to the U.S. dollar on September 2, 1998. The economy rebounded quickly, returning to healthy growth rates by the end of 1999.

Although capital flow restrictions and the fixing of the exchange rate may have helped avoid a more severe financial crisis in the short run (Kaplan and Rodrik, 2002), the Malaysian authorities concluded that international financial integration remained crucial for the ultimate success of the country. They therefore embarked on a staged process of reforms that involved both strengthening the domestic financial sector and gradually reopening the financial account. This strategy foresaw the development of the domestic financial sector over the subsequent 10 years through three *ex ante* planned phases: During the first three years policy efforts focused on enhancing the capacity and capability of the existing banks. The subsequent three to four years saw increased competition through the deregulation and liberalization of the sector. Finally, during the last phase, the authorities promoted greater international integration by allowing new players into the domestic economy and supporting investment abroad. Another important step that increased the resilience of the financial sector was to foster the development of equity and bond markets, which expanded financing beyond bank lending. Finally, the Malaysian authorities took considerable steps to improve financial regulation and supervision by adopting risk-based capital requirements, stress testing, peer group comparisons, and horizontal reviews.

The strengthening of the financial sector was accompanied by a gradual easing of restrictions on capital flows and exchange rate transactions in order to increase efficiency and reduce the costs of conducting business internationally. A notable consequence of fewer restrictions on capital outflows was the gradual accumulation of a substantial gross international asset position. While international liabilities stayed relatively constant as a proportion of GDP, Malaysia more than doubled its gross foreign holdings between 1997 and 2012, leading to a large correction in the net foreign asset position, which turned positive.

Figure 4.7. Malaysia

Despite larger swings in gross capital inflows, Malaysia weathered the global financial crisis much better than the Asian crisis. This is due in part to more countercyclical use of fiscal policy and larger capital outflows that significantly offset movements in gross inflows.



Sources: IMF, *Balance of Payments Statistics*; IMF, *International Financial Statistics*; PRS Group, Inc., *International Country Risk Guide*; and IMF staff calculations.

The accumulation of international assets was initially fueled by the increase in official reserves accumulated to offset appreciation pressure on the exchange rate. Importantly, the accumulation of reserves limited the incentives for private agents to invest abroad, given the possibility of eventual appreciation of the currency. As in the case of Chile during the late 1990s, this behavior is emblematic of the distortionary effects a large accumulation of official reserves can have on capital outflows. When official reserves are used to resist fundamental movements in exchange rates, they present private investors with the opportunity for a one-way bet against the continuation of policy intervention, which can lead to inefficient allocation of private capital.

Indeed, when Malaysia moved its exchange rate regime to a managed float in 2005, allowing the local currency to appreciate and further removing restrictions on international transactions, the accumulation of foreign assets accelerated. Gross outflows in U.S. dollars increased by about 50 percent during 2006–09 compared with 2002–05, with a dramatic increase in private outflows. The proportion of official reserves in total private and official outflows fell from more than 50 percent during 2002–05 to less than 20 percent during 2006–09. This increase in private capital outflows was characterized by strong growth of foreign direct investment by Malaysian companies fueled by a desire to seek new markets and benefit from economies of scale. A similarly rapid increase was recorded in bank lending abroad and in foreign deposits. Overall, the increase in gross private outflows contributed to a considerable improvement in the net foreign asset position of Malaysia, which was also reflected in a positive net foreign asset position by domestic banks.

The accumulation of foreign assets has played an important role in reducing the volatility of net capital flows. Indeed, the reduction in capital inflows during the Great Recession was largely offset by the sales of foreign reserves and the repatriation of domestic capital invested abroad. In particular, large sales of domestic bonds by foreign investors were absorbed with minimal impacts on yields by the Employee Provident Fund and other deep-pocketed domestic institutional investors. The stabilizing role of reserves and private outflows, coupled with the greater flexibility of the exchange rate and strength of domestic financial institutions, allowed Malaysia to weather the global financial crisis much better than during the crisis of the late 1990s, despite the larger reduction in gross capital inflows. An additional element that has strengthened

the resilience of Malaysia to swings in capital flows has been a significant change in the dynamics of public spending. While government spending was positively correlated with GDP fluctuations during the 1990s, it has become much more countercyclical during the 2000s, especially by providing fiscal stimulus during downturns (Figure 4.7, panel 2).

The Czech Republic

After a rocky start in the 1990s, when strong capital flows, a weak financial sector, and a fixed exchange rate regime contributed to a large recession in 1998, the Czech Republic has developed into a stable advanced market economy. This followed the adoption of credible fiscal and monetary policies that contributed to lower sovereign and corporate interest rate premiums, which, unlike in some other central and eastern European nations, minimized incentives for destabilizing inflows and outflows.

Capital flows into the Czech economy started right after the change of the political regime in the early 1990s. The Czech Republic's membership of the Organization for Economic Cooperation and Development (OECD) from 1996, and the associated commitment to phase out capital controls, meant that capital controls were generally unavailable, necessitating different policy approaches than those used in Chile and Malaysia.¹⁹ Capital inflows put the currency under appreciation pressure and facilitated growing imbalances on the current account, which the Czech National Bank (CNB) attempted to deal with by pegging the currency against an effective exchange rate basket and sterilizing inflows. In 1995, with the pressure intensifying, the CNB introduced a surcharge on foreign exchange transactions and a limit on short-term borrowing by banks. It also broadened the exchange rate band to ± 7.5 percent in 1996. Notwithstanding these actions, imbalances grew and were magnified by fiscal expansion and strong wage growth. The framework was challenged in May 1997 with a speculative attack on the currency triggered by a combination of political uncertainty and contagion from southeast Asia. The defense of the currency saw interest rates rise substantially as monetary policy was forced to operate procyclically (Figure 4.8, panel 2).

¹⁹See Ötker-Robe and others (2007) for a more detailed discussion of the Czech Republic's experiences.

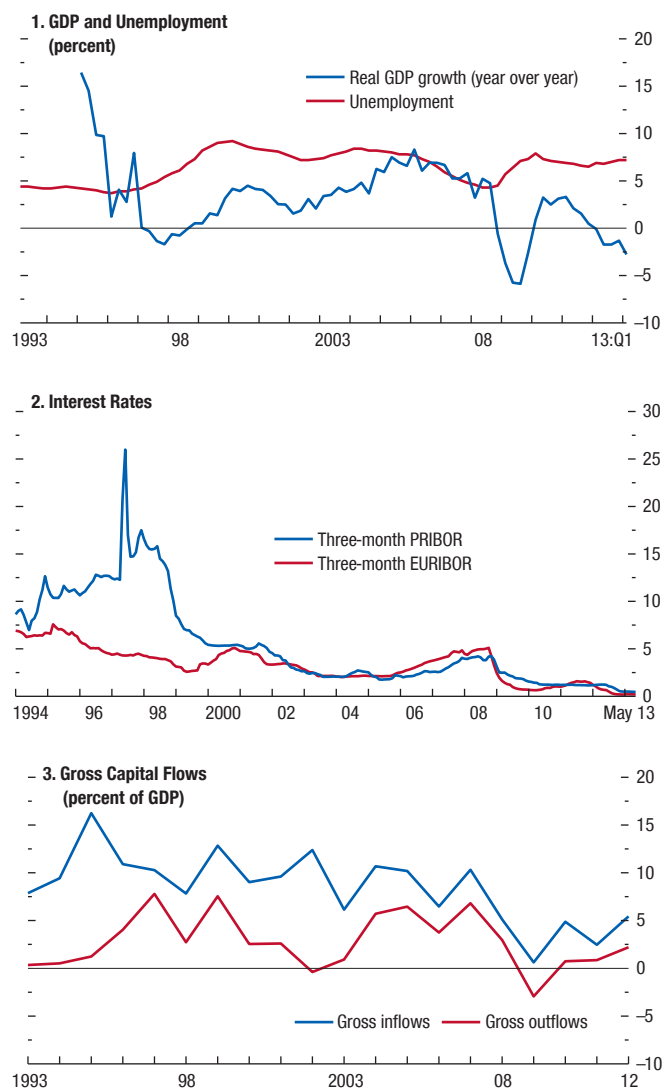
A recession ensued and was exacerbated by weakness in the financial sector, which was a holdover from the previous regime of inefficient government-controlled financial institutions. While lending was not well managed and inefficiently allocated due to government control, there was a lack of infrastructure to support large-scale foreign exchange lending, and so, somewhat by accident, the Czech Republic did not experience the sort of disruption that foreign currency borrowing induced in a number of central and eastern European economies over the past decade or so. During the global financial crisis, many local banks suffered large losses, and most were eventually sold to foreign investors, significantly improving the financial infrastructure.

With the fixed exchange rate regime unsustainable in the face of speculative attacks, and capital controls ruled out by membership in the OECD, the CNB decided to adopt inflation targeting and a freely floating exchange rate regime in 1998. Monetary policy quickly gained a large degree of credibility, albeit at a relatively large real cost, as inflation was reduced by means of a tight monetary policy. The CNB also stayed clear of the foreign exchange market, exposing households and firms to a freely floating currency. Fiscal policies were also rather conservative during the 1990s and 2000s, generating deficits between 2 and 4 percent of GDP, with the extra benefit of a very favorable starting point (gross government debt started at less than 20 percent of GDP in the early 1990s): gross government debt has never exceeded 50 percent of GDP. On average, as measured by the correlation between the cyclical deviations of primary government spending and GDP, fiscal policy was slightly countercyclical during this period.

As a result of the credible monetary policy regime and sustainable fiscal debt, the interest rate differential vis-à-vis world currencies disappeared (with the nominal three-month interbank rate dropping below the three-month euro interbank offered rate early in 2002; see Figure 4.8, panel 2). A noticeable consequence was that the vast majority of the net increases in foreign liabilities over this time were private foreign direct investment flows. Because of the small interest rate differentials, there were very few “hot money” private nondirect investment inflows and, similarly, few incentives for domestic residents to borrow in foreign currencies. This situation is rather uncommon in the context of emerging market economies but highlights some of the benefits of strong fundamentals that are expressed in low

Figure 4.8. The Czech Republic

After a recession in 1997, the Czech Republic adopted a policy mix of inflation targeting, floating exchange rates, free capital flows, and credible fiscal policy. The interest rate differentials, which had previously been very high, declined to practically zero. Consequently, and in contrast with a number of other central and eastern European countries, there were few incentives for foreign currency borrowing, and most capital inflows were foreign direct investment. As a result, the Czech economy was much more resilient to capital inflow fluctuations. The drop in capital inflows associated with the global financial crisis was matched by a reduction in outflows, which lent stability to net flows.



Sources: Haver Analytics; IMF, *Balance of Payments Statistics*; IMF, *International Financial Statistics*; PRS Group, Inc., *International Country Risk Guide*; and IMF staff calculations. Note: EURIBOR = euro interbank offered rate; PRIBOR = Prague interbank offered rate.

interest rate differentials.²⁰ Furthermore, reflecting better prudential management, domestic credit expansion was very moderate compared with similar central and eastern European countries during this period. Domestic credit rose from about 30 percent of GDP in 2001 to about 50 percent of GDP in 2008, and almost all the lending was in domestic currency.

When the global financial crisis hit, these policy settings and institutional features meant that the effects on financial stability and the current account were relatively muted and much smaller than during the earlier episode at the end of the 1990s. The nominal exchange rate was allowed to depreciate (which it did by about 15 percent), but it quickly returned to its precrisis levels. The CNB was free to run countercyclical monetary policy and cut rates from 3.5 percent in August 2008 to 1.0 percent by the end of 2009, and then further to 0.05 percent in 2012. Fiscal policy was also countercyclical, facilitated by contained gross debt levels and limited changes in long-term government bond yields. A large reduction in gross inflows was offset by a corresponding reduction in gross outflows (Figure 4.8, panel 3). There were no reversals on the current or financial accounts, and the performance of Czech banks remained strong.

Overall Analysis

This chapter began by showing that emerging market economies differ with respect to how changes in gross inflows are absorbed through financial versus real adjustment and that this difference was reflected in their level of resilience during the global financial crisis. The empirical section documented the country characteristics associated with higher financial adjustment, and the case studies told how Chile, the Czech Republic, and Malaysia reformed their economies and moved toward a regime with more financial adjustment that buffered capital inflows. This section brings together the accumulated evidence to address a few key questions. First, how has financial adjustment operated in these economies and, particularly, to what extent was financial adjustment driven by government intervention or private behavior? Second, what policy reforms (and their ordering) might assist policymakers in other emerging market

²⁰Box 4.1 presents a series of simulations that illustrate these benefits. The simulated economy with no foreign currency borrowing is much more resilient to international financial market volatility than the simulated economy with 50 percent of borrowing in foreign currency.

economies in strengthening resilience and encouraging more buffering through financial adjustment?

How Did Financial Adjustment Operate in the Case Studies?

The empirical and case study evidence underlines that the majority of financial adjustment in more resilient economies was undertaken by private agents. And an important element underlying the buffering behavior of private agents was a relatively flexible exchange rate regime. When country authorities try to resist fundamental changes in the exchange rate, they create incentives for both foreigners and residents to take the opposite position. As the case of Chile demonstrates, when depreciation can be anticipated, as it usually can with managed exchange rate regimes during periods of pressure, there is a tendency toward destabilizing capital outflows from both domestic residents and nonresidents. Conversely, during the global financial crisis, when the exchange rates of both Chile and the Czech Republic were allowed to adjust and depreciate, gross capital outflows served to stabilize the net flows because domestic residents either slowed their normal outflows or repatriated foreign funds.

Although reserves management can contribute to financial adjustment, the case studies and evidence from the global financial crisis show that private agents can themselves manage their foreign assets in a stabilizing way. This analysis has already reviewed several reasons private agents may have strong incentives to reduce outflows when inflows dry up. The case studies provide some concrete examples. In Chile, for example, the primary actors are the private pension funds, which invest the pension savings of Chileans and hold approximately 40 percent of their assets abroad. During the global financial crisis, multiple incentives combined to encourage a significant rebalancing: pension funds repatriated foreign assets and, thereby, offset the reduction in foreign investors' inflows.²¹ In particular, the freely floating exchange rate combined with limited capital controls and well-developed financial markets to quickly and efficiently encourage and facilitate financial adjustment that buffered volatile gross inflows.

The case of Malaysia shows a larger use of foreign reserves to offset private inflows, particularly during the early stages of Malaysia's recovery from the Asian crisis. However, during the global financial crisis

²¹See Carrière-Swallow and Garcia-Silva (2013) for more details.

changes in nonofficial outflows also contributed greatly to buffering. In particular, bond markets remained stable thanks to purchases by the Employees Provident Fund and other well-capitalized institutional investors. These operations may have been somewhat influenced by public officials given the higher level of government involvement in the Malaysian economy, but these purchases mirrored the behavior of the private pension funds in Chile, suggesting that simple market incentives played an important role.

Finally, it is worth noting that, even though the private sector may undertake the majority of the financial adjustment in response to shocks in the cases studied, this does not rule out a role for the official sector. In both Chile and Malaysia, the central banks intervened in the foreign exchange market from time to time to smooth fluctuations or to address a temporary overshooting of the equilibrium exchange rate.

How Can Emerging Market Economies Encourage Stabilizing Financial Adjustment and Increase Their Resilience?

Each of the countries studied has increased its resilience to volatile capital inflows by improving prudential regulation, fostering financial development, strengthening the credibility and countercyclical use of fiscal and monetary policy, moving toward more flexible exchange rate regimes, and allowing for greater openness in the financial account—in particular with respect to capital outflows. The net effect has been that highly volatile gross capital inflows now have much less influence on the current account and economic stability than in the past.

An important question is whether these policy changes led to resilience or vice versa. The evidence points to the former conclusion. In each case, reforms that improved financial supervision and relaxed restrictions on capital flows and exchange rates were the result of conscious policy choices rather than the outcome of resilience to capital flows obtained through other propitious events. Indeed, most of these policy changes were implemented during times of weakness and crisis after previous policy mixes were found to be inadequate in dealing with capital flow reversals. That said, reforms were sequenced in all three countries, and not all reforms were implemented at the same time. For example, measures to strengthen domestic financial development typically preceded steps toward more exchange rate flexibility.

Much can also be learned from the previous regimes, which failed to ensure macroeconomic stability and steady economic growth in the face of volatile capital inflows. Policy mixes that contained some but not all of the elements of resilience were found lacking. For example, the case of the Czech Republic demonstrates how open financial accounts alone, without appropriate institutional backing, can be destabilizing. Weak financial systems also exacerbated downturns after capital flow reversals. And speculative attacks on managed currencies required procyclical monetary policy responses that destabilized the domestic economy even when other elements of resilience were in place.

The empirical and case study analysis also shows a much higher incidence of countercyclical fiscal policy in resilient economies. Previous research, for example, by Cardarelli, Elekdag, and Kose (2009) highlights the beneficial effects of countercyclical fiscal policy. However, what is less clear is whether resilience allows countries to adopt countercyclical fiscal policies or vice versa. Frankel, Végh, and Vuletin (2011) find that over the past decade, about one-third of their sample of emerging market economies was able to escape fiscal policy procyclicality and become countercyclical. Importantly, they attribute this critical shift in fiscal policy to an improvement in the quality of institutions. The evidence from the case studies suggests that the adoption of sound fiscal policies tends to precede resilience. Thus, it seems that countercyclical fiscal policy (or a general improvement in institutions) contributes to resilience. Furthermore, when surpluses are saved in a sovereign wealth fund that is invested abroad, as in Chile, this can directly contribute to financial adjustment during a downturn because the repatriation of such funds can buffer falls in capital inflows and support fiscal stimulus.

Conclusions

Emerging markets have faced unprecedented volatility in capital inflows during the past decade. In 2011 policymakers worried that excessive inflows might cause overheating, but more recently concerns have shifted to the disruption that might result from sudden stops as interest rates in the United States normalize. A key question for many policymakers is how best to respond to the challenges such volatile capital inflows present. As illustrated in Box 4.1 and discussed in other research from the IMF, capital flow management measures and foreign exchange intervention can be useful in moderating the volatility of capital flows

and exchange rates in less resilient emerging market economies in some circumstances.²² But policymakers are not limited to these tools.

Policymakers can implement important reforms that can help increase the resilience of their economies to swings in gross inflows by encouraging stabilizing financial adjustment. Such adjustment means that swings in gross inflows need not necessarily translate into disruptive fluctuations in the current account. Rather, when gross capital inflows increase, residents will tend to offset these flows by accumulating foreign assets that are later repatriated when foreign inflows decline. And this chapter documents how countries with such greater financial adjustment better withstood the sharp contraction in gross inflows during the global financial crisis, experiencing a smaller fall in both GDP and consumption.

The particular reforms and characteristics that appear to have supported stabilizing financial adjustment are highlighted in the empirical analysis and case studies. A first important characteristic is the strength of their institutional frameworks.²³ In particular, resilient emerging market economies have more credible fiscal and monetary policies that are used countercyclically. In this regard, it is important to note that countercyclical fiscal measures should not be used only in downturns, when some emerging market economies may actually be limited in their ability to finance a fiscal stimulus. It is equally important to tighten fiscal policy during episodes of strong growth, when capital inflows tend to contribute to overheating. In fact, investing such fiscal savings abroad, as Chile does through its sovereign wealth fund, can help buffer gross inflow surges. Furthermore, as the case of the Czech Republic demonstrates, prudent fiscal and monetary management can reduce the interest rate differential with the rest of the world and limit the incentives for both hot money inflows and the domestic accumulation of foreign currency debt.

Second, resilient emerging market economies are characterized by improved prudential regulation and

supervision that limit excessive risk taking without preventing the development of the domestic financial sector. Third, stabilizing financial adjustment obviously requires a relatively open capital account that allows residents to both accumulate a stock of gross foreign assets and efficiently move money in and out of the country as necessary to buffer gross inflows. Furthermore, as Figure 4.3 suggests and the case of Chile demonstrates, more flexible exchange rate regimes have encouraged such buffering behavior in recent years. A heavily managed exchange rate, on the other hand, may undermine residents' incentives to reduce outflows during sudden stops, because an anticipated depreciation creates very strong incentives to send assets offshore, thereby exacerbating capital flow volatility. A caveat is that these findings reflect the responses to global shocks that have been very much in evidence over recent years. Domestic shocks may encourage different capital flow behavior.²⁴

The case studies also provide important insights about the appropriate sequencing of reforms. Reforms to strengthen the domestic financial system typically preceded other policy measures, while steps toward greater openness to capital flows and exchange rate flexibility came toward the end. For example, the experience of the Czech Republic in the late 1990s demonstrates that merely opening up the financial account without other policies in place does not lead to resilience. Rather, the case studies suggest that countries that improved prudential policies and adopted credible monetary and fiscal policy regimes (such as inflation targeting in the cases of Chile and the Czech Republic) were then able to relax remaining restrictions on capital flows or the exchange rate and thereby benefit from the stabilizing role played by fluctuations in the exchange rate and capital outflows. The role of reserves in contributing to this adjustment is less clear. While they are used in Malaysia, there is also a growing stock of private gross assets that played a more significant role in stabilizing net flows in recent years. At any rate, both Chile and the Czech Republic (and advanced economies more generally) demonstrate that a large stock of official reserves is not a prerequisite for net capital flow stability.

A possible concern with these findings is that the ability to improve institutions and run countercyclical

²²As discussed in IMF (2012), pp. 35–36, “a key role needs to be played by macroeconomic policies, including monetary, fiscal, and exchange rate management, as well as by sound financial supervision and regulation and strong institutions. CFMs [capital flow management measures] should not be used to substitute for or avoid warranted macroeconomic adjustment.”

²³The benefits of such strong frameworks are not limited to dealing with capital flows. IMF (2012) finds that recent improvements in policies and institutional frameworks are associated with significant improvements in the general resilience of emerging market and developing economies over the past decade.

²⁴Although the evidence from Broner and others (2013) suggests that, even in the case of domestic shocks, residents may still act to buffer changes in gross capital inflows.

macroeconomic policies may be a benefit of resilience, rather than a direct cause of it. The case studies, however, suggest that this is not the case. A common element in all three cases is that neither increased resilience to capital flows nor benign economic conditions were a precondition for reform. Instead, policy reforms tended to be implemented in response to a crisis or

recession. That is, these policies can be, and have been, implemented by less resilient economies at times of weakness as a way to build their resilience.

In sum, the countries that have demonstrated greater resilience to the yin of capital inflows are those that have encouraged the balancing yang of capital outflows.

Box 4.1. Simulating Vulnerability to International Capital Market Conditions

Sudden changes in international capital market conditions can create significant problems for domestic banking systems, capital formation, and growth. This box presents simulated scenarios of such boom-bust credit cycles and studies how outcomes depend on the composition of bank balance sheets and the policy environment. Three scenarios are considered: (1) a baseline in which all lending is in domestic currency; (2) an alternative in which half of all lending is in foreign currency; and (3) a variation of (2) in which half of all lending is in foreign currency and controls on capital outflows are implemented at the beginning of the bust phase of the credit cycle.

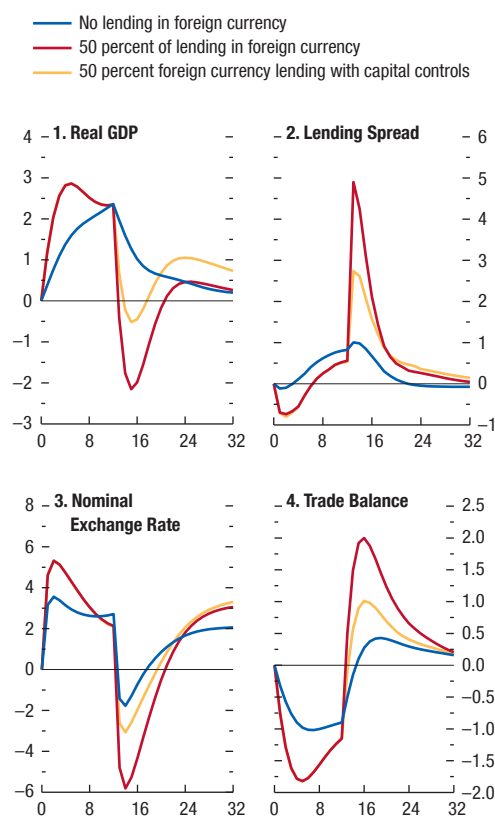
The simulations are based on the model of small open economies outlined in Benes, Kumhof, and Laxton (2013). In this model, bank loans are essential because they create the purchasing power needed by households and firms for all their economic transactions. In the model, changes in lending interest rates are asymmetrically large following negative shocks, because borrowers' loan-to-value ratios rise into high-risk territory and banks' capital adequacy ratios move closer to their legal minimum.

All simulations consist of two episodes characterized by the behavior of the interest rate risk premium faced by the country. During an initial three-year boom period, which is misperceived as being permanent, the risk premium drops by 200 basis points. At the reversal, the risk premium suddenly increases by 300 basis points, followed by a gradual decline back to its original level.

The initial shock reduces domestic real interest rates and appreciates the currency (Figure 4.1.1, panel 3). This increases income and wealth, and because wealth represents collateral to banks, domestic lending and therefore creation of purchasing power increases by about 4 to 5 percent, depending on the scenario. The effects are much stronger in the scenario in which half of all lending is in foreign currency, because the domestic currency value of existing debt declines on impact. Real GDP expands by almost 2.5 percent by the end of year three in all scenarios. Inflation declines due to the currency appreciation, despite the additional demand. The trade balance deteriorates by 1 to 2 percent of GDP depending on the scenario, leading

The authors of this box are Jaromir Benes and Michael Kumhof.

Figure 4.1.1. Responses to Changes in International Capital Market Conditions
(Percent level deviation)



Source: IMF staff calculations.

to the accumulation of significant claims on the domestic economy by foreigners.

The foreign capital inflow is therefore a *consequence* of increased domestic bank lending, not vice versa. This must invariably be true, because foreign residents cannot deposit their goods in a domestic bank in exchange for a deposit, and domestic residents can purchase additional imports only if banks have first created the necessary additional purchasing power for them. The fact that the boom is not created by a capital inflow, but by increased domestic lending in response to lower interest rates and lower perceived risk, is critical for formulating policy advice on how to deal with such episodes.

Box 4.1 (continued)

The reversal of the boom leaves banks exposed to a loan book that is much riskier than anticipated when it was first made. Banks respond by reducing lending and raising lending spreads, which reduces purchasing power throughout the economy. This, together with the negative income and wealth effects of the reversal, reduces domestic demand. The exchange rate depreciates, which helps to unwind the previously accumulated foreign debt positions.

In the baseline scenario without foreign currency lending (Figure 4.1.1, blue line), the contraction is moderate and gradual. The riskiness of bank loans remains satisfactory, as seen in the very modest changes in asset prices, lending spreads, and bank capital buffers. GDP declines smoothly without negative output gaps, and inflation quickly returns to its target, facilitated by the depreciating exchange rate.

In the alternative scenario with 50 percent foreign currency lending (Figure 4.1.1, red line), the contraction is large and sudden. The exchange rate depreciation sharply increases the local currency values of domestic agents' liabilities. This reduces borrowers'

wealth and increases banks' loan losses and lending risk. Lending contracts faster than in the baseline, and spreads increase steeply, by about 450 basis points. The lending rate therefore increases, despite further cuts to the policy rate. Domestic demand contracts by over 6 percent in two quarters, GDP by over 4 percent, and real incomes and asset prices decline by far more than in the baseline. Because this makes lending even riskier, a vicious cycle ensues that keeps spreads elevated for several years. Because of the strong real contraction, inflation remains subdued for a number of years, despite the sizable depreciation.

In the alternative scenario with a postreversal imposition of capital controls (Figure 4.1.1, yellow line), the real contraction is significantly less deep. Capital controls reduce the interest rate premium, which lowers the increase in lending spreads by about 200 basis points and limits the size of the exchange rate depreciation. Because borrowers benefit, banks' lending losses are significantly reduced, lending terms tighten less severely, and real GDP contracts by almost 50 percent less than in the baseline.

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