

CAPITAL MOBILITY AND MONETARY POLICY: AN OVERVIEW

Miguel Fuentes D.
Central Bank of Chile

Claudio E. Raddatz
Central Bank of Chile

Carmen M. Reinhart
Harvard University

The papers that comprise the different chapters of this volume were presented in the XVII Annual Conference on Central Banking that took place at the Central Bank of Chile, Santiago, during November 14 and 15, 2011.

While the global economic environment has changed considerably from the end of 2011 to the present for advanced and emerging economies alike, the themes and policy issues addressed by these papers share a timeless dimension. Collectively, the studies that comprise this volume deal with various aspects of the causes, consequences, and policy challenges associated with the repeated boom-bust cycles that have characterized market economies throughout most of their history. The papers have a decided open-economy focus and connect the prosperity-crisis-depression cycle to international capital flows and their impact on domestic and external indebtedness, currency fluctuations, and the banking sector; their connection to global factors, such as international interest rates, commodity prices and crises or turbulence outside the national borders is explored. While the analysis is tilted towards emerging markets, particularly in Latin America, the relevance of these topics for mature economies has been made plain by the Global Financial Crisis.

Capital Mobility and Monetary Policy, edited by Miguel Fuentes D., Claudio E. Raddatz, and Carmen M. Reinhart, Santiago, Chile. © 2014 Central Bank of Chile.

1. THE EVOLVING GLOBAL SETTING

At the time of the conference, the global outlook was notably brighter for emerging markets as a group while many (if not most) advanced economies continued to struggle with the aftermath of systemic banking crises. After a relatively promising 2010 and much discussion in policy circles of “green shoots,” growth prospects for the United States, Japan, and especially Europe were being revised downwards. The depth of the financial, fiscal, and structural problems in the euro area became more apparent and the probability of a quick resolution slimmer. A novel element in the global setting was the relative resilience of emerging markets in the face of the financial meltdown in the “North.” The relatively swift and sharp recovery in emerging markets following the global turmoil of 2008 to early 2009 posed a striking contrast to the 1930s when deep financial crises in the United States and Europe ushered in years (if not decades) of economic contraction and stagnation in the “South.”

In both advanced and emerging economies, policymakers, academics, and the financial community were still trying to make sense of the financial tsunami that hit them in late 2008 and the channels through which the U.S. subprime mortgage crisis became viral and global almost synchronously. By 2011, the reverberations of the crisis in Europe were becoming clearer as the banking crises morphed into sovereign debt crises in a growing number of “periphery” countries (a group which now also includes Spain and Italy—in addition to Greece, Ireland and Portugal).¹ The range of options under discussion for dealing with and solving the fiscal and lack of international competitiveness problems of countries in the periphery included discussions of the relative merits of the departure from (if not dissolution of) the euro.

Emerging markets could not rely on history to provide a comparable turn of events to the Global Financial Crisis. At the height of the global crisis, capital flows to these countries predictably dried up overnight. Paradoxically, financial flows fled to the epicenter of the crisis (the United States) in search of safety (and/or liquidity). However, unlike other crisis episodes, the *sudden stop* did not last long for emerging markets and flows started to recover vigorously

1. Iceland, which also lost access to international capital markets, would be added to this group if non-euro-area countries were included in the casualty list. See Reinhart and Rogoff (this volume) about the connection between banking and debt crises.

in the second half of 2009, largely unaffected by the problems in Europe.² In effect, as the European periphery slid into a sovereign debt crisis of varying magnitudes and capital market access was lost, global investors in their eternal quest for higher yields increasingly saw emerging markets as the most attractive destination in an otherwise bleak global setting.

Commodity prices also followed a somewhat atypical pattern. Historically, recessions in the United States and the larger advanced economies have been associated with declining commodity prices.³ Yet, after a precipitous but short-lived decline in late 2008, prices of primary commodities recovered and surpassed their pre-crisis levels.

All in all, with a few exceptions, emerging market economies were able to recover faster than advanced ones and sustain consistently higher rates of economic growth, which led some analysts to refer to the situation as a “two-speed world” (see for example IMF, 2011). The two-speed-world view was reinforced by the increasing realization that the recovery of advanced economies would not be quick and that private deleveraging and mounting fiscal problems (most marked in the European periphery) could lead to a protracted recession. The lack of “fiscal space” to stimulate demand in advanced economies as time progressed and public debts marched upward meant that advanced economies looked increasingly to external demand to fuel the recovery. Emerging economies, with their comparatively stronger economic performance, were the natural source of that demand. However, to act as the global engine of growth, emerging markets had to be willing to run larger trade and current account deficits, tolerate a more appreciated currency, and finance those deficits with potentially unstable capital inflows. The search for yield in emerging markets was fueled further by expansionary monetary policies in the United States and other advanced economies. In effect, after 2008 real ex-post short-term interest rates in the advanced economies were negative roughly half of the time (a phenomenon not seen since the late 1970s).

Owing to the sudden and drastic reversal of capital flows in late 2008 and the countless previous experiences with similar reversals over the course of history has led many emerging markets to be wary of

2. For the original sudden stop concept see Calvo (1998).

3. This North-South link has a long-standing history, as discussed in Dornbusch (1985).

“fickle financial flows.”⁴ In a setting in which capital flows are seen as potential harbingers of financial instability, it is not surprising that the policy discussion and academic research pursued a line of inquiry involving interrelated questions such as: What are the mechanisms behind the surge in capital inflows experienced by emerging markets before the crisis and after 2009? What are the consequences of such inflows—same as prior episodes—or are there new dimensions? What are the main channels of transmission of financial crises and what determines resilience to external turbulence? And, importantly, how should policy respond to these inflows and related effects so as to avoid the buildup of financial vulnerability at home?

The rest of this overview chapter reviews selective highlights of these articles and their contribution to the discussion of and literature on capital mobility, north-south linkages, financial crises, and macroeconomic policy. The chapter will be structured around the potential phases of the capital flow cycle: the rise (or bonanza), the demise (or reversal), and the policy reactions to either deal with “excessive” inflows or disorderly outflows.

2. THE RISE IN CAPITAL INFLOWS (WITH AN EMPHASIS ON LATIN AMERICA)

Both, between 2003 and 2008 and again between 2009 and 2012, emerging economies were the recipients of large inflows of capital. The earlier wave of inflows prior to the Global Financial Crisis and also for the years 2009 and 2010 were not primarily directed to the financing of ever-widening current account deficits. Burnt by severe crises since the mid-1990s emerging markets had embraced self-insurance and the earlier wave of capital flows was importantly channeled into reserve accumulation (which set new records for many emerging markets—not just China). This use of inflows was also representative for countries in Latin America as can be seen in the current account balances that appear in table 1. Current account surpluses are comparatively rare in Latin American countries.

The nearly balanced current account shown in table 1 for the euro area masks another surge in capital inflows that had taken place prior

4. As also highlighted in the IMF World Economic Outlook (2011), this balancing act was not occurring in an orderly fashion, with Latin American countries bearing a disproportionate share of the adjustment.

Table 1. Current Account Balances, 2003-2012
As a percent of GDP

<i>Country group</i>	2003-2007	2008	2009	2010	2011	2012
Advanced economies	-0.88	-1.14	-0.14	-0.02	-0.17	-0.13
United States	-5.38	-4.74	-2.73	-3.05	-3.09	-3.03
Euro Area	0.63	-0.71	0.25	0.53	0.60	1.81
Emerging and developing economies	3.35	3.52	1.47	1.53	1.90	1.45
Developing Asia	4.31	5.85	3.72	2.47	1.58	1.06
Latin America and the Caribbean	0.90	-0.90	-0.71	-1.21	-1.34	-1.73
Japan	3.86	3.30	2.91	3.71	2.02	0.99
China	6.14	9.31	4.87	4.01	2.76	2.60
Brazil	1.09	-1.71	-1.50	-2.21	-2.11	-2.26
Chile	2.35	-3.23	2.05	1.48	-1.31	-3.54

Source: IMF World Economic Outlook, April 2013.

to the 2008 crisis. The European Periphery—along with Iceland, the United Kingdom and the United States—was recording record current account deficits financed by increased borrowing from abroad, also in record volume. By 2008, Iceland's current account deficit was 28 percent of GDP, Greece's was 15 percent and Portugal and Spain's current account deficits were in the 9 to 13 percent range. Like many capital flow bonanza episodes of the past, this one would end just as badly.

The trends in the current account directly map to the observed trends and important regional differences in external indebtedness.

In contrast to previous periods of global economic turmoil, Latin America was remarkably well positioned to weather the headwinds of the Great Recession. Nowhere was this better seen than in a comparison of global external debt figures. As figure 1 demonstrates, Latin America had among the lowest levels of external debt in the world during the six years preceding the financial crisis. Not only that, Latin America was deleveraging at an extraordinarily fast pace, resulting in debt levels the rivaled those of the early 1970s, among the brightest periods of Latin American economic growth.

Figure 1 (from Reinhart and Rogoff, this volume) is based on 2003-2009 gross external debt as a percent of GDP. The left-hand panel of the figure indicates whether there was an increase in indebtedness to GDP over the 2003-2009 period, or a decrease (deleveraging). The right-hand panel gives the ratio of gross external debt to GDP as of the end of the second quarter of 2009. The group averages are based on a total data set of 59 countries.

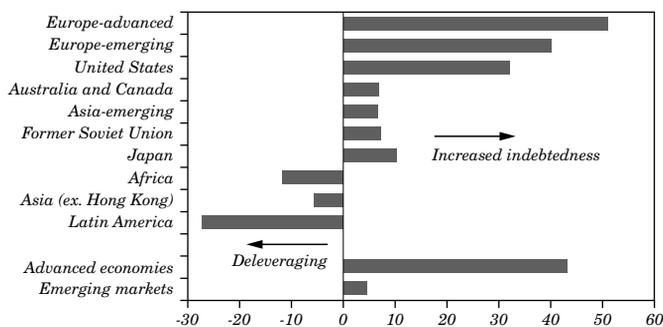
As the right-hand side of the figure illustrates, external debt burdens at the time of the crisis were particularly high in Europe, with an average external debt to GDP ratio across advanced European economies of over 200 percent, and an average external debt to GDP across emerging European economies of roughly 100 percent. A sizable share of the debt is intra-European, but nonetheless external to the country.

Famously profligate Latin America, by contrast to the advanced economies, had gross external debt liabilities averaging only around 50 percent of GDP at the time of the global crisis. Moreover, in contrast to the advanced countries that added an average of 50 percent of GDP to gross external debt during the recent period, Latin American countries actually reduced external debt by more than 30 percent of GDP.

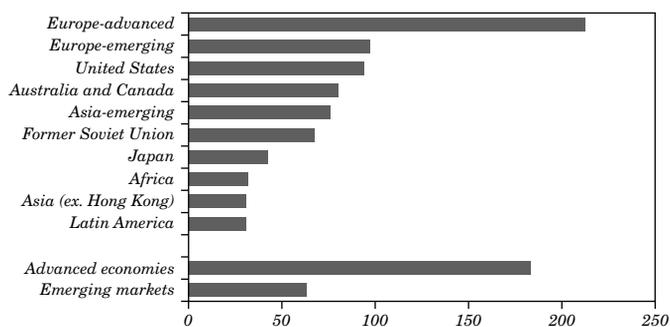
Importantly, Latin America lowered its foreign currency liabilities and shifted away from dollarized to domestic-denominated debt,

**Figure 1. Gross External Debt as a Percent of GDP:
Averages for Selected 59 Countries, 2003-2009**
In percent

A. Change in debt-to-GDP ratio, 2003-2009



B. Debt-to-GDP ratio



Sources: International Monetary Fund, *World Economic Outlook*, World Bank, Quarterly External Debt Statistics (QEDS), and authors' calculations.

Notes: Data for 2009 end in the second quarter. The countries participating in QEDS included in these calculations are listed in what follows by region. *Advanced-Europe*: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, (15 countries). If Ireland were included, the averages would be substantially higher for this group; *Emerging Europe*: Bulgaria, Croatia, Czech Republic, Estonia, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia, and Turkey, (11 countries). *Former Soviet Union*: Armenia, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, and Ukraine (8 countries). *Africa*: Egypt, South Africa, and Tunisia (3 countries). *Asia-Emerging*: Hong Kong, India, Indonesia, South Korea, Malaysia, Thailand (6 countries). *Latin America*: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Mexico, Paraguay, Peru, and Uruguay (12 countries). There are a total of 19 advanced economies and 40 emerging markets.

avoiding one of the major pitfalls of emerging market borrowing. Current accounts (as noted) in most of the region were in surplus, a relative rarity for the region. Indeed, domestic conditions in Latin America were so strong that one could not find a newspaper in the fall of 2008 or in 2009 that ran an article about the possibility of default in Latin America as a result of the global economic meltdown—itsself a rarity.

This sharp deleveraging in the run-up to 2008-2009 is thus intimately connected with the drought in capital inflows to the region for several years prior to 2003. The low levels of external public and private debt at the outbreak of the crisis and the resilience of Latin America in particular, and emerging markets in general, to the crisis of the North, importantly catalyzed further capital inflows to emerging markets after the crisis. As the inflows persisted beyond 2010, current account surpluses became smaller, eventually giving way to deficits in a number of countries; old vulnerabilities had re-emerged.

2.1 The Drivers of Capital Inflows: Push or Pull?

There is considerable literature dating back to the early 1990s on whether capital flows to and from emerging markets are primarily driven by external or “push” factors such as international interest rates, commodity prices and general economic conditions in the world’s financial centers, or by domestic “pull” forces, which often cite structural reforms, inflation stabilization, financial liberalization, or comparatively favorable domestic economic conditions in the recipient country.⁵

The articles by Forbes and Warnock, Fratchzer, Mendoza and Terrones, and Shin (in this volume) contribute to this body of work.

In the context of the post global financial crisis surge in capital flows to emerging markets, the actual and expected growth differential between previously discussed advanced and emerging economies figured prominently among the pull factors cited. It provided international investors with a strong incentive to invest in emerging markets. Of course, this growth differential does not trace out to what extent the accommodative monetary policies in the advanced economies, with their attendant low interest rates and ample global liquidity, helped emerging market growth. After

5. For a discussion and comprehensive bibliography of capital flow bonanzas and their causes, see Frankel (2011).

all, emerging-market banks did not suffer from the domestic credit market dislocations associated with deep banking crises. Furthermore, some of the recipients of large inflows were commodity producers that benefited from the quick and sharp rebound in commodity prices that took place after the crisis. The strength in commodity prices amid widespread recession in advanced economies is often linked to China's spectacular and sustained high rates of growth. Owing to a common view that China was in the process of internal rebalancing and that the country would remain in the high growth path of recent years, the strength in commodity prices was perceived as relatively persistent, leading to relatively high medium-run growth forecasts for these economies as depicted in the IMF projections from April 2011 shown in table 2.

The rebound in economic performance in emerging markets also resulted in the normalization of interest rates, which, *ceteris paribus*, provided an additional pull factor for international capital.

Finally, the resilience to the financial crisis shown by many emerging economies also served to highlight their improved fiscal position (to some extent this is reflected in a previous discussion on the significant reduction in public external debt), financial regulation, and institutional frameworks. While these improvements were the fruits of policies taken after the onset of the Asian and Russian financial crises, they had not been tested yet, and the relatively mild impact of the crisis in some of these countries validated these policies in the eyes of international investors.

Despite all the pull factors mentioned above, the coincidence of capital inflows with the large monetary policy expansions in advanced economies, record lows in nominal (and often real) interest rates; the apparent synchronicity and commonality shown by these inflows across countries, and the difficulties sorting whether the pull factors mentioned above were a cause or a consequence of the flows led many to view the latest episode of surging capital inflows to emerging markets as another example where associated pull factors played a crucial role in explaining the pattern of reallocation of global capital flows.

In principle, both push and pull factors can be cyclical (temporary) and subject to reversals. In practice, there is a tendency to view domestic policy reforms and institutional changes as less transitory than interest rate cycles in the United States and other financial centers or fluctuations in world commodity prices. Thus, the extent to which push and pull factors could explain the pattern of capital flows

Table 2. Real GDP Growth and Projections in 2011

<i>Country group</i>	03-08	2009	2010	<i>Projections</i>		
				2011	2012	2016
World	4.4	-0.7	5.1	4.4	4.5	4.7
Advanced economies	2.3	-3.4	3.0	2.4	2.6	2.4
United States	2.3	-2.6	2.8	2.8	2.9	2.7
Euro area	1.9	-4.1	1.7	1.6	1.8	1.7
Emerging and developing economies	7.4	2.8	7.3	6.5	6.5	6.8
Developing Asia	9.3	7.2	9.5	8.4	8.4	8.6
Latin America and the Caribbean	4.7	-1.7	6.1	4.7	4.2	3.9
Japan	1.5	-6.3	3.9	1.4	2.1	1.2
China	11.3	9.2	10.3	9.6	9.5	9.5
Brazil	4.2	-0.6	7.5	4.5	4.1	4.2
Chile	4.7	-1.7	5.3	5.9	4.9	4.3

Source: IMF World Economic Outlook, April 2011.

remains an important research question—not just to understand the past but to ascertain the odds of future reversals and their attendant macroeconomic dislocations.

Forbes and Warnock (in this volume) build on their previous work on the characterization and determinants of gross capital flows.⁶ While most research on capital mobility during the 1990s focused on net capital flows—the difference between the inflows of non-residents and the outflows of residents—the crisis made apparent that the gross positions behind these net flows could shed important light on the nature of sudden capital movements, and also that gross positions were potentially more important for financial stability concerns than net positions. This point has also been recently stressed by Broner et al. (2013).

In an earlier contribution, Forbes and Warnock (2012) use data on gross inflows and outflows to characterize episodes of waves in net capital flows into surges, stops, starts, and retrenchments. In this taxonomy, *surges* and *stops* correspond to large gross inflows or outflows of capital by non-residents into or from a country, respectively. *Starts* and *retrenchments*, on the other hand, are large gross outflows and inflows of capital from a country's residents. Therefore, a large decline in net capital flows may result from a stop or a start depending on whether non-residents or residents are taking their capital out of the country. Conversely, a large increase in net capital flows may result from a surge or a retrenchment. Also, small movements in net capital flows may mask large movements in gross positions between residents and non-residents. In the last chapter of this volume, the authors extend their previous work using quarterly data on capital flows between 1980 and 2009 to analyze the characteristics of large capital flow episodes before and during the crisis. A key finding is that the majority of the more extreme episodes were fueled by debt flows rather than equity flows. Their analysis shows that equity-led flows respond mainly to country-specific factors and are largely unaffected by measures of global risk or other determinants of contagion. In contrast, debt-led flows are mainly related to global factors and regional contagion, with county-level factors associated mainly with growth shocks playing a secondary role.

A significant empirical regularity in the Forbes and Warnock analysis is that extreme episodes of capital flows are largely debt-

6. See Forbes and Warnock (2012).

related and associated with global factors and regional contagion. Among global factors, the authors find that global risk and interest rates are the most important determinants of extreme debt-related capital flow episodes. The strong association between debt flows, capital flow volatility, external factors, and contagion are in line with the discussion in Reinhart and Rogoff that connects surges in external debt to banking crises, and often sovereign debt crises, with the most extreme illustrations coming from advanced economies (particularly the cases of Iceland and Ireland).

These findings suggest an important role of push factors in the rise of capital inflows to emerging market countries. However, they also mask some heterogeneity in the type of global factor related to each different type of episode. In fact, while both risk and interest rates are associated with stops, surges are related mainly to global risk and growth. According to these results, global interest rates did not play a major role in the probability of a surge of inflows into a country.

Further evidence on the role of push factors for capital flows comes from Mendoza and Terrones, (in this volume). While this paper focuses on characterizing the cyclical patterns around episodes of credit booms, an interesting finding is that credit booms tend to be synchronized internationally, and sometimes culminate around “big events,” such as the Asian and Russian crises, and the 2008 Global Financial Crisis. Since the authors also find that credit booms tend to be triggered by surges in capital inflows, it follows that these surges are, to an important extent, concentrated in time across countries, hinting at the presence of common push factors. Nonetheless, Mendoza and Terrones also find that credit booms have important domestic sources and are often preceded by TFP gains and financial reforms, although with less frequency among emerging compared to advanced countries.

Other recent studies have tried to determine the relative importance of push and pull factors. For instance, Fratzscher (2012) uses monthly data on capital flows from international mutual funds to study the role of push and pull factors in determining such inflows during the period 2005 to 2011. His results show that both types of factors matter, although pull factors or those related to common global economic conditions were the most important ones especially before the onset of the crisis. Domestic or pull factors gained prominence only after the recovery had begun. In a related study, Fratzscher, Lo Duca and Straub (2013) use an event

study methodology to examine the role of quantitative easing (QE) announcements on international equity and bond flows, prices and yields. They find that both QE programs had noticeable effects on the global value of the dollar and induced a relevant portfolio across national borders. The announcement by the Federal Reserve of their intent to “taper” QE policies in the spring of 2013 (which would constitute another event study in the Fratzscher-Lo Duca-Straub approach) set in motion a far reaching sell-off of emerging market currencies and financial assets. One can only speculate that this event may have marked the end of the most recent capital flow bonanza era in emerging markets and would lend further support to their earlier findings.

Hyun Shin’s chapter in this volume also identifies push factors (under the umbrella of global liquidity) as a key contributor to the surge of cross border capital flows observed in the second half of the 2000s and the post global financial crisis era. He highlights the central role of commercial banks in funneling funds from countries where liquidity was abundant, especially the U.S. bank funding market, to countries where expansionary macroeconomic policies were creating massive demand for those resources. This transmission mechanism also reminds us of the importance of policy spillovers and how they can be amplified by private banks (or, more generally, financial institutions). As discussed in the section on policy, the behavior of cross-border lending through commercial banks observed during the buildup to the 2008 financial crisis helps to draw important lessons for the design of regulations that make economies less prone to these costly disruptions.

All in all, the existing evidence regarding the determinants of capital inflows to countries points to both push and pull factors playing a role that varies in significance and in magnitude over time and across countries. However, the synchronization of episodes around big or systemic events, the importance of global factors, and the evidence of spillovers of very specific push measures strongly suggests that large episodes of capital inflows, the so-called surges, are mainly associated with push factors operating at a global level. Policies taken by the largest global economies seem to define a global financial cycle that spills over to the rest of the world. The events of the spring of 2013, following the Federal Reserve’s announcement of its intent to move to a somewhat less expansionary phase of its monetary policy stance, have done little to contradict that conclusion.

2.2 The Consequences: Credit and Asset Price Booms and Busts

Regardless of their causes, the consequences of surges in capital inflows may be a source of concern for policymakers. It is often stated that extreme (in terms of their magnitude, relative to the size of the economy, their persistence, or both) episodes of capital inflows may result in real exchange misalignments that hurt a country's competitiveness. In the extreme, Dutch disease problems may arise or get exacerbated. Surging inflows fuel bubbles in key asset prices, such as real estate, that may threaten financial stability when they burst. A recent body of literature has used the techniques for identifying surges in capital inflows described above to characterize their consequences for credit growth, real exchange movements, as well as equity, and housing prices.

The starting point in this literature is the identification of extreme episodes of capital inflows using a variety of statistical methods and/or relying on events or chronologies similar to some of the methods discussed above. This literature generically refers to these episodes as "surges" or bonanzas (as in Reinhart and Reinhart, 2009) without considering that the finer distinctions depending on the residency of the agents or the types of capital flow differences across papers come mainly from variation in the filters used to define the surge or bonanza (including procedures to set thresholds, cyclical adjustments, etc.).

An issue that has received considerable attention in recent years has been the connection between capital inflow surges and credit booms, and especially their connection to crises. The chapter by Mendoza and Terrones (in this volume) focuses primarily on post 1960 credit booms and their determinants. A key finding of their analysis is that surges in capital inflows are an important determinant of credit booms (indeed, surges temporally precede credit booms), especially, but not exclusively, among emerging markets. As to financial crises, they note that not all credit booms end in crisis but lending booms precede all financial crises. Schularik and Taylor (2012), who focus on a dozen advanced economies over 1870-2009, arrive at similar conclusions.

A related literature has focused more directly on policy design, specifically taking into account the particular features of the relation between capital flows and bank lending. The chapter by Shin shows how the abundance of funding in international financial centers is channeled worldwide by banks, fueling credit expansions overseas and making banks in the recipient countries highly vulnerable to

fluctuations in the availability of wholesale financing. The departing point of his argument is that, contrary to the standard view that fluctuations in a bank's leverage are due to their corporate finance decisions in terms of substituting equity for debt for a given level of assets, these fluctuations are mainly driven by growth in assets with a fixed level of equity. In this setting, banks borrow heavily and increase their leverage during expansions; the macroeconomic vulnerability introduced by rising leverage is discussed further in the next section. Shin documents this hypothesis with evidence from Europe and South Korea, showing that most of the expansion in bank balance sheets is driven by borrowing in wholesale international interbank markets, rather than in expansions of retail deposits.

The effect of capital flows on equity prices in the recipient economies is the subject of the work of Olaberria (in this volume). He studies the relation between cross border flows and equity price boom prices post 1990, paying special attention to the economic conditions that might mediate the relation between those variables. Specifically, he introduces proxies for the level of openness, the quality of institutions and the extent of financial development. Booms in equity prices are defined as deviations from a long run trend. The results from applying this methodology to the data indicate that capital inflows have a sizable impact on equity prices only in emerging economies, which are amplified by low institutional quality and modest financial development. This result, possibly owing to the definition of an equity boom used, is at odds with the episode-by-episode finding in Reinhart and Reinhart (2009) of a general rise in equity prices during the bonanza phase of the cycle. Beyond equity prices, Sá et al. (2011) focus on the nexus between real estate prices, capital inflows, credit and monetary policy in OECD economies up to and including the run-up to the Global Financial Crisis of 2008. Their results suggest that capital inflows have a significant and positive effect on real house prices, real credit to the private sector and real residential investment. Furthermore, the responses of housing variables to capital flow shocks are stronger in countries with more developed mortgage markets.

3. THE DEMISE: FROM INFLOWS TO OUTFLOWS

What happens in the economies that receive significant capital inflows when those inflows either cease (a sudden stop) or are altogether reversed? What if capital market access becomes very

costly or altogether impossible? What becomes of the usually massive accumulation of private and public debt observed in recent years? Can we identify the channels through which disturbances in financial markets affect the real economy? These questions are hardly academic and it has been a source of recurring concerns for policy makers in emerging markets for decades and for many advanced economies more recently. Several of the papers included in this volume offer some insights from different and often complementary perspectives.

Reinhart and Rogoff (in this volume) provide a study of the major trends in private and government debt for emerging and industrialized economies since the late 19th century to the present. As discussed, high levels of domestic and external debt are intimately connected to previous surges in capital inflows (see, for example Mendoza and Terrones) that, in turn, often end in systemic banking crises. The connection between debt and banking crises is “equal opportunity” affecting advanced and emerging economies alike. Banking crises, in turn, usually lead to a sharp deterioration in public finances and, in the most extreme cases, culminate in sovereign debt crises. The toll on output levels and growth is significant. Put differently, as Reinhart and Reinhart (2009) document, the probability of a banking crisis conditional on a capital flow bonanza (or surge) in the preceding three years is significantly higher than the unconditional probability. Comparable statements can be made about sovereign debt, currency and inflation crises. The cumulative evidence that busts so often and predictably follow booms (albeit at uncertain timing) raises legitimate concerns for policymakers of the desirability of the boom in the first place.

While Reinhart and Rogoff primarily focus on public debt (domestic and external) and total external debt (public and private), the chapter by Mendoza and Terrones analyzes primarily domestic credit to the private sector. Taken together these studies *nearly* complete the larger picture of leverage cycles. *Nearly* refers to the fact that shadow banking, off balance sheet transactions, and private and public arrears are all varieties of “hidden debts” that are not captured by the conventional aggregates but often surface only in moments of crises. The Mendoza and Terrones analysis covers all the industrialized countries as well as 40 emerging economies; some of their most novel findings involve comparisons of these two groups. Among their findings is the somewhat surprising fact that the number of credit booms is remarkably similar in emerging and industrialized economies; the rapid increase in domestic bank credit

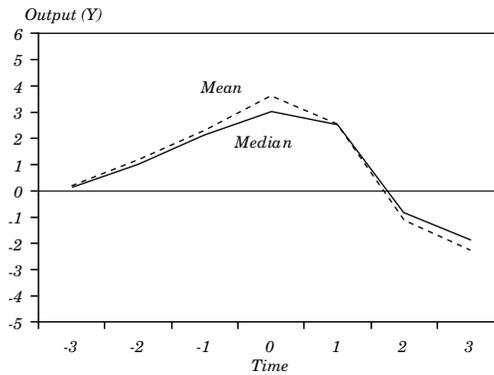
is not a problem confined to less developed economies. An important implication of this is that countries should not expect to put episodes of financial instability behind them as their income level raises, reinforcing the need for appropriate financial supervision. There is no “graduation” from banking crises.

As to the dynamics of output, their analysis provides additional robust quantitative evidence that the capital inflow/credit boom phase is associated with above trend output (figure 2) just as the

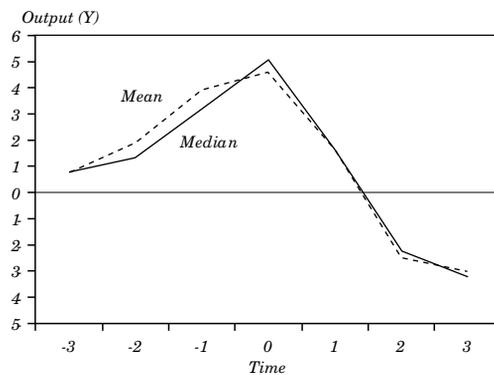
Figure 2. Credit booms and economic activity

Cross-country means and medians of cyclical component of real GDP

A. Industrial countries



B. Emerging economies



Source: Mendoza and Terrones, this volume.

capital flow reversal and credit crunch phase is associated with recession and below trend growth. The patterns are strikingly similar for advanced and emerging economies, with the latter showing deeper recessions in the aftermath of the credit boom. However, in light of the six-year contraction in many advanced economies following the credit boom that culminated in the Global Financial Crises extending their analysis beyond 2010 (when their sample ends) may yield equally severe post-boom recessions in the industrialized economies.

Mendoza and Terrones also show that, consumption and investment fall below their trends in the demise of the credit booms, and that the magnitude is similar in the two groups of countries when the figures are normalized by the wider amplitude of the cycle in less advanced economies. A variable where there are significant differences among these groups of economies is in government consumption. In line with several of the papers in Céspedes and Galí (2012), fiscal policy in EMs is found to expand significantly more above trend in the run up of domestic credit, and contract more deeply in the downturn. As in Reinhart and Reinhart (2009) for capital flow bonanzas, another noteworthy result in Mendoza and Terrones is that the probability of currency crisis, banking crisis or Sudden Stops is higher during the tail end of the credit boom; although, the first two are more common than the third.

Contributing to the analyses of boom-bust cycles, Fuentes and Saravia (in this volume) take an in-depth look into the mechanisms that might explain why real activity declines sharply in the wake of financial market turmoil. They focus on the case of Chile and exploit a unique and rich data set of firms and their financing sources. The data they assemble lists all the banks that have extended loans to firms that have raised capital in domestic financial markets through either bonds or stocks. The balance sheet information of these firms plus the identity of their creditor banks is then merged with the financial statements of the banks, making it possible to analyze firms' investment decisions during recessions and how they are influenced by the banks' financial characteristics. The examination of the question of whether banks increased their leverage the most in the period prior to each crisis showed the sharpest decrease in subsequent lending. Their analysis suggests this is the case and that the firms that contracted loans with the most leveraged banks are the ones that showed the sharpest declines in investment. The novel micro-level evidence on the channels through which disturbances in financial markets during periods of financial distress affect developments in the real economy complements the broader findings already discussed.

4. THE POLICY RESPONSES: FROM CAPITAL CONTROLS TO MACROPRUDENTIAL TOOLS

Given the dire consequences that the financial crises of 2008-2009 had on the performance of many economies, policy makers and the academic community have devoted vast efforts to designing policy environments that can serve two purposes: preventing the onset of another disruption and, if the crisis does take place, mitigating its effects. The papers contained in this volume also touch on these very important issues.

The contribution of Shin has a special focus on policies that pertain to the regulation of the banking sector. He assigns a central role in his discussion of an appropriate regulatory framework to the non-core liabilities of the banking sector. As its name suggests, this source of funds of banks differ from the traditional retail deposits that constitute the traditional resource used by banks to sustain their lending. Non-core liabilities are instead provided by other financial intermediaries and are more volatile than core liabilities. Its volatility and usually quick retrenchment in periods of financial turmoil make them a key element to consider in the design of policies. Among non-core liabilities, Shin gives special attention to cross-border lending channeled by foreign banks and most certainly denominated in a different currency than that of the recipient country.

Shin proposes a useful taxonomy to establish three different types of macroprudential policies, all related to commercial banks: assets side tools, liabilities side tools and bank-capital oriented tools. In each category he discusses the relative merits of mostly well-known policies mentioning, when available, the empirical evidence of their effects in preventing crises. The discussion of policies aimed to curtail the increase in non-core liabilities (that is, liabilities side tools) is perhaps one of the most interesting. These prescriptions have the potential to be welfare enhancing since they can bridge the gap between the private costs of this source of funds that usually comes from outside the country with its full social cost that includes its potential to originate a crisis. Even though the different types of capital controls discussed have seemed attractive in principle, the empirical evidence mentioned by Shin and Fratzscher (also in this volume) casts doubts on their ability to affect the total volume of non-core liabilities contracted by the banking sector. Nevertheless, as Shin mentions, capital controls have been associated with changes in the composition of capital flows biasing them towards those less associated to economic crises.

The issue of capital controls is also analyzed in more depth by Fratzscher in this volume. The author takes an interesting perspective on this important policy discussion. Instead of revisiting the effects of adopting these restrictions to financial flows, Fratzscher examines the motivations that countries have to impose them. This is an important contribution to the empirical literature on this issue and surely has important policy implications. The main conclusion that the author draws from an extensive empirical analysis is that foreign-exchange goals, and not financial stability concerns, are the main drivers of restrictions to the cross-border trade of financial assets. In other words, an intense appreciation of the local currency is the factor that is most important for policy makers when deciding to establish currency controls. A pending issue and one that in all likelihood will motivate further research is if this traditional macroeconomic concern has lost ground to financial stability concerns in light of the increased prominence of macroprudential tools in the recent policy debate. The increased attention on macroprudential tools and capital controls as potential standard elements has been addressed by Ghosh et al. (2011) and Ostry et al. (2011). Those authors argue that even though restrictions to cross-border financial transactions are no substitute for sound macroeconomic policies, they appear to offer some benefits in terms of financial stability and resilience to crises.

In his exposition of macroprudential policies in his chapter of this volume, Shin makes an important point: the interconnection between macroprudential and more traditional macroeconomic policies such as, in particular, monetary policy. One clear example of this is the implications that changes in the interest rate have for short-term capital flows and hence for financial stability. In a world of increasing international financial integration, tighter domestic monetary conditions might be followed by an increase in capital inflows that in itself translates into higher credit growth and spending. The tradeoffs and challenges of coordinating domestic policy objectives in an open economy are the subject of the paper by Schmitt-Grohé and Uribe (in this volume). They present a simple model to illustrate the potential costs of keeping a pegged exchange rate regime in different degrees of financial integration. This work has important implications for the optimal degree of capital account openness for defaulting countries that are members of a currency union.

Reinhart and Rogoff conclude by showing that, according to the historical record, reductions of the debt to GDP ratio have been

achieved through defaults (partial or total), higher inflation or the use of financial repression tools. Which of these surely unpleasant options is ultimately chosen depends on the institutional arrangements in place that constrain the choices of those in charge of economic policy.

REFERENCES

- Broner, F., T. Didier, A. Erce, and S. Schmukler. 2013. "Gross Capital Flows: Dynamics and Crises." *Journal of Monetary Economics* 60(1): 113–33.
- Calvo, G.A. 1998. "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops." *Journal of Applied Economics* 1(1): 35–54.
- Céspedes, L.F. and J. Galí (eds.). 2013. *Fiscal Policy and Macroeconomic Performance*, Central Bank of Chile.
- Dornbusch, R. 1985. "Policy and Performance Links between LDC Debtors and Industrial Nations." *Brookings Papers on Economic Activity* 16(2): 303–68.
- Forbes, K.J. and F.E. Warnock. 2012. "Capital Flow Waves: Surges, Stops, Flight, and Retrenchment." *Journal of International Economics* 88(2): 235–51.
- Frankel, J. 2011. *Monetary Policy in Emerging Markets: A Survey*. In *Handbook of Monetary Economics*, edited by B. Friedman and M. Woodford. The Netherlands: Elsevier.
- Fratzscher, M. 2012. "Capital Flows, Push versus Pull Factors and the Global Financial Crisis." *Journal of International Economics* 88(2): 341–56.
- Fratzscher, M., M. Lo Duca, and R. Straub. 2013. "On the International Spillovers of US Quantitative Easing." Working Paper Series 1557, European Central Bank.
- Ghosh A.R., K.F. Habermeier, J.D. Ostry, M. Chamon, L. Laeven, M.S. Qureshi, and A. Kokenyne. 2011. "Managing Capital Inflows: What Tools to Use." IMF Staff Discussion Notes 11/06, International Monetary Fund.
- International Monetary Fund. 2011. *Tensions from the Two-Speed Recovery: Unemployment, Commodities and Capital Flows*. World Economic Outlook April 2011.
- Mendoza, E. and M. Terrones. 2008. "An Anatomy of Credit Booms: Evidence From Macro Aggregates And Micro Data." NBER Working Papers 14049, Washington: National Bureau of Economic Research.
- Ostry, J.D., M.S. Qureshi, K.F. Habermeier, D.B.S. Reinhardt, M. Chamon, and A.R. Ghosh. 2010. "Capital Inflows: The Role of Controls." IMF Staff Position Notes 2010/04, International Monetary Fund.

- Reinhart, C.M. and V.R. Reinhart. 2009. "Capital Flow Bonanzas: An Encompassing View of the Past and Present." In *NBER International Seminar in Macroeconomics 2008*, edited by J. Frankel and F. Giavazzi Chicago: Chicago University Press for the NBER.
- Sá, F., P. Towbin, and T. Wieladek. 2011. "Low Interest Rates and Housing Booms: The Role of Capital Inflows, Monetary Policy and Financial Innovation." Working Paper 79, Globalization and Monetary Policy Institute, Federal Reserve Bank of Dallas.
- Schularick, M. and A.M. Taylor. 2012. "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008." *American Economic Review* 102(2): 1029–61.