

## Chapter 6

# Policy Implications

When global financial conditions affect domestic conditions, the institutional details of how they are transmitted matter. Designing and implementing policies that address these spillovers need to carefully take these channels into account. As the prolonged period of ample global liquidity starts to fade or comes to a close, a lively debate has begun over the impact capital flows have on the macroeconomic and financial conditions of recipient economies. Standard policy measures may need to be reviewed given the formidable role “supply-push” factors played, the growing significance of capital markets in determining monetary aggregates, and the specific circumstances including sociodevelopment challenges in each economy.

In this chapter, we discuss the range of policy options that can address the impact of global liquidity on domestic financial conditions. Monetary policy occupies an important place in the range of available policy options. But we argue that it may need to be complemented with macroprudential policies that account for financial vulnerability. We then outline the range of available policy options.

### 6.1 Tailoring Policies to Vulnerabilities

The three phases of global liquidity have somewhat different underlying mechanisms. But the policy challenges for recipient economies are equally significant during all three phases. For economies affected by the first two phases of global liquidity—and where economic fundamentals are relatively weak—the policy challenges in the third phase become even more daunting.

Macroprudential policy tools aim to mitigate the buildup of vulnerabilities to financial instability. For the reasons outlined in earlier chapters, the primary aim of macroprudential policy is to secure financial stability by leaning against permissive financial conditions (should they be deemed excessive) and to lean against excessive credit growth.

However, the policy should be aimed at handling vulnerabilities, not banks. Many of the macroprudential policies discussed in this chapter are aimed at banks. But it is important to put policies in the broad context of capital market development. This is especially true in the second phase of global liquidity, when the transmission channel expanded from banks to nonbanks.

The role of asset managers in transmitting global liquidity during the second phase has become a major topic of discussion. Feroli et al. (2014) have provided some analytical background to the role asset managers play in amplifying the procyclical nature of international capital markets. Azis (2014) has also described how the behavior of fund managers when liquidity surges may be optimal privately but not socially. Policy makers have started to highlight this role as well—see, for instance, the speech by Haldane (2014), the Bank of England’s Executive Director for Financial Stability.

To be sure, the 2008/2009 global financial crisis and the unwinding of the first phase of bank-led global liquidity involved much deleveraging. However, past experience does not imply future bouts of financial instability will operate similarly. The financial market’s “taper tantrum” in 2013 and the renewed turbulence in early 2014 were associated with selling pressure in fixed-income mutual funds, especially those holding emerging market debt. Moreover, the outflows involved both retail and institutional investors (Feroli et al. 2014). The US Treasury’s Office of Financial Research (OFR) highlighted just this risk in its 2013 Annual Report (OFR 2013). It said that “yield seeking capital flows across borders, driven by both external and domestic factors, have driven a decline in local [emerging market] bond yields. Markets for emerging market bonds have grown increasingly more sensitive to changes in US interest rates.” Clearly, deteriorating growth prospects in important emerging market economies could have a meaningful impact on the global economy.

The bout of emerging market turbulence in early 2014 showed that financial instability need not be associated with the banking sector, at least directly. Insolvency and the problem of “Too Big To Fail” do not concern long-term asset management investors, as these institutions have little effective leverage and do not threaten insolvency the way banks or highly leveraged hedge funds do.

Nevertheless, the lack of leverage does not rule out a meaningful impact on the real economy through exchange rate, or asset price changes that dampen corporate investment and growth directly. When the local currency yield curve steepens and the domestic currency depreciates, the financial conditions facing households and firms are also affected, with direct knock-on effects on investment, consumption, and output. This will eventually influence the incomes of different households, although the resulting outcome of the influence on income inequality remains to be examined.

Asset managers’ procyclical investment strategies may be derived from several underlying sources. Feroli et al. (2014) explore their concern for relative performance in amplifying market movements. If there are investor pressures to redeem fund products, then procyclical behavior is exacerbated. Chen et al. (2010) present evidence of mutually reinforcing redemption pressures in mutual fund flows, resembling the way bank depositors display run-like responses. More generally,

Vayanos and Woolley (2013) have shown how momentum and reversals result from small agency friction, even with exclusively long-term investors. These findings highlight the need to better understand the market-wide impact of traditional delegated investors.

## 6.2 Macroprudential Tools

Despite the wide-ranging sources of financial instability, those emanating from banks draw most attention, and rightly so. The experience of the first phase of global liquidity and the unwinding of bank excesses serve as a reminder of the importance of finding the right combination of micro- and macroprudential policy tools. Traditional solvency regulations based on minimum capital requirements are a key component of the policy mix. But microprudential tools need to be supplemented by macroprudential ones.

There are many ways to group macroprudential tools for banks. One useful way is to distinguish between (i) bank capital-oriented tools that limit loan growth through altering bank incentives, (ii) asset-side tools that limit bank loan growth directly, and (iii) liability-side tools that limit vulnerability to liquidity and currency mismatches.

### 6.2.1 *Bank Capital-Oriented Tools*

#### 6.2.1.1 Capital Requirements that Adjust Over the Cycle

Bank management of balance sheets is inherently procyclical, as explained in Chap. 3. The rise in asset values that accompanies a boom results in higher capital buffers in financial institutions, supporting further lending in the context of an unchanging benchmark for capital adequacy. During a bust, the value of this capital can drop precipitously, possibly even necessitating a cut in lending.

Current capital requirements can therefore amplify the credit cycle, making a boom and bust more likely. However, capital requirements that lean against the credit or business cycle instead—rise with credit growth and fall when it contracts—can play an important role in promoting financial stability and reducing systemic risk.

We have already commented on some of the measurement issues associated with the implementation of countercyclical capital buffers. The framework envisaged in Basel III has focused on the ratio of credit growth to GDP. There are two preconditions for this to succeed. First, the quantitative signals that trigger actions must accurately reflect the features of policy makers' target (such as excessively loose lending conditions). Second, in implementing them, policy makers must be able to move decisively and in a timely manner to ward off the buildup of vulnerabilities. We have already commented on the first point in Chap. 3. Here, we focus on the second point.

If the trigger for adjusting countercyclical capital requirements is predicated on authorities' discretion and judgment, then market participants and other interested parties will ramp up the pressure. This political economy problem is similar to what central banks face when tightening monetary policy to head off a property boom, for example. As private sector participants—such as construction companies or property developers—benefit from the short-term boom, they can be expected to pressure policy makers or intensify lobbying. These problems will be more acute if there is controversy over the exact stage of the financial cycle or how conclusive the empirical evidence presented by policy makers is.

Thus, these two issues—the accuracy of quantitative indicators and political economy problems—are in fact very closely related. One of the disadvantages of the countercyclical capital buffer is that it relies on the triggering of additional capital requirements in response to quantitative signals. Although these quantitative measures are relatively straightforward in simple theoretical models, in practice, there may be considerable challenges in their smooth and decisive implementation.

### **6.2.1.2 Forward-Looking Provisioning**

Forward-looking provisioning requires the buildup of a loss-absorbing buffer at the time the loan is made—it shares similarities with the countercyclical capital buffer. However, there is a key difference between provisioning and equity in accounting treatment. The forward-looking provision is not counted as bank capital and hence is less likely to influence bank—which targets a specific return on equity. To the extent the bank uses its capital as the base for constructing its total balance sheet, the larger the equity base, the larger the balance sheet, and hence greater use of debt to finance assets. During a credit boom, the buildup of assets using debt financing will contribute to a buildup of vulnerabilities.

Accounting for the loss buffer as a provision rather than equity thus has a potentially crucial effect on bank behavior. By insisting on forward-looking provisioning, bank equity is reduced by the amount of the provision. During a boom, this reduction in bank capital can play an important role in “letting off steam” in the pressure to buildup the bank's balance sheet by removing some of its capital base.

For Spain's banking system, for example, forward-looking provisioning was important in cushioning the initial stages of the global financial crisis. But there is the question of whether building up loss-absorbing buffers by itself can be sufficient to cushion an economy when a major property bubble bursts, as Spain discovered during the recent financial crisis in Europe.

### **6.2.1.3 Leverage Caps**

Caps on bank leverage can limit asset growth by tying total assets to bank equity. The rationale rests on the role bank capital plays as a constraint on new lending, rather than the Basel approach of using bank capital as a buffer against loss.

The main mechanism is the cost of bank equity, regarded by banks as more expensive than short-term debt. By requiring a larger equity base to fund the total size of the balance sheet, a regulator can slow asset growth.

There are some lessons from the Republic of Korea's use of leverage caps. In June 2010, Korean regulatory authorities introduced a new set of macroprudential regulations to mitigate excessive volatility of foreign capital flows. Specific policy measures included explicit ceilings on banks' foreign exchange derivative positions, regulations on FCY bank loans, and prudential regulations for improving financial institutions' foreign exchange risk management. These measures were intended to limit short-term FCY-denominated bank borrowings. They did so by requiring banks to put up more equity capital if they chose to increase volatile debt. The leverage cap on bank foreign exchange derivative positions had some success in limiting banks from hedging forward dollar positions with Korean won carry trades funded by short-term US dollar debt.

#### **6.2.1.4 Loan-to-Value and Debt-Service-to-Income Caps**

Asset-side tools act as direct brakes on bank asset growth, counteracting the superficial and temporary strength of individual bank capital ratios that are inflated due to temporarily depressed risk measures or to higher profitability during booms. Inevitably, there are tools that straddle alternative categories. For instance, central bank reserve requirements are an asset-side tool, but are more naturally discussed in connection with the noncore liabilities levy, as we do below. Here, we begin with loan-to-value (LTV) and debt-service-to-income (DTI) ratios. When monetary policy is constrained, administrative rules that limit bank lending such as caps on LTV and DTI ratios may be a useful complement to traditional tools for bank supervision. LTV regulations restrict the amount of a loan to a maximum percentage of the value of collateral. DTI caps operate by limiting a borrower's debt service costs to some fixed percentage of verified income.

Conceptually, it is useful to distinguish the two motivations for using LTV and DTI caps. The first is the consumer protection motive, where the intention is to protect household borrowers from taking on debt beyond what they can reasonably repay out of wage income. Under this motivation, LTV and DTI rules would be similar to those against predatory lending to uninformed households. Although this is an important topic for consumer protection policy, this is not the motivation relevant for macroprudential policy and is not discussed here.

Instead, the macroprudential rationale for imposing LTV and DTI caps is to limit bank lending to prevent both the buildup of noncore liabilities in funding these loans as well as to lean against eroding lending standards associated with rapid asset growth.

It is important to reiterate why conventional microprudential tools—such as minimum capital requirements—are insufficient to stem excessive asset growth. Minimum capital requirements rarely bite during a lending boom with high bank profitability and low measured risk.

Although LTV ratio caps are familiar tools, the use of DTI caps is less widespread. For the Republic of Korea and Asian economies such as Hong Kong, China, the use of DTI ratios has been an important supplementary tool for macroprudential purposes. DTI rules have the advantage that bank loan growth can be tied (at least loosely) to wage growth. Without this fundamental anchor, an LTV rule by itself is susceptible to the amplifying dynamics of a credit boom, which interacts with an increase in the value of collateral assets, for example, during a housing boom. Even though the LTV rule is in place, if house prices are rising sufficiently fast, the collateral value will rise as well, reducing the rule's effectiveness.

In the case of Hong Kong, China, DTI rules take on added significance due to the US dollar currency board, which prohibits an autonomous monetary policy. In this case, US monetary policy shocks are transmitted directly.

### **6.2.1.5 Loan-to-Deposit Caps**

A cap on the loan-to-deposit ratio limits credit growth by tying it to growth in deposits. The Korean supervisory authority announced in December 2009 it would reintroduce the loan-to-deposit ratio regulation—which had been scrapped in November 1998 as a part of government deregulation efforts. The regulation mandates that the ratio of Korean won-denominated loans to won-denominated deposits should fall below 100 % by 2013. The rationale for this policy was to restrict loan growth by tying it to the deposit base.

With the deposit base as baseline, the definition of what qualifies as a deposit is strict. For instance, negotiable certificates of deposit are not included as a deposit in the denominator when computing the ratio. Although the requirement to meet the 100 % ceiling was set for the end of 2013, banks anticipated the eventual cap and began reducing their LTV ratios ahead of time.

However, one potential weakness is that the rule does not apply to Korean branches of foreign banks. As they supply a substantial amount of foreign exchange-denominated lending to Korean banks and firms, exempting foreign bank branches leaves a loophole. However, it could not have been easily plugged within the loan-to-deposit cap framework because foreign bank branches by their very nature mostly rely on funding from headquarters or from wholesale funding, rather than from local deposits.

For domestic banks, the loan-to-deposit ratio cap has two effects. First, it restrains excessive asset growth by tying loan growth to growth in deposits. Second, there is the direct effect on the growth of noncore liabilities and hence on the buildup of vulnerabilities that arise from the liability side of the balance sheet. In this respect, there are similarities between the loan-to-deposit cap and the levy on noncore liabilities.

Indeed, at the theoretical level, the loan-to-deposit cap can be seen as a special case of a noncore liabilities levy in which the tax rate is kinked—changing from zero to infinity at the threshold. However, the comparison with the noncore liabilities levy is more difficult as the loan-to-deposit cap applies only to loans, not to total assets or total exposure (including off-balance sheet exposure).

### 6.2.1.6 Levy on Noncore Liabilities

Liability-side tools address the buildup of vulnerabilities to liquidity and currency mismatches along with the underpricing of risk on global capital markets. A levy on noncore bank liabilities mitigates the buildup of systemic risk through currency or maturity mismatches. The levy works by counteracting the distortions to global funding conditions and the funding “supply push” by global banks.

As already discussed in earlier chapters, the stock of noncore liabilities reflects the stage of the financial cycle and the extent of underpricing risk in the financial system. A levy or tax on noncore liabilities can also mitigate pricing distortions that lead to excessive asset growth. The “financial stability contribution” recommended by the IMF to the G20 leaders in June 2010 is an example of this kind of corrective tax (IMF 2010).

A levy on noncore liabilities affects overall financial stability in several ways. First, the levy’s base itself varies over the financial cycle. It bites hardest during the boom stage—when noncore liabilities are large—so the levy acts as automatic stabilizer even if the tax rate itself remains constant. Given the well-known political economy challenges facing regulators, this automatic stabilizer feature of the levy may have important advantages.

Second, the levy addresses financial vulnerability, leaving alone the essential financial function of channeling core funding from savers to borrowers. By only targeting noncore liabilities, the levy addresses externalities associated with excessive asset growth and systemic risk arising from bank interconnectedness. In other words, it addresses the “bubbly” element of bank liabilities, rather than the core liabilities of the banking system.

Third, targeting noncore liabilities can address the vulnerability of emerging economies with open capital accounts to sudden capital flow reversals due to bank deleveraging. Indeed, for many emerging economies, a levy on noncore liabilities could narrowly target just FCY-denominated liabilities.

The revenue raised by the levy is actually a secondary issue. Its main purpose is to align incentives. A good analogy is London’s congestion charge—currently an £11.50 daily fee for driving a vehicle into central London. Its main purpose is to discourage drivers from bringing cars into central London, alleviating the externalities associated with traffic congestion. In the same way, the noncore liabilities bank levy should be seen primarily as a tool for aligning the incentives of banks closer to the social optimum. The secondary issue of revenue raised also benefits (perhaps for a market stabilization fund).

In December 2010, the Republic of Korea announced it would introduce a “Macprudential Stability Levy” aimed at foreign exchange-denominated bank liabilities—for both domestic banks and foreign bank branches (the levy became effective August 2011). The rate for the Korean levy was set at 20 basis points for short-term foreign exchange-denominated liabilities of up to 1 year, falling to 5 basis points for liabilities exceeding 5 years. The levy proceeds are held in a special account under the Exchange Stabilization Account, managed by the finance ministry. The proceeds may be used as part of official foreign exchange reserves.

There is a key difference between the Republic of Korea's macroprudential levy and an outwardly similar levy introduced by the UK. In the UK case, the revenue goes into the government's general fiscal account and hence can be regarded as revenue raising. In contrast, the Korean levy is specifically used for financial stabilization.

### 6.2.1.7 Unremunerated Reserve Requirements

Perhaps, the best-known traditional form of capital control is an unremunerated reserve requirement (URR), where the central bank requires capital importers to deposit a specified fraction at the central bank. URRs are frequently used because the central bank runs both prudential policy and macroeconomic management. Also, the central bank normally has the discretion to use URR without the legislative approval required for other forms of capital controls, such as levies and taxes.

Most central banks impose some type of reserve requirement for deposits, especially when they fall under government-sponsored deposit insurance. The rationale for the reserve requirement here is that it acts as an implicit insurance premium paid by the bank in return for deposit insurance.

The macroprudential motivation for URRs is that it imposes an implicit tax on components of financial intermediary liabilities other than insured deposits and will likely have negative spillover effects. The introduction of a reserve requirement for nondeposit bank liabilities would raise the cost of nondeposit bank funding—thereby restraining their rapid growth during booms. In this case, the reserve requirement on nondeposit liabilities has a similar effect as a tax or levy on these liabilities, as we discuss below.

Examples of URRs are discussed comprehensively in an IMF note (Ostry et al. 2011). Chile established a URR in 1991 with a 20 % rate for periods varying by maturity. The rate was subsequently increased to 30 % for a 1 year deposit, regardless of maturity. However, the URR rate was reduced to zero in 1998.

Colombia set up a 40 % URR in 2007, where withdrawals within 6 months subject to a heavy penalty. The rate was increased to 50 % in May 2008. Also, to prevent the loophole of classifying some flows as foreign direct investment (FDI), a 2-year minimum requirement was implemented for inward FDI.

Although URR is an implicit tax on a balance sheet item, the implied tax rate itself will vary with the opportunity cost of funds and hence on the prevailing interest rate. The variability of the implicit tax rate necessitates some adjustment of reserve rates—raised high when interest rates are low. This is potentially a disadvantage relative to other measures.

Another issue is how to manage the central bank balance sheet as a consequence of URRs. The reserves would need to appear as a liability, with implications for fluctuations in the money supply in line with private sector use of nondeposit liabilities and the selection of counterpart assets on the central bank balance sheet.



Although not a core issue, there are also differences in revenue implications between a URR and a levy or tax. The reserve requirement raises revenue to the extent that the net income on assets held by the central bank and funded by the reserves would be positive. Hence, the bigger the interest spread between the asset and liability, the larger the income.

There is one advantage of URRs not shared by the levy—banks would have access to a liquid asset in case of a liquidity shortage or run on the financial market. In this respect, the URR would have some of the features of the Basel III liquidity requirement on banks (BCBS 2010).

However, a disadvantage of the reserve requirement is that it applies only to banks, rather than other financial institutions that use noncore liabilities. When faced with the possibility of arbitrage or with structural changes that shift intermediation from banks to market-based financial intermediaries, the URR would be less effective.

### ***6.2.2 Relative Merits of URR Versus Levies/Taxes***

The time delay between the announcement and effectivity of the Republic of Korea's Macroprudential Stability Levy offers useful lessons on the relative merits of URRs and levies or taxes. The legislative process required to pass a levy can considerably delay policy implementation. For the Republic of Korea, initial discussions began in February 2010, the announcement of the levy was in December 2010, and legislative hurdles were cleared in April 2011, while the levy became effective in August 2011.

With a rapidly changing external environment, such long delays make introducing a levy cumbersome and impractical as a first line of defense. Nevertheless, as in the Korean case, alternative measures that rely on existing legislation or other temporary measures can be used in the interim until the longer-term policy measures come into force.

In practice, the choice between URR and levies or taxes is driven by practical reasons for administrative expediency rather than matters of principle. Typically, the central bank is the best established policy institution with direct contact with financial markets and institutions. This long-established central bank status explains why URRs have been more prevalent than levies or taxes.

There are, however, exceptions. In Brazil, an inflow tax (IOF) was introduced in 1993, and legislation has been in effect since. Although the tax rate was zero during times the tax was not implemented, the infrastructure has been available for “dusting off” as circumstances demand.

Unlike a tax, a URR can usually be removed (or set to zero) more easily because the budget is not directly reliant on its revenues. For a similar reason, the macroprudential levy set by the Republic of Korea has been designed so the revenue has no budgetary implication, precisely to forestall potential political economy concerns.

### ***6.2.3 Relationship with Other Stabilization Policies***

An important consideration when formulating macroprudential policy is its link with broader macroeconomic stabilization policies, particularly monetary policy. In both advanced and emerging economies, monetary policy resonates broadly in securing financial stability.

Here, we focus on the specific macroprudential tools and their link to the debate on capital controls. To the extent, the external environment affecting the global banking system is a key determinant of the vulnerability of an economy to financial excess, considering macroprudential policies cannot easily be separated from the active debate on the merits of capital controls. The IMF has suggested the more neutral term “capital flow management,” rather than the more emotive “capital controls” (IMF 2011).

Indeed, some macroprudential tools have many attributes similar to tools used in capital controls. For this reason, the IMF suggested classifying policies in terms of capital flow management (IMF 2011). It categorizes three types of macroprudential tools:

- (i) Prudential tools have a primarily domestic focus and are not aimed at correcting capital flow distortions. Examples include LTV rules, caps on the loan-to-deposit ratio, and leverage caps, among others.
- (ii) Currency-based tools are prudential measures that address vulnerabilities originating from distortions in the external environment—such as global liquidity conditions—but which restrict activity or impose costs based on currency distinctions rather than on investor residency. Examples include the Republic of Macropudential Stability Levy on short-term foreign exchange-denominated bank liabilities. As discussed in Chap. 5, this is the most preferred kind of policy measure.
- (iii) Residency-based tools are traditional capital controls that restrict activity or impose costs based on an investor’s residence. Examples include administrative restrictions on ownership and taxes on portfolio inflows—the IOF currently imposed by Brazil.

Capital controls raise a complex set of issues concerning their ultimate objectives—whether the objective is to hold down the exchange rate or limit the total volume of inflows to slow exchange rate appreciation. These issues merit a separate discussion and do not concern us here. In this chapter, we focus exclusively impact of macroprudential policies on financial stability.

Capital controls have two broad rationales. The first is as a macroeconomic policy tool designed to lean against exchange rate appreciation. The second is as a prudential tool used for bolster financial stability. We do not have much to say about the first objective. The IMF’s paper from its Strategy, Policy and Review Department discusses the variety of capital control tools and their rationale (IMF 2011).

The distinguishing feature of capital control tools is that they discriminate based on investor residence—whether the investor is domestic or foreign. Tools include

inflow taxes, such as Brazil's IOF, as well as administrative measures that restrict or ban certain activities or investments that foreign investors can hold.

Although capital controls have been used to affect the pace of exchange rate appreciation, the evidence on their effectiveness remains controversial. However, there is much better evidence on the implications of capital controls on financial stability.

There is a strong empirical association between capital controls on the one hand and less severe forms of both (i) credit booms and (ii) foreign exchange borrowing on the other. From this perspective, the global financial crisis can be regarded as a natural experiment for the effectiveness of capital controls. There are also important implications for monetary policy autonomy.<sup>1</sup> Capital controls channel into financial stability through their effect on the composition of capital flows rather than their total amount. De Gregorio et al. (2000) and Cardenas and Barrera (1997) show capital controls are likely to tilt the composition of inflows away from short-term and debt claims toward longer-term claims with more benign financial stability implications. The survey paper by Magud et al. (2011) conducts a "meta-analysis" of existing survey literature on the effects of capital controls. Their results are based on a meta-analysis of 37 empirical studies, with four main findings. Capital controls (i) make monetary policy more independent; (ii) alter the composition of capital flows; and (iii) reduce real exchange rate pressures (although the evidence on the latter is more controversial). However, they (iv) do not reduce the volume of net flows (and hence, the current account balance).

To the extent capital controls have an effect on the composition of capital flows and the likely pace of currency appreciation that gives additional autonomy to monetary policy, both features appear to point to some role of capital controls within the broader macroprudential policy framework.

### 6.3 Financial Integration and Institutional Design

There are important variations in both legal form and funding model for a foreign-related bank. Subsidiarization is a distinction on its legal form—whether it is a domestically incorporated subsidiary or a branch of the parent bank—while the funding model is about the composition of the liability side of the balance sheet. It is important to distinguish whether the bank is funded mainly from local deposits or is substantially reliant on wholesale funding, either from the parent bank or from the wholesale funding market. We have already discussed how bank procyclicality appears to be intimately tied to its funding structure. When lending expands faster than its core deposits, the bank typically migrates to using noncore, wholesale funding to finance lending growth. As such, if foreign-owned banks rely

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<sup>1</sup> For example, capital controls allowed the Chilean central bank to target a higher domestic interest rate over a 6–12 month period.

on wholesale funding for a substantial part of their lending, then procyclicality would be built into their balance sheet management.

For instance, foreign-owned banks in Central and Eastern Europe hold the legal form of subsidiaries. While these raised considerable local funding in their host economies, a key type of cross-border credit flow was interoffice funding channeled from their Western European parents. In this way, the operations of foreign-owned banks enabled a faster rate of credit growth than otherwise would have been possible. Conversely, fast repatriation of funding by the parent at the height of a crisis could create a credit crunch and endanger financial stability in the host economy. A major foreign bank's decision to contract lending in a host economy will lead to a slowdown in economic activity, which in turn may affect the decision of other foreign lenders—implying the host economy may find funding abruptly cut. Hence, in such a situation, there is a clear externality and a need for international cooperation.

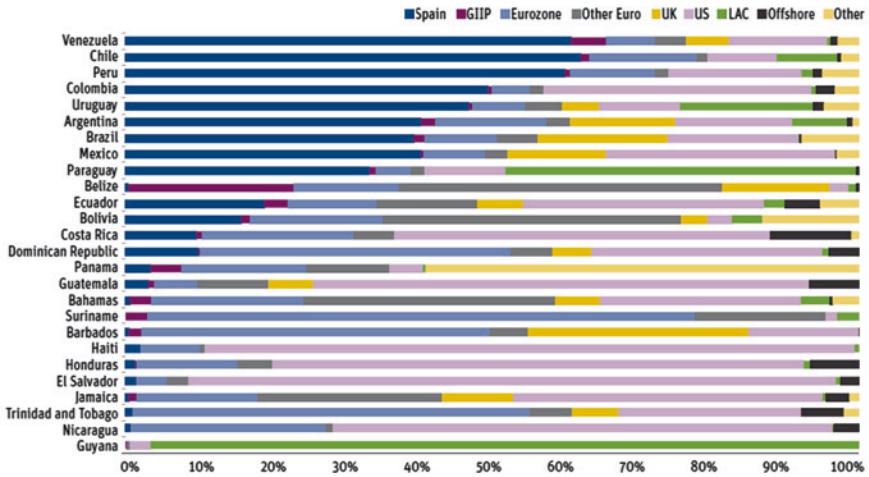
As noted by the BIS (2010), many (non-Spanish) European banks use a centralized funding model in which US dollar funds are deployed globally through a centralized portfolio allocation decision. Some of the funds raised will thus flow to Europe, Asia, and Latin America—where global banks are active local lenders. At the margin, the shadow value of bank funding will be equalized across regions through the portfolio decisions of the global banks, so they become carriers of dollar liquidity across borders. However, the BIS report also notes that Spanish banks pursued an “arm's length” approach when managing subsidiaries. The fact that foreign-owned banks in Latin America have been owned by Spanish parent banks has translated into a funding strategy in which most of the funding has been domestic (local) deposit funding, backed up by more stringent local regulations than found in many advanced economies. In particular, Santander and BBVA subsidiaries are among the most important banks in the region.

Nevertheless, the large presence of Spanish banks has also been a source of concern for Latin American policy makers on the banking system's exposure to Europe's financial crisis. The “arm's length subsidiarization model” cushioned Latin America from the deleveraging shock of the global financial crisis.

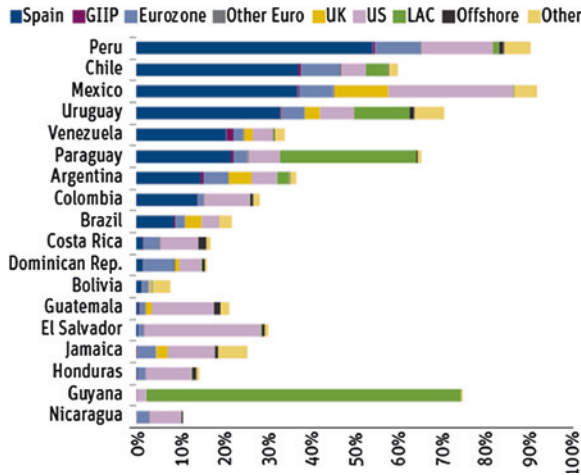
A recent Inter-American Development Bank (IADB) report contains a detailed analysis of foreign banks in Latin America and their European bank exposure (IADB 2012) (Fig. 6.1).

As can be seen, Spanish banks are the most important holders of foreign claims, followed by the US. As a consequence, foreign claims are quite important and concentrated in Spanish banks, reaching about half of domestic credit in Peru (Fig. 6.2). Foreign banks have been an important source of financial deepening and “bancarization” of important segments of the population.

However, as already mentioned, most foreign claims are local claims (Fig. 6.3). Local funding in domestic currency reduces exposure of the Latin American banking system to foreign financing. It is interesting to note that some economies, such as Mexico—which has one of the largest levels of foreign claims with respect to domestic credit—is also an economy where international claims are only about a quarter of foreign claims. Therefore, despite the significant relevance of foreign banks in terms of credit, they are still financed primarily by local funds.

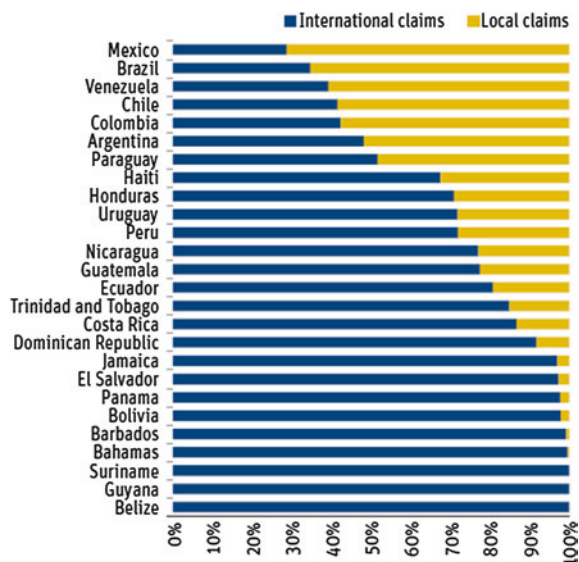


**Fig. 6.1** Foreign claims of BIS-reporting Banks on Latin America and the Caribbean (as of 2011Q2). *GIIP* Greece, Italy, Ireland, and Portugal; *UK* United Kingdom; *US* United States; *LAC* Latin America and the Caribbean. *Source* IADB (2012), data from *Consolidated Banking Statistics* (immediate borrower basis), Bank for International Settlements (*BIS*)



**Fig. 6.2** Foreign Claims of BIS-reporting Banks on Latin America and the Caribbean (as of 2011Q2, % of total bank credit to domestic sector). *GIIP* Greece, Italy, Ireland, and Portugal; *UK* United Kingdom; *US* United States; *LAC* Latin America and the Caribbean. *Source* IADB (2012), data from *Consolidated Banking Statistics* (immediate borrower basis), Bank for International Settlements (*BIS*), and *International Financial Statistics*, International Monetary Fund

**Fig. 6.3** Composition of foreign claims of BIS-reporting banks on Latin America and the Caribbean (as of 2011Q2). *Source* IADB (2012), data from *Consolidated Banking Statistics* (immediate borrower basis), Bank for International Settlements (BIS)



The proportion of local versus international claims implies differences in terms of banking procyclicality. While cross-border flows have significant comovements with global financial conditions (and Latin America did not escape this during the global financial crisis), local funding provides a more stable financing source. Indeed, while international lending fell in most Latin American economies during the 2008/2009 crisis, economies such as Brazil and Chile saw foreign claims actually increase, indicating that local funding more than offset the decline in cross-border lending (IADB 2012).

We can contrast the Latin American case with Asia. Spanish banks have far less exposure to counterparties in Asia. If we examine the percentage of total credit taken up by foreign claims of BIS-reporting banks, the presence of Spanish banks is far less visible in Asia compared with Latin America. Overall, foreign claims as a share of domestic credit are a much larger fraction in Latin America than in Asia. Examining the breakdown of the foreign claims between local and international claims, data also show the greater reliance of Asian economies on international rather than local claims. While about 60 % Latin America's foreign claims are local, this fraction declines to 40 % in Asia.

The evolution of cross-border and foreign claims did not prevent a reduction in domestic credit after the Lehman collapse, but the evidence suggests it was not necessarily triggered by especially procyclical foreign bank behavior. Indeed, the recession that followed the crisis came with a severe reduction in domestic credit. This was not simply due to tightened financial conditions on the side of lenders, but also a decline in credit demand.

Still, it is possible that in this banking model—based on multinational bank subsidiaries—there may still be strong local bank dependence on the economic health of the parent's financial system. Chile's experience illustrates how the local banking

system can, over time, accommodate increased tensions in foreign funding. Chile's foreign debt from peripheral Europe—which includes Spain—has been declining sharply. Indeed, foreign bank affiliates have reduced lending from peripheral Europe from about 15 % in early 2010 to less than 3 % in 2012. There has been an important substitution from direct loans from peripheral Europe to bond issuance.

This evidence has a number of implications. Most importantly, Latin America—severely affected by international financial turbulence in the past—showed unusual resilience during the global financial crisis. High levels of indebtedness, weak banks, and currency mismatches were among the amplifying factors of previous bouts of global financial turbulence, especially in the 1980s and 1990s. This time has been notably different, despite its European bank exposure.

## 6.4 Policy Choices

What are the policy choices available? The Republic of Korea's experience makes it a good example to consider. It was hit hard by the 1997/1998 Asian financial crisis and was again severely affected by the financial turmoil after the Lehman Brothers failure in September 2008. In both cases, the source of vulnerability was the rapid buildup of short-term FCY bank liabilities. Recognizing this, the authorities introduced a series of macroprudential measures beginning in June 2010 to build resilience against capital flow reversals in the banking sector and the associated disruptions to domestic financial conditions. The first policy measure (announced in June 2010) was a leverage cap on the notional value of FCY derivatives contracts (encompassing currency swaps and forwards) that banks could maintain. For foreign bank branches, the leverage cap was set at 2.5 times their capital, while for domestic banks the cap was 50 % of their capital. Foreign banks could, in principle, increase their positions by allocating greater capital to their branches in the Republic of Korea, but the leverage cap lowers the return to capital for banks engaged in this segment of their business, thereby serving as a disincentive to expand their derivative positions.

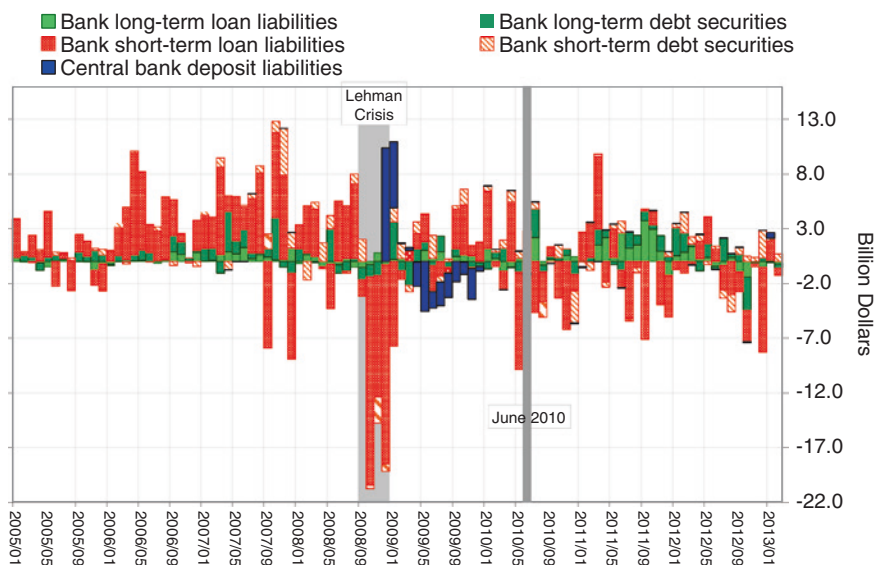
The second component was the levy on the noncore liabilities of the banks mentioned earlier, the “Macroprudential Stability Levy” (see again the results of policy prioritization in Chap. 5). To recap, the levy consists of an annualized 20 basis point charge on nondeposit FCY liabilities with maturities up to 12 months. Lower rates are applied in a graduated manner to maturities over 1 year. The proceeds of the levy are paid into a special segregated account of foreign exchange reserves, rather than into the general revenue of the government. In this respect, the levy was designed from the outset as a tool for financial stability rather than for fiscal purposes. This contrasts with the outwardly similar bank levies introduced by several European economies after the global financial crisis. Also, by only targeting noncore liabilities, the levy was designed to address bank procyclicality, not the intermediation of core funding from savers to borrowers. The noncore liabilities levy was relatively novel compared with more standard capital-related or

capital control tools such as URRs. Again, as mentioned earlier, it took 18 months from the time it was first mooted (February 2010) until effectivity (August 2011).

Bruno and Shin (2014) give a preliminary empirical assessment of the impact of the macroprudential measures. Their assessment is based on a panel study in which the Republic of Korea is one of 48 economies in a sample including both advanced and emerging economies. Their approach is to treat other economies as a comparison group and ask how the Republic of Korea's susceptibility to global supply-push factors in terms of capital flows compares with others during the sample period. Having obtained a benchmark for comparison from this cross-country panel study, they then ask whether the empirical relationship between the Republic of Korea and the comparison group changed in any noticeable way following the sequenced introduction of macroprudential measures beginning in June 2010.

They found that capital flows into the country did indeed become less sensitive to global supply-push factors after these measures were introduced. Interestingly, this change in sensitivity to global factors stands in contrast to other economies in the region. Clearly the experience in the Republic of Korea is the opposite of what happened in Australia, Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam, where sensitivity to global factors actually increased after June 2010.

Short-term bank liabilities in the Republic of Korea continued to shrink after 2010 and were replaced by long-term liabilities in the form of long-term securities and loans (Fig. 6.4). The panel regression study allows for a more rigorous assessment of the policies by examining the country's experience compared with



**Fig. 6.4** Monthly capital flows to the banking sector in the Republic of Korea. *Source* Bank of Korea



other economies. The results confirm the impression that its sensitivity to global supply-push factors decreased after introducing macroprudential policies.

The measures used should be seen in the context of the broader debate on macroprudential policies. The evidence suggests that macroprudential measures aimed at enhancing financial stability may be effective in mitigating vulnerability to external financial shocks.

Although the above example pertains specifically to the Korean case, a similar measure can be considered in other emerging Asian economies where the banking sector experiences a surge in noncore liabilities. The key challenge for policy makers in general is to identify vulnerabilities. While each economy's circumstances may differ, broad principles can be useful. For economies with open capital markets, bank-led capital flows are key indicators of financial vulnerability. During a boom when bank assets are growing rapidly, the funding required outstrips the growth of the domestic deposit base. The gap is often filled by capital flows from international banks and is reflected in the growth of short-term FCY-denominated domestic bank liabilities. As such, short-term FCY bank liabilities can be viewed as being volatile noncore liabilities of the banking sector. For economies with relatively closed financial systems, where domestic banks do not have ready access to funding provided by the global banking system, a better approach would be to adapt existing conventional monetary aggregates to address financial stability. The key distinction is not how liquid the claims are, but rather who holds them. The distinction between household retail deposits and corporate bank deposits plays a particular important role.

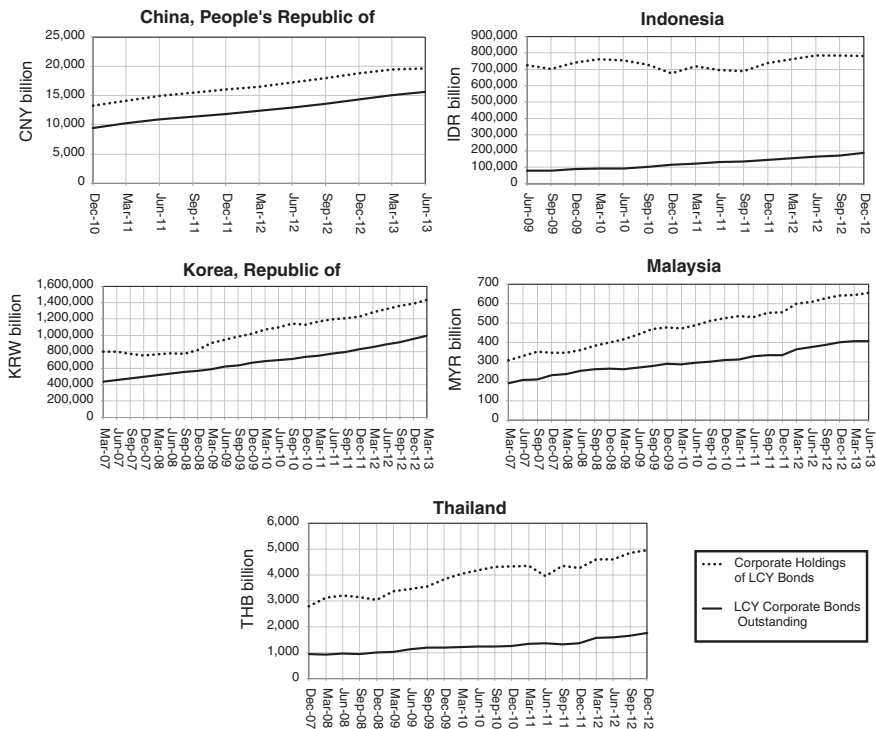
Entering the third phase of global liquidity, emerging Asia faces a different set of policy challenges. With the reversal of capital flows, policy makers must deal with depreciating currencies, an economic slowdown, falling asset prices, and rising inflation. While this may look like a standard case, two circumstances distinguish it from a classical financial crisis. First, the trigger of capital outflows is a decrease in perceived risk in the US, not changes in emerging Asia's fundamentals. Second, capital markets in emerging Asia have grown steadily since the 1997/1998 crisis, meaning monetary aggregates are no longer influenced solely by monetary policy—the effects on the balance sheets of various institutions should be gauged more carefully.

Given the enormous size of the capital inflows, it has become more difficult to restore the equilibrium by using domestic economic policies when flows reverse. Dealing with structural issues that enhance efficiency and productivity can improve current accounts and fiscal balances. This is important, but requires medium-term policies. Countering the perception of relatively lower US market risk by raising domestic interest rates is far less effective compared with raising rates when outflows are driven by deteriorating domestic conditions. Only a very large increase in interest rates may be able to counter such outflows, but the risk of a recession can be huge. Confidence will likely deteriorate, fueling more capital outflows and thereby weakening the currency further—in a scene reminiscent of the 1997/1998 Asian financial crisis.

As capital markets in emerging Asia developed over the years, domestic agents and institutions have taken advantage by holding financial assets to safeguard returns.

Firms needing to secure long-term financing without risking a currency mismatch can raise funds through capital markets. Since the 1997/1998 crisis, more governments in Asia have also started to use local currency bond markets for budgetary purposes. Most of these securities are held by the banking sector. In this environment, the quality of a bank’s balance sheet is influenced by mark-to-market prices or the value of financial assets it holds. Lower prices of bonds may help issuers to raise inexpensive fund, but lower value of bond holdings hurts the bank’s net worth.

Figure 6.5 shows the trend of LCY bond holdings and bond issuance among corporates—including banks and nonbank financial institutions—in selected economies in emerging Asia. As argued in Azis and Shin (2013), in all cases, holdings exceed issuance, and in some economies, the gap is quite sizable. In Indonesia, for example, bond holdings are almost eight times bond issuance. If bond prices were to fall due to rising yields prompted by higher interest rates, the asset values on corporate balance sheets would likewise deteriorate. Some firms with strong fundamentals and ample liquidity may be able to withstand the pressure, but others,



**Fig. 6.5** LCY corporate bonds outstanding and corporate holdings of LCY Bonds. *LCY* local currency. *Notes* (1) “Corporate” includes banks, nonbank financial institutions, and other corporate entities. It excludes government institutions, foreigners, and individuals. (2) “Corporate Holdings of Bonds” include holdings of both government and corporate bonds. *Source* AsianBondsOnline

such as small banks, may be unable to do so. Banks without ample liquidity and a relatively large amount of nonperforming loans would be in a very difficult position. Thus, what started as a liquidity problem could easily become one of solvency.

As emerging Asia continues to expand its capital markets, defending the exchange rate by raising interest rates carries a bankruptcy risk for domestic firms. Allowing the currency to slide without much intervention will not only avoid insolvency, but also help preserve foreign exchange reserves. But if this path is taken, the economy still has to confront three risks: (i) imported inflation; (ii) rising foreign debt payments; and (iii) deteriorating market confidence due to a weakening currency. Of these three, only the last is a short-term challenge. The first two, while important, cannot be resolved immediately.

To deal with the problem of imported inflation, import dependence must be reduced, especially for exporters. But that requires structural change and medium-term policies in technology, education, the business environment, and investment incentives, among others. The problem of increased debt payment is linked to a debt structure in which the portion of FCY-denominated debt with short-term maturities is high—the double mismatch problem. Policies that discourage or even penalize this behavior are either ineffective or have only medium-term impact. More extreme policies—such as debt rescheduling or debt default—can backfire as investors may shun the market further.

That leaves us with the most unpredictable component—the confidence factor. Economic fundamentals can certainly play a role. Lowering current account and fiscal deficits, for example, will help restore investor confidence. Yet, this requires making changes in the production-cum-export structure and expanding the tax base, not a short-term solution. Cuts in imports of certain goods may help, but at the risk of falling investment and retaliation from trading partners. Allowing easier product exports—such as unprocessed materials—may quickly boost exports, but at the cost of stifling high value-added production-cum-exports, not to mention degrading the environment (resource depletion). Thus, the unknown aspect of market confidence is the most difficult to deal with. Regulators and the corporate sector also have a vital part to play, for example, by making mark-to-market accounting more flexible to prevent a downward spiral in asset prices.

Markets are neither to be fought with nor surrendered to. New policy packages taken by the authorities may be a necessary (albeit insufficient) condition for restoring market confidence. Fully restoring market confidence usually involves some measure of guarantees, direct financial resources, or establishing precautionary funds such as swap agreements and emergency external funds—including international and regional organizations, along with multilateral banks. Even with macroprudential policies, domestic financial safety nets may be inadequate in dealing with financial instability due to the size and volatility of capital flows. In such cases, regional financial safety nets can be useful. The Chiang Mai Initiative Multilateralized (CMIM) is an example within the ASEAN+3 framework. To the extent the power of an individual economy's safety nets is relatively limited—and in some cases nowhere near a match for damage enormous capital flows can

cause—regional cooperation in providing financial safety nets can complement domestic efforts and existing bilateral swaps (Azis 2012). It can also minimize the probability of contagion, both intra-regional and external.

We have shown in Chap. 5 that when banks are getting more risk-taking, increased capital inflows can exacerbate the socioeconomic problems of unemployment, income inequality, and poverty. To ensure that banks behave more prudently, imposing a macroprudential policy is necessary. We have also shown that when socioeconomic objectives are included in the overall goal, a certain type of macroprudential tools can be more favorable than others. Given policy makers' strategic goal is to achieve the most balanced mix of (i) macroeconomic stability; (ii) micro and financial stability; and (iii) improved socioeconomic conditions, each available policy's relevance and contribution to attaining the right balance is assessed in terms of its benefits (*B*), the opportunities it can provide (*O*), as well as its associated costs (*C*) and risks (*R*). After considering a set of criteria for each component, three policy options are considered (i) promote direct investment abroad during the tranquil period; (ii) impose a levy on noncore bank liabilities; and (iii) strengthen regional financial safety nets. All three are important, but prioritizing them is necessary. Quantifying the weight of elements under each policy's BOCR, policy analysis suggests that encouraging outflows during tranquil periods is superior because it can help stabilize net flows in times of market turmoil, while at the same time strengthen competitiveness as the exchange rate weakens. But taking a one-sided approach by looking at only potential benefits and neglecting potential costs and risks is less than desirable. Indeed, by taking into account the costs and the risks of each alternative measure, encouraging capital outflows is not best. Imposing a levy on bank-led flows is most preferred. From a welfare perspective, the resulting financial market stability feeds into the real economy, boosting factor income rather than returns on financial assets. It suggests that imposing a levy as a macroprudential tool will not only reduce the risk of financial instability but also improve the socioeconomic conditions including income inequality.

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## References

- Azis IJ (2012) Asian regional financial safety nets? Don't hold your breath. *Public Policy Rev* 8(3):321–340
- Azis IJ (2014) Asia in a changing global liquidity: dancing with the system. *Indonesian Q* 42(2):80–98
- Azis IJ, Shin HS (2013) How do global liquidity phases manifest themselves in Asia? Asian Development Bank, Manila

- Bank for International Settlements (2010) Funding patterns and liquidity management of internationally active banks. CGFS papers 39
- Basel Committee on Banking Supervision (2010) International regulatory framework for banks (Basel III). <http://www.bis.org/bcbs/basel3.htm>
- Bruno V, Shin HS (2014) Assessing macroprudential policies: the case of South Korea. *Scand J Econ* 116(1):128–157
- Cardenas M, Barrera F (1997) On the effectiveness of capital controls: the experience of Colombia during the 1990s. *J Dev Econ* 54(1):27–57
- Chen Q, Goldstein I, Jiang W (2010) Payoff complementarities and financial fragility: evidence from mutual fund outflows. *J Financ Econ* 97(2):239–262
- De Gregorio J, Edwards S, Valdés R (2000) Controls on capital inflows: do they work? *J Dev Econ* 63:59–83
- Feroli M et al (2014) Market tantrums and monetary policy. US monetary policy forum report. [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2409092](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2409092)
- Haldane A (2014) Age of asset management. Speech, Bank of England. <http://www.bankofengland.co.uk/publications/Pages/speeches/2014/723.aspx>
- Inter-American Development Bank (2012) The world of forking paths: Latin America and the Caribbean facing global economic risks. The Latin American and Caribbean macro report, Washington, DC
- International Monetary Fund (2010) The IMF–FSB early warning exercise: design and methodological toolkit. <http://www.imf.org/external/np/pp/eng/2010/090110.pdf>
- International Monetary Fund (2011) Recent experiences in managing capital inflows—cross-cutting themes and possible policy framework. <http://www.imf.org/external/np/pp/eng/2011/021411a.pdf>
- Magud N, Reinhart C, Rogoff K (2011) Capital controls: myth and reality—a portfolio balance approach. National Bureau of Economic Research working papers 16805
- Office of Financial Research (2013) Annual report to Congress. [http://www.treasury.gov/initiatives/ofr/about/Documents/OFR\\_AnnualReport2013\\_FINAL\\_12-17-2013\\_Accessible.pdf](http://www.treasury.gov/initiatives/ofr/about/Documents/OFR_AnnualReport2013_FINAL_12-17-2013_Accessible.pdf)
- Ostry J et al (2011) Managing capital inflows: what tools to use? IMF staff discussion note SDN/11/06
- Vayanos D, Woolley P (2013) An institutional theory of momentum and reversal. *Rev Financ Stud* 26:1087–1145