4. Macroprudential Tools in Latin America: 
A Primer

The global crisis has highlighted the need to attach greater importance to systemic risk in policy analysis and incorporate a macroprudential perspective in policymaking. This need is especially relevant under external financing conditions conducive to financial and economic excess (asset price bubbles, credit exuberance, and demand booms). Latin American countries already have been using prudential tools for macroprudential purposes and authorities are actively engaged in analyzing systemic risks and deciding on policies incorporating a macroprudential perspective. Despite the emerging agreement on the need to adopt a macroprudential approach, thinking on policy design is still evolving and its implementation will be challenging. This chapter reviews the Latin American experience with macroprudential policies and discusses some general considerations to help guide their use and integration into existing policy frameworks.

The global crisis has highlighted the potential force of financial and real sector interactions. This calls for attaching greater importance to systemic risk in policy analysis and incorporating a macroprudential perspective in policymaking. Current macroeconomic and microprudential frameworks have limitations in identifying and managing systemic risk. They may fail to identify or appropriately handle financial excesses or adverse shocks that pose a risk to the financial system and the economy as a whole (for example, excessive risk taking, overly abundant capital inflows). In this regard, tackling systemic risk represents a new priority for policymakers, with the Lehman collapse as a clear reminder of its potentially non-self-evident nature.

Furthermore, the traditional policy toolkit may be too blunt or lead to difficult policy trade-offs. For instance, very high policy interest rates may prick a bubble, but in the process create a sharp recession or, in some cases, even exacerbate the source of the imbalance (e.g., capital inflows). In this regard, macroprudential instruments may allow a targeted policy intervention, offering finer alternatives to the use of traditional macroeconomic policies, which are more akin to “broad spectrum antibiotics.” Because of this, authorities in Latin America have resorted to complementing the usual policy toolkit with other instruments. Looking ahead, the challenge will be how to set in place a broader framework that assesses and manages systemic risk and its potential amplifying effects in the financial sector, to help smooth the financial and economic cycle.

Embedding a macroprudential perspective in the policy framework has particular importance under external financing conditions conducive to financial and economic excess (asset price bubbles, credit exuberance, and demand booms). The financial systems in the region weathered the recent global financial crisis better than in the past. This was partly the result of improved prudential policies, which were well adapted to country circumstances, including the stage of financial development, and enhanced in light of lessons learned from past crises.

Note: This chapter was prepared by Camilo E. Tovar and Mercedes Vera Martin.

1 Microprudential frameworks can be thought of as those policies limiting the failure of an individual institution by limiting idiosyncratic risks (see discussion below and Crocket, 2000).

2 For a discussion of the role of macroeconomic policies after the global financial crisis, see Blanchard, Dell’Ariccia, and Mauro (2010).

3 Some of these measures affect financial transactions between residents and nonresidents. The distinction between capital controls and prudential measures could be sometimes blurred, because, in some instances, prudential measures are imposed only on nonresidents, and therefore considered capital controls. This chapter does not enter into such distinction and considers measures aiming at financial stability as prudential or macroprudential.

4 For a broader discussion on redesigning the contours of the future financial system, see Kodres and Narain (2010).
financial crises. But improved macroeconomic policies in the region and resilient terms of trade were also important factors; mitigating the severity of the shock to financial systems.\(^5\) Hence, future financial resilience cannot be taken for granted on the basis of the recent experience.

The current economic cycle in the LA region, South America in particular, may prove challenging given the strong economic rebound that may be increasingly accompanied by large capital inflows (see Chapter 2). More specifically, excesses could arise not only through the banking sector (the core of the financial system in the region), but also through other developing markets (e.g., bond or derivatives markets) that may not be under full oversight (see Chapter 3). Therefore, it will be important to incorporate to the extent possible analysis of systemic risk in policymaking to ensure financial and macro stability. International discussions are still evolving about the design of an eventual macroprudential framework, including its perimeter.

This chapter briefly reviews the ongoing international debate on macroprudential policies, including the concept of systemic risk and objectives of these policies. It gives some examples about the international experience with these measures, particularly in Latin America, and concludes with a discussion of the challenges ahead from a Latin American perspective.

**Systemic Risk and Macropuadrential Policy—An Ongoing International Debate**

*What is systemic risk?* Systemic risk can be defined as “the risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to have serious negative consequences for the real economy.”\(^6\) It comprises two dimensions: a cross-sectional and a time dimension.\(^7\) The first takes into account the distribution of risk across the financial and economic system and therefore accounts for externalities across the system (for example, common exposures, interconnectedness). In this regard, information asymmetries about counterparty exposures are at the core of contagion during periods of financial stress, as the recent financial crisis clearly demonstrated.\(^8\) The second dimension considers how system-wide risk evolves and is accumulated over time, along with the two-way links between the financial system and the real business cycle. It accounts for the usual procyclicality of the financial system.\(^9,10\)

From a Latin American perspective, addressing procyclicality is a major policy priority given the prospect of large capital inflows,\(^11\) but attention should also be paid to the lessons of the crisis in advanced economies, particularly on how to assess and tackle common exposures and interconnectedness in the financial system. Moreover, supervision of currency and liquidity mismatches, including those in the corporate sector, remain crucial for the management of systemic risk.

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\(^5\) Greater exchange rate flexibility helped temper the incentives for capital inflows; less procyclical fiscal policies helped moderate the cyclical exuberance; the financial system was not exposed to toxic assets, thanks in part to improved profit opportunities across sectors; and, despite the depth of the global crisis, commodity export prices did not collapse as in the past.


\(^7\) This characterization is from the Bank for International Settlements (BIS). For details, see BIS (2009), Borio (2010, 2009), and Persaud (2009). Earlier references include Borio and others (2001) and Crocket (2000). Similarly, the Bank of England (2009) uses the terms network and aggregate risks, respectively, for the cross-sectional and time dimensions of systemic risks.

\(^8\) Although the collapse of Lehman would not have been identified ex ante as a potential macroeconomic shock, it had systemic financial implications because of the uncertainty regarding exposures (“who holds the losses?”) in a highly interconnected financial system.

\(^9\) For a detailed discussion on policies to deal with procyclicality, see Andritzky and others (2010).

\(^10\) For example, excessive leverage was at the core of financial imbalances in the wake of the global financial crisis, as risk illusion and excessive liquidity led to underpricing of risks.

\(^11\) See IMF (2010e) for a general discussion about global liquidity expansion and the policy response options for “receiving” economies.
4. MACROPRUDENTIAL TOOLS IN LATIN AMERICA: A PRIMER

What is macroprudential policy? Macroprudential policy helps promote financial and macroeconomic stability by reducing systemic risks. For the cyclical dimension, one could think of it as a combination of a set of rule-based tools and limited discretion that helps manage the role of the financial system as a source of shocks and amplifier of economic cycles. It aims to reduce the cyclicality of financial services by leaning against the buildup of risk in the economic upswing and against deleveraging during the downswing to support economic activity. Buffers would act as economic and financial stabilizers. For the cross-sectional dimension, it aims to reduce spillovers generated within a closely interconnected financial network. This requires addressing not only the “too-big-to-fail” problem, but also identifying systemic institutions (from a financial substitutability perspective). In this case, the calibration of prudential tools is institution-specific and requires assessing the systemic significance of individual institutions (i.e., their contribution to overall risk).

How to measure systemic risk? A macroprudential approach requires measuring and identifying the source and extent of systemic risk. The task is far more complex than in other policy areas, where a specific indicator can serve as a target. In particular, it is unlikely that a summary indicator will be able to say whether systemic risk is too high or too low, or whether imbalances will arise or not down the road. Therefore, authorities have to rely on a broad set of indicators that examine the different dimensions of the problem and combine them with doses of judgment to assess the vulnerability of the system. Identifying systemic risk will also require enhanced transparency and greater information disclosure, to limit contagion in times of stress. However, one must keep in mind that this indicators-based approach is imperfect and can fail to take into account key vulnerabilities. A concern is that such a set of indicators may give a positive assessment of the health of the financial system precisely when the system is most vulnerable.

What is the relationship between macroprudential and microprudential policies? The distinction between the micro- and macroprudential dimension of financial stability is best drawn in terms of the objectives (Borio, 2009; Persaud, 2009; and Crocket, 2000). Microprudential policy aims to reduce the probability of default of individual institutions, taking systemic risk as given, whereas macroprudential policy aims at containing risks for the financial system as a whole, to prevent the economic and social costs of systemic financial distress, considering the feedback effects that the behavior of individual institutions have on each other, and on the whole economy. What could be enough to safeguard a particular institution from a narrow perspective (say, by limiting its credit to improve its capital adequacy ratio) might not be enough (or excessive, depending on circumstances) once spillovers to the economy and other players are considered. The distinction between macro- and microprudential policies has less to do with the type of instruments involved. However, the granularity of the former need not be as much as that of the latter (see below).

Proposed instruments. Ongoing international discussions have identified a set of potential tools that could be used to deal with systemic risk. In July 2010, the Group of Governors and Heads of

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12 For example, during the global financial crisis, capital indicators gave a sense of security, but could not capture the liquidity risk, which was not well captured due to accounting practices (mark-to-market) which fueled the self-reinforcing cycle during the crisis (Financial Services Authority, 2009).

13 New methodologies are being developed. For instance, to identify systemic institutions, new approaches are being put in place, such as network analysis, Co-risk analysis, multivariate distress dependence matrix, or “bottom-up” univariate contingent claims to deal with systemic risk (Financial Stability Forum, IMF, and BIS, 2009; and IMFb, 2009).

14 The Data Gaps Initiative (under an interagency group involving the Bank for International Settlements, European Central Bank, Eurostat, International Monetary Fund, Organization for Economic Development and Cooperation (OECD), World Bank, and United Nations) aims at improving official statistics for financial surveillance in light of the crisis, mainly in the areas of interlinkages within the financial sector, exposures of the nonbank financial sector to vulnerabilities; and cross-border exposures of nonfinancial firms.
Supervision have reached broad agreement on the Basel Committee capital and liquidity reform package.\(^{15,16}\) Although Basel III, to a large extent has focused on microprudential concerns, some proposals address macroprudential issues. For instance, in dealing with procyclicality, the proposed tool is a countercyclical capital buffer to be imposed when excess aggregate credit growth is judged to be associated with a buildup of system-wide risk. On forward-looking provisioning, the International Standards Accounting Board (2009) published its proposals for replacing the current incurred loss impairment methodology with an expected loss (or cash-flow) approach. To address cross-sectional risk, discussions have focused on strengthening capital requirements for counterparty credit risk exposures (for example, from derivatives, repos, securities financing). The BCBS also continues to review specific proposals to address the risks of systemic banking institutions, which include a “guided discretion” approach for a systemic capital surcharge in combination with other mitigating regulatory and supervisory measures.\(^{17}\)

Recent Country Experiences with Macroprudential Tools

Country experience with macroprudential measures suggests that policymakers have used a broad range of instruments and applied those to deposit-taking institutions on a discretionary basis. They have used macroprudential instruments mainly to limit financial exuberance and the fallout from the global financial crisis. Countries have taken a pragmatic approach, targeting measures to specific markets or financial channels that were a cause of concern for financial stability. In a survey of macroprudential instruments and frameworks prepared by the Committee on the Global Financial

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\(^{15}\) The agreement was endorsed in September 2010. For details, see Basel Committee on Banking and Supervision (BCBS) (2009, 2010a), and BCBS press release and Annex (2010c).

\(^{16}\) Extracting the benefits of better regulation will also require better supervision. This may involve not only the ability to supervise, but also the will to act in a more intrusive, skeptical, proactive, comprehensive, adaptive, and conclusive manner (Viñals and Fletcher, 2010).

\(^{17}\) The IMF, the FSB, and the BIS produced a set of principles to identify systemically important institutions, markets, and instruments. See FSB, IMF, and BIS (2009).
Table 4.1: Selected Examples of Macroporudential Tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>Definition</th>
<th>Country</th>
<th>Procyclicality</th>
<th>Credit Risk (Assets)</th>
<th>Funding Cost (Liabilities)</th>
<th>Liquidity Inter-connectedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank-specific caps on credit growth</td>
<td>Limits on the quantity of credit taking into account the balance sheet profile of the financial institution.</td>
<td>Brazil, Kuwait, United Kingdom</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Credit ceilings</td>
<td>Limits on the quantity of credit.</td>
<td>Bulgaria, Croatia</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loan-to-deposit limits</td>
<td>Bank funding target to secure that loans are funded with stable sources. In this case deposits rather than, say, wholesale funding.</td>
<td>Hong Kong, SAR, Indonesia, Kuwait</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tightening/loosening along the cycle of:

<table>
<thead>
<tr>
<th>Tool</th>
<th>Definition</th>
<th>Country</th>
<th>Procyclicality</th>
<th>Credit Risk (Assets)</th>
<th>Funding Cost (Liabilities)</th>
<th>Liquidity Inter-connectedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan-to-value ratio caps</td>
<td>Limits imposed on the percentage of the total appraised value of an asset to the loan provided by a financial institution, or time-varying LTV that is adjusted over the cycle.</td>
<td>China, Hong Kong, SAR, Hungary, Korea</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Debt to income ratio caps</td>
<td>Limits imposed on lending through the percentage of consumer’s monthly gross income that goes toward paying debts.</td>
<td>Korea</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Capital requirements</td>
<td>Capital requirement changes depending on the credit or/and economic cycle.</td>
<td>Brazil, Bulgaria, Saudi Arabia</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign exchange lending limits</td>
<td>Limits imposed on lending in foreign exchange taking into account FX mismatches of the financial institution.</td>
<td>Hungary</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Leverage ratio caps</td>
<td>Limits on the leverage of a financial institution.</td>
<td>Canada</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Limits to foreign investment by domestic pension funds</td>
<td>Limits on the amount of securities (eg. Derivatives) owned or owed by the financial agent.</td>
<td>Chile, Colombia, Mexico, Peru</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Limits on the foreign exchange position</td>
<td>Limits on the amount of securities (eg. Derivatives) owned or owed by the financial agent.</td>
<td>Brazil, Colombia, Mexico, Peru</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dynamic provisioning</td>
<td>Bank loan-loss provisioning based on future expected losses rather than past incurred losses. In some cases, bank-specific.</td>
<td>Bolivia, Colombia, Peru, Spain, Uruguay</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Limits on net non-core funding dependence ratio</td>
<td>Restrictions on the degree to which the bank is funding longer-term assets (loans, securities that mature in more than one year, etc.) with non-core funding.</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Minimum core funding ratios</td>
<td>Measures imposing restriction on the structure of funding for financial institutions to ensure they hold sufficient retail and long-dated wholesale funding.</td>
<td>New Zealand</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum liquidity mismatch ratio</td>
<td>Rules ensuring adequate liquidity for financial institutions over a short-term period, in case of funding risks materialize.</td>
<td>New Zealand</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reserve requirements</td>
<td>The reserve requirements (or cash reserve ratio) is a bank regulation that sets the minimum reserves each bank must hold to customer deposits and notes. It would normally be in the form of fiat currency stored in a bank vault (vault cash), or with a central bank.</td>
<td>Bulgaria, Colombia, Indonesia, Peru, Romania</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limits on interbank exposures</td>
<td>Limits based on linkages among financial institutions.</td>
<td>European Union</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources: IMF Staff Review Note (June 2010) and authors’ compilation, based on national sources.
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System (CGFS, 2010), central bankers viewed these measures as those aimed at reducing system-wide financial risks, including traditional microprudential instruments applied to the system as a whole; fiscal measures such as financial transaction taxes; and central bank tools used for system liquidity management (for example, reserve requirements). These measures are usually seen as complements to monetary policy. Table 4.1 lists instruments that have been used recently for macroprudential purposes as well as their main channels of operation (e.g., whether they operate on the asset side or liability side of financial intermediaries).

In the run-up to the global crisis, countries in the region used prudential tools for macroprudential purposes, and recently have started to redeploy them. Latin America authorities have relied not only on traditional prudential tools (for example, leverage ratios, limits on currency and maturity mismatches, limits on credit growth to specific sectors), but also have put in place dynamic loan-loss provisioning systems (see Box 4.1), actively managed marginal reserve requirements (see Box 4.2), and have imposed capital controls or limits on the net foreign exchange position of banks.

Many countries in the region are proactively thinking about ways to analyze interconnectedness, evaluate systemic importance of financial institutions, adjust capital requirements, and implement counter-cyclical capital buffers in line with the international discussions. Furthermore, authorities in the region already recognize the complexity of macroprudential objectives, including the matter of shared responsibility among different authorities. Several countries already have taken steps on the institutional front to bring together different authorities through the creation of bodies responsible for macroprudential policy (e.g., Mexico’s Consejo de Estabilidad del Sistema Financiero), or establishing agreements to improve the exchange of information across regulatory institutions.

To address similar concerns, countries in Asia and emerging Europe also have implemented measures with macroprudential objectives. To manage procyclicality, central banks in the region have used counter-cyclical provisioning, loan-to-value ratios, loan-to-deposit requirements, and direct controls on lending to specific sectors. The authorities have been addressing cross-sectional risks through capital surcharges for systemically important financial institutions, liquidity requirements/funding ratios, and limits on currency mismatches. More recently, measures relating to property lending markets (for example, mortgage lending limits, tightened loan-to-value ratios, or down payment requirements), have been used to temper the surge in asset prices and/or sales in several countries and ease risks of asset bubbles or sharp market corrections in the event of capital outflows. These instruments were calibrated from existing microprudential settings taking into account macroeconomic conditions. Moreover, in line with the Latin American experience, the authorities have also used macroprudential measures to reduce the inflows and associated volatility from speculation in very specific asset markets (for example, limits on banks’ currency derivatives positions and on short-term external loans denominated in foreign currencies).

19 It is important to keep in mind that reserve requirements are also a monetary policy tool. However, its use had been phased out in advanced economies as direct instruments of monetary policy were replaced by indirect (i.e., market-based) instruments, such as interest rates.
21 In the past, countries also relied on reserve requirements on short-term borrowing of banks (e.g., Argentina in the 1990s, and Peru in more recent times).
22 For a discussion on the implications of the global financial regulatory reform for the LAC region, see Rennhack (2009).
23 These agreements aim at strengthening the safety net of the financial systems and improving confidence of the public in the system (e.g., Colombia’s formal agreements for the exchange of information between the Central Bank and the Supervisory Authority).
24 See IMF (2010b, 2010c) for details.
25 See CGFS paper No. 38 for details on experience with measures relating to property lending markets. For instance, an 80 percent loan-to-value maximum is widely interpreted as a norm for residential real estate loans from a microprudential point of view, and tightening of this instrument has taken the form of 10-20 percentage point reductions, some of which were later reversed when conditions in the targeted markets were seen to have normalized.
### Box 4.1. Dynamic Provisioning in Latin America

Dynamic loan-loss provisions are a countercyclical tool that requires the buildup of cushions against expected losses in good times and releases them in bad times.\(^1\) The calibration uses a statistical method to allow for losses that are inherent within the portfolio but which have not yet materialized (Financial Services Authority, 2009). In the economic downswing, some losses are met from the accumulated buffer.

In the region, Bolivia (2008), Colombia (2007), Peru (2008), and Uruguay (2001) have in place systems of dynamic provisioning (Table).\(^2\) In Uruguay, the formula offsets loan delinquencies with provisions—as in Spain—whereas in Peru the system is a GDP-based dynamic loan-loss provisioning rule that is applied equally to all banks. In Bolivia, the system prescribes a general provision on prime quality loans, which can be drawn upon fully during a downswing.

#### Dynamic Provisioning: Cross-Country Comparison

<table>
<thead>
<tr>
<th>Country</th>
<th>Year of introduction</th>
<th>Forms of provisioning</th>
<th>Trigger of rule</th>
<th>Applicability</th>
<th>Form of provisioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uruguay</td>
<td>2001</td>
<td>(i) Individual provisioning; and (ii) dynamic provisioning, which reflects the difference between monthly statistical losses on loans and the realized loan loss in that month.</td>
<td>Depends on individual NPLs.</td>
<td>Depends on individual bank's portfolio.</td>
<td>Cumulative funds gradually build over time.</td>
</tr>
<tr>
<td>Spain</td>
<td>2005</td>
<td>(i) The specific provision covers incurred losses individually identified in specific loans; and (ii) the general provision, to cover incurred losses, not yet individually identified, in homogeneous loan portfolios classified as normal and calculated using statistical procedures.</td>
<td>Depends on individual NPLs.</td>
<td>Depends on individual bank's portfolio.</td>
<td>Cumulative funds gradually build over time.</td>
</tr>
<tr>
<td>Colombia</td>
<td>2007(^2)</td>
<td>(i) Individual provisioning depends on the characteristic of the borrower; (ii) countercyclical provisioning reflects changes in borrower's credit risk due to economic cycle; and (iii) generic provisioning of at least 1 percent of total loan portfolio.</td>
<td>Regulator decides, based on default probabilities, but has also some discretion. Recent revisions will make decision more rule based.</td>
<td>Systemic, but is moving to individual banks.</td>
<td>Cumulative funds gradually build over time.</td>
</tr>
<tr>
<td>Bolivia</td>
<td>2008</td>
<td>(i) Specific provisioning; (ii) generic provisioning; and (iii) countercyclical provisioning, with rates ranging from 1.5 percent to 5.5 percent depending on the type of loan. During a contraction, banks can use these provisions to offset up to half of the additional specific provisions required.</td>
<td>Six consecutive months of deterioration in loan quality (provided that the dynamic provisioning has been phased in fully, and there is no objection by the regulator).</td>
<td>Loan quality is computed for individual banks. However, the regulator takes into account the macroeconomic and sectorial conditions to issue the &quot;no objection&quot; statement required to trigger the rule.</td>
<td>Cumulative funds gradually build over time.</td>
</tr>
<tr>
<td>Peru</td>
<td>2008</td>
<td>(i) Generic provision depends on credit; and (ii) procyclical rate, dependent on GDP growth.</td>
<td>GDP-based.</td>
<td>Systemic.</td>
<td>Procyclical provisioning is discrete, and only implemented once trigger set in place.</td>
</tr>
</tbody>
</table>

---

1. By contrast, capital adequacy ratios (CARs) protect a financial institution against unexpected losses. Although CARs also can be employed to deal with both expected and unexpected losses, provisions lessen fluctuations in recorded bank profitability at business cycle frequencies independently of the solvency of the bank (Borio and others, 2001).

2. The Bank of Spain first introduced a dynamic and forward-looking provisioning system in 2000 to cope with credit risk (Fernández de Lis and others, 2001). The system was intended to account for “latent” risks of homogeneous categories of assets that could lead to expected levels of losses over the business cycle. Provisions were tied to the growth of assets and accumulated in a fund, which could be used to cover loan losses.

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Dynamic provisioning helps lean against the wind.

A recent IMF study compared the Bolivian, Spanish, Peruvian, and Uruguayan provisioning systems using the actual Uruguayan cycle (Wezel, 2010). Each system induces a different path for provisioning (see the figure). For example, the Bolivian and Peruvian formulas yield a smoother path than the Spanish or Uruguayan systems. The comparison leaves open the question of whether the level of provisions is adequate or optimal.

Macroprudential Policy Challenges in the Current Latin American Context

Amid lax global financing conditions (ample liquidity driven by low international interest rates and high risk tolerance) that will likely prove protracted, Latin American countries are currently facing capital inflow pressures that may be conducive to financial excess, including credit booms, asset price bubbles, and domestic demand exuberance, all of which increase systemic risk. Emerging market economies can be especially prone to credit booms and/or asset price bubbles. Lack of exchange rate flexibility and credit constraints can make domestic demand particularly sensitive to external financial conditions. Macroprudential policy would add an additional set of instruments to the policy toolkit, particularly when traditional macroeconomic policies may not be adequate, and would allow addressing financial excess in specific sectors.27

Despite the emerging agreement on the need to adopt a macroprudential policy perspective, its implementation may prove challenging. These policies cannot be seen in isolation and considered a “silver bullet” to prevent the buildup of systemic risk and achieve financial and macroeconomic stability. Macroprudential policies need to be coordinated with macroeconomic policies. Moreover, many issues are still under discussion, which include how to track systemic risk, the level of granularity of the approach (that is, general versus sector-specific tools), the balance between rules and discretion, the perimeter of regulation, institutional arrangements and mandates, coordination and cooperation in

26 Beyond Dutch disease concerns, exchange rate flexibility in some countries may be limited for other reasons, including dollarization and risks of balance sheet effects. In this instance, macroprudential measures could play a bigger role in macroeconomic stability.

27 With large and protracted capital inflows being the potential destabilizing source, capital controls may also play a useful role. See Ostry and others (2010) for details.
Box 4.2. Reserve Requirements as a Macroprudential Tool in Latin America

The use of reserve requirements as a macroprudential tool has gained prominence, especially in emerging economies. The reason is threefold. First, increasing reserve requirements can help contain the pace of credit growth during an upswing, thus operating as a speed limit. Second, increasing reserve requirement in the upswing builds a buffer, that is, a cushion of reserves that can be deployed during the downswing to contain liquidity risks. Finally, they can complement monetary policy at times when the credit cycle is at odds with its goals. For instance, raising interest rates to contain demand pressures in the context of large capital inflows can be self-defeating if exchange rate flexibility is overly limited. Under such circumstances, increasing reserve requirements may substitute for an increase in interest rates. However, these benefits have to be weighed against its potential costs. Reserve requirements are difficult to calibrate and are costly taxes on intermediation. Therefore, their use seems more appropriate when standard and less costly policy instruments are insufficient to achieve financial or price stability (see Vargas and others, 2010).

In Latin America, the central banks of Colombia and Peru have used marginal reserve requirements as a macroprudential tool in the recent past.\(^1,2\) They acted as a speed limit on credit growth during the upswing, as a countercyclical tool to manage capital flows and the credit cycle, and as a liquidity buffer that was built in good times and released in bad times. The central bank of Brazil also used reserve requirements as a device to pump up liquidity to the financial system during the crisis.

In Colombia, rapid demand growth was threatening to overheat the economy by 2006. Credit in some segments (e.g., consumption) was expanding at an annual rate of 50 percent in a context of a highly indebted private sector. Thus in early 2007, to contain the expansion of credit amid increasing capital flow pressures, the central bank imposed marginal reserve requirements on savings, checking, and CD deposits (see the figure). These measures were complemented with the use of price-based capital controls (unremunerated reserve requirements on capital inflows), and limits to derivatives exposures of the banking sector. In September 2008, the central bank removed the marginal reserve requirements in an effort to counteract adverse external conditions and support liquidity needs in the domestic financial system. Colombia did not experience major liquidity problems, and the countercyclical use of reserve requirements gave the central bank additional degrees of freedom to manage the external shock.\(^3\)

\(^1\) By marginal, it is meant that reserves are required on each additional deposit made at a bank from the date on which the regulation is made.

\(^2\) Reserve requirements have also been used countercyclically in other emerging market economies (EMEs), including China and India. For a discussion of the use of reserve requirements in EMEs and some historical data, see Mohanty and Turner (2008).

\(^3\) For a detailed account of the developments and reasons surrounding the policy measures adopted in Colombia prior to the collapse of Lehman Brothers, see Uribe (2009). An analysis of the effects of reserve requirements in Colombia on the interest rate and interest rate pass-through is discussed in Vargas and others (2010).
Box 4.2 (concluded)

In Peru, the central bank has been active in using reserve requirements, in the upswing (prior to the global crisis), during the crisis, and more recently as the new cycle begins (see figures below on Peru). However, its goals may have differed at moments in time. In the upswing and prior to the crisis, the use of reserve requirements was motivated by large speculative capital inflows, which prompted the central bank to intervene in the market to limit exchange rate volatility. Such interventions were sterilized by issuing CDs, part of which were bought by foreign investors. This forced the central bank to switch instruments, specifically long-term deposits that could not be sold to foreign investors, and to impose reserve requirements on local and foreign currency deposits. The aim was to reduce liquidity in the market. At the time the central bank estimated that these measures were effective in reducing the amount of speculative inflows and equivalent to a 50 basis point increase in the reference rate.

The case of Brazil has featured high levels of reserve requirements, allowing the central bank to lower reserve requirements for macroprudential purposes following the Lehman Brothers episode. In particular, to confront liquidity problems in the interbank market, the central bank reduced reserve requirements to support lending from large liquid banks to small illiquid banks (see figure at right). By introducing this liquidity provision mechanism during the crisis, the central bank was able to avoid financial stability problems in the system.

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4 For details on this specific episode of capital inflows to Peru, see Jara and Tovar (2008).
For now, a number of general considerations may help guide the use of prudential tools for macroprudential purposes and help eventually integrate those tools into policy decision making in Latin America.

*Interaction with monetary and fiscal policies.* Macropur planning policies should not be a substitute for fiscal and monetary policies playing a primary countercyclical role. However in a context of external financing distortions contributing to overexuberant conditions, over-reliance on monetary and fiscal policies may be suboptimal and/or inadequate to contain the macroeconomic impact. For instance, interest rate policy could exacerbate capital inflows under conditions limiting exchange rate flexibility, or the fiscal effort required to counter the private sector exuberance could introduce other significant distortions or not be feasible. In such contexts, the use of prudential instruments for macropur planning purposes could effectively add to the macroeconomic policy toolkit. Yet such policies should not substitute for an appropriate degree of exchange rate flexibility, the first and critical line of defense amid capital inflows.

*Broad-range oversight.* Conditions of excess leverage can occur in any segment of the financial system (regulated or shadow) with material externalities to the rest of the system and the overall economy. Macropur planning oversight therefore should encompass the entire financial spectrum and may also require monitoring the balance sheet of the corporate sector.

*Targeted intervention.* To avoid distorting markets or segments not affected by overexuberant conditions, prudential measures should aim to “lean against the wind” in the specific sectors concerned at a particular juncture. Given the new nature of using prudential instruments for macroprudential purposes, constrained experimentation may be needed to explore effectiveness while taking into account potential negative side effects on the financial sector.

*Embedding macropur planning policies in an institutional setup.* Given that there is an overlap of responsibilities and instruments in the conduct of macroprudential policies, it would be important to adopt an institutional mechanism with clear mandates, transparency, and principles for coordination and accountability. Because a macropur planning framework cannot only be rule based—it would be impossible to calibrate the appropriate tools for all circumstances—the approach would require some degree of judgment, with checks and balances among the different institutions in charge of stability.

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29 To evaluate the suitability of different macropur planning tools, an important challenge is how to incorporate the financial sector in macroeconomic modeling. See Tovar (2009) for a general discussion and Beneš, Ötker-Robe, and Vávra (2009) and N'Diaye (2009) for more concrete applications to emerging market economies.