

Safeguarding Financial Stability: The Role of Macroprudential Policy

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INTRODUCTION

Financial stability is key to inclusive and sustained growth. Financial crises frequently result in large output and wealth losses, and they tend to affect people in middle- and lower-middle classes harder than the wealthy, sapping broad-based economic growth. Without remedies against the often severe consequences of financial crises, prevention is better than cures that deal with their impact after the event. To mitigate the financial stability risks that emanate from financial institutions, countries have traditionally relied on prudential regulations and more recently on risk-based supervision to buffer financial shocks. However, risks to systemic stability can also stem from real sector shocks. As seen during the global financial crisis of 2008, cross-border and cross-sector spillovers can intensify both.

The bursting of asset market bubbles, such as in housing and equities, can impact financial sector stability through a deterioration of asset quality, resulting in credit crunches and bank failures. Should public funds be required to head off bank runs, such shocks could, in turn, worsen fiscal imbalances and require austerity measures—further reducing economic growth and worsening bank asset quality. After the global financial crisis, many countries deployed a new set of macroprudential policies, focused on mitigating systemic risks associated with these macro-financial links, with the aim to prevent negative feedback loops between financial and real sector shocks.

This chapter analyzes the institutional and operational macroprudential policy framework in the seven CAPDR countries and draws some conclusions regarding the effectiveness of macroprudential instruments. After a brief overview of the nature of systemic risks embedded in the structural characteristics of CAPDR's financial system, it compares the existing institutional frameworks for macroprudential policies in CAPDR and discusses implications for the effectiveness of its macroprudential policies to reduce the main systemic risks identified. Next, drawing on an innovative new survey, the chapter details the macroprudential policy toolbox in the region, compared to both other emerging markets and the

broader Latin American region. Finally, to deepen understanding of the effectiveness of existing tools in reducing systemic risk in CAPDR, the chapter explores the impact of these policies on various indicators of systemic risk.

MACROPRUDENTIAL INSTITUTIONAL AND OPERATIONAL SETTINGS

Systemic Risks in CAPDR's Financial System

What are the sources of systemic risk in CAPDR, linked to the structure of the financial system, that determine the institutional macroprudential policy framework and its corresponding toolbox?¹ In CAPDR, the financial system is dominated by the banking sector. As of the end of 2017, the banking sector held over 80 percent of the region's total financial sector assets. The main risks to the region's financial stability are therefore associated with the specific characteristics of its banks, such as high market concentration,² highly concentrated portfolios and risks,³ and large dollarization (Figure 13.1).

The financial sources of systemic risk are intimately linked to the structural characteristics of the region's economies, which are also potential sources of systemic risk. The relatively small size of the region's economy and high concentration of economic activity in relatively few economic conglomerates explain to a large extent the concentration of banks' lending and risks, while open current accounts and strong links with the United States have contributed to high dollarization (Table 13.1). On the fiscal front, weak revenue mobilization capacity, constrained fiscal space, and debt sustainability considerations constrain bank resolution frameworks in most countries. On the monetary side, the transition to inflation targeting is still ongoing in most countries, while dollar-denominated deposits establish a tight connection between liquidity support and official reserves, and official dollarization limits the availability and flexibility of lender-of-last-resort facilities in El Salvador and Panama. Underdeveloped debt and money markets further complicate liquidity management and increase banks' credit risk concentration.

These structural characteristics and resulting risks have shaped prudential regulation and supervision in the region and, more recently, macroprudential

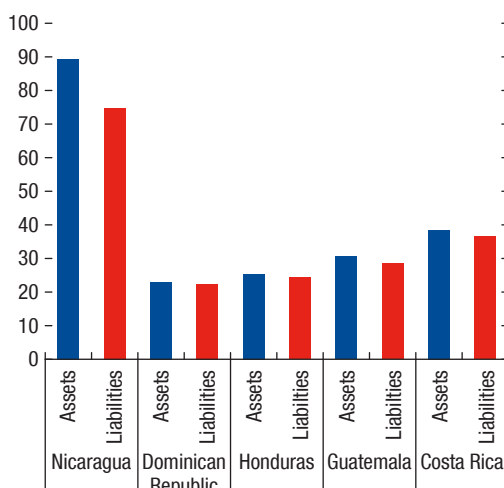
¹This chapter uses the definition of systemic risk as "the risk of widespread disruption to the provision of financial services that is caused by an impairment of all or parts of the financial system," as featured in a 2009 report to the G20 from the International Monetary Fund, the Financial Stability Board, and the Bank for International Settlements.

²On average, the three largest banks account for 56.2 percent of total banking sector's balance sheet, ranging from 31.3 percent in Panama to 77.2 percent in the Dominican Republic.

³In many cases, banks belong to or are associated with large domestic or regional economic groups and, while consumption credit and mortgages have increased with improvements in per capita income and the entry of foreign banks over the last decades, corporate credit portfolios tend to be concentrated in a few economic sectors derived from historical links with specific family-based economic groups.

Figure 13.1. Foreign Currency Share in Central American Bank Balance Sheets

(April 2018, percent)



Source: Central American Monetary Council.

Note: Excludes Panama and El Salvador as both economies are fully dollarized. For convenience, references to Central America refer to the IMF subregion Central America, Panama, and the Dominican Republic (CAPDR). The Central American countries in this group are: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.

policies. Over the past two decades, risk-based supervision has largely replaced compliance-based supervision, with a focus on addressing the specific risks of banks in the region. With the assistance of IMF capacity development, the Regional Council of Financial Superintendents set up a Coordination Committee in charge of developing and implementing cross-border consolidated banking

TABLE 13.1.

Central America: Economic Size and Trade Openness			
Country	World GDP share (%)	Trade Openness (%)	Export to US to total export (%)
Panama	0.08	44.64	18.91
Dominican Republic	0.09	26.74	50.23
Nicaragua	0.02	48.53	57.11
Costa Rica	0.07	33.60	40.87
El Salvador	0.04	32.52	45.70
Honduras	0.03	50.54	34.54
Guatemala	0.09	22.74	33.83

Source: *World Economic Outlook, Direction of Trade Statistics*, and IMF staff estimates.

Note: Data correspond to 2017.

For convenience, references to Central America refer to the IMF subregion Central America, Panama, and the Dominican Republic (CAPDR). The Central American countries in this group are: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.

supervision. This was based on a common set of accounting principles and memorandums of understanding for the exchange of information and joint audits to regional groups. However, gaps remain in data, resources, and implementation capacity. Moreover, risk-based supervision is still in its infancy for nonbank financial institutions. The institutional macroprudential framework started to develop in earnest only after the global financial crisis, and most macroprudential instruments surveyed in this study were applied with prudential, monetary, or liquidity objectives before the institutional macroprudential policy frameworks described in this chapter were developed.

Institutional Framework for Macroprudential Policies

What components of a macroprudential policy institutional framework are critical to ensure its effectiveness in reducing systemic risk? An effective institutional framework requires: (1) a clear objective, (2) the willingness and ability to act, (3) information collection powers, (4) coordination mechanisms across multiple agencies involved in systemic risk mitigation and resolution, and (5) an accountability framework that includes a range of communication tools (IMF 2013). This section provides a comparative analysis of the institutional and operational settings of macroprudential policy among CAPDR countries.

In practice, two models of macroprudential policymaking prevail worldwide. The first model assigns the leading role in macroprudential policymaking to the central bank given its expertise in systemic risk identification.⁴ In the second model, macroprudential authority is vested in a committee or council or supervisory agency outside the central bank, typically with the central bank participating in the macroprudential committee (MPC). The second model can accommodate a stronger role of the Ministry of Finance, whose help is needed to provide resources and/or expand the macroprudential toolkit. How the model is adopted in any given country reflects monetary and supervisory policy responsibilities, legal constraints, and political economy criteria (Table 13.2).

In CAPDR, macroprudential authority has generally been entrusted to the central bank directly or in consultation with an interagency MPC. In Honduras, the MPC is headed by the Banking and Insurance Commission (with the central bank a member of the Financial Stability Committee), while in Panama, which is without a central bank, the Financial Coordination Council is responsible for coordination of financial sector supervision and regulation across supervision agencies, but does not have a formal role in systemic risk oversight or macroprudential policies. Across the region, the banking supervision institution and the central bank (where relevant) belong to the interagency MPC, while other

⁴See IMF (2011), Nier and others (2011), and IMF (2013). IMF (2014) suggests that three models have prevailed as it differentiates between two types of models, with the central bank being assigned the macroprudential policy mandate. In one model, the mandate is assigned to the central bank and in the other it is assigned to a dedicated committee within the central bank structure. We consider these models jointly.

TABLE 13.2.

Structure of Macroprudential Decision-Making in Central America					
	Arrangement	Composition	Legal Macroprudential Mandate	Decision-making Power	Financial Stability Report
CRI	CONASSIF (1997 with oversight over the Superintendencies of Financial entities, Securities, and Insurance) Working group on macroprudential issues	President of the Central Bank Minister of Finance Five private sector members	Implicit	Recommendations to the boards of the central bank and CONASSIF Non-binding	Yes Central Bank
DOM	Monetary Board (MB, 1947) Responsible for monetary, exchange and credit policy, banking and financial supervision and regulations Macroprudential and Financial Stability Committee (2017) guided by MB	MB is chaired by Central Bank Governor, includes Minister of Finance, Bank Supervisor, and six private sector members Directed by senior officials of the central bank and one from Superintendency of Banks	Central bank and bank supervisor have legal mandate to promote financial stability	Yes. MB can set up ad hoc commissions for specific issues, including systemic risk	No
SLV	Systemic Risk Committee (2013)	Central Bank (coordinator) Integrated financial regulator/supervisor Ministry of Finance Deposit Insurance Agency	Yes	Risk monitoring and information sharing only	Yes Central Bank
GTM	Monetary Board (1993) Responsible for monetary, exchange and credit policy, banking and financial supervision and regulations	Chaired by CB Governor (1 vote) Three Ministries: Finance, Economy, Agriculture (3 votes) Two private sector members (1 vote each)	Implicit	Yes. In context of Monetary Board power	Yes. Prepared jointly by Central Bank and Superintendency of Banks
HND	Financial Stability Committee (2017)	Commissioner from the National Commission of banks and Insurance (Coordinator) Central Bank (Secretariat), Ministry of Finance, Deposit Insurance Agency	Yes	Yes. Voting system to be determined	Yes. Central Bank

(continued)

TABLE 13.2. (Continued)

Structure of Macroprudential Decision-Making in Central America					
	Arrangement	Composition	Legal Macroprudential Mandate	Decision-making Power	Financial Stability Report
NIC	Financial Stability Committee (FSC 2016)	Two representatives of Central Bank and two from the Superintendency of Banks and other financial Institutions (SIBOIF) rotate to chair FSC	Central bank and bank supervisor have legal mandate to promote financial stability	No	No
PAN	Council of Financial Coordination (2011)	Superintendency of Banks (chair) Four other supervisory authorities Ministry of Commerce and Industries	No	No. Information Exchange based on MoUs	Yes. Prepared by Banking Supervisory Authority

Source: National authorities.

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TABLE 13.3.

		Dominican						
		CRI	Republic	GTM	SLV	HND	NIC	PAN
I.A.	Designated macroprudential authority	yes	yes	yes	yes	yes	yes	no
I.A.1.	Central bank	yes	no	yes	no	no	no	no
I.A.2.	Committee within the central bank	no	no	no	yes	no	no	no
I.A.3.	Committee outside the central bank	no	no	no	no	no	no	no
I.A.4.	Supervisory agency (other than the central bank)	yes	no	no	no	yes	yes	no
I.A.5.	Other	n.a.	yes	no	no	yes	yes	no
I.B.	Macroprudential authority's powers	yes	yes	yes	yes	yes	n.a.	n.a.
I.B.1.	Hard powers	no	yes	yes	yes	yes	n.a.	n.a.
I.B.2.	Semi-hard powers	yes	n.a.	no	n.a.	yes	n.a.	n.a.
I.B.3.	Soft powers	n.a.	yes	no	n.a.	n.a.	yes	n.a.
I.C.	Interagency coordination mechanism	yes	yes	n.a.	yes	yes	yes	yes

Source: National authorities; n.a. not available.

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frequent members are the Ministry of Finance, the Deposit Insurance Agency, and other financial supervision agencies. Other public institutions participate in the MPC in two cases (Table 13.3).⁵

The strength of legal powers to guide and implement macroprudential policies varies. In some cases, the macroprudential authority has direct control over macroprudential instruments as, for instance, in Guatemala and the Dominican Republic. In others, policy formulation and execution lie with different institutions. In Honduras and Costa Rica, the leading macroprudential entity is limited to issuing formal recommendations to other agencies. Regardless of the overall macroprudential institutional setting, all central banks in the region employ monetary policy tools such as reserve requirements and foreign exchange regulations; for example, constraints on open foreign currency positions, which are also part of their macroprudential toolkit.

To improve the effectiveness of the institutional arrangements, all CAPDR countries have reinforced coordination mechanisms. These are important given that central banks generally have responsibility over macroprudential objectives, but decision-making powers over critical tools are controlled by another regulatory agency, such as the banking supervisor, as also observed in emerging market economies throughout the world (BIS 2017). The central bank of Guatemala holds weekly meetings with the Superintendency of Banks to enhance interagency coordination, while there is no formal MPC. In Honduras, the Financial Stability Council has an inter-agency operational committee legally entitled to request information to identify potential risks and propose emergency measures to deal with threats to financial stability. In Panama, the Financial Coordination Council

⁵In Guatemala and Panama some ministries, including Agriculture, Commerce, and Industry participate in MPCs.

coordinates regulatory guidelines across financial sector regulators with mostly a microprudential focus.

In all CAPDR countries, macroprudential authorities seek to identify vulnerabilities to adopt preventive measures at an early stage. Consistent with their macroprudential mandates, central banks have taken the lead on systemic risk assessment, in some cases in coordination with the Superintendency of Banks. Systemic risk analysis is gradually being deepened, with analysis of financial soundness indicators increasingly supplemented by econometric models, and financial stability maps aiming to capture the interaction between the real and financial sector and domestic and cross-border flows. All countries in the region closely monitor the foreign currency operations and maturity mismatches that could threaten the payments system. Despite some progress, data gaps hamper adequate monitoring of sectoral risks, particularly in relation to debt service to income ratios and total indebtedness in the household sector.

Macroprudential analysis dissemination as embodied in the Financial Stability Reports (FSR) has become common practice. Honduras, El Salvador, Nicaragua, and Guatemala (until 2012) published their reports, while it remains an internal document in the other countries. Lim and others (2017) evaluated financial stability reports in Latin America and the Caribbean based on 26 criteria covering, among others, clarity of aims, coverage of issues, assumptions and tools, and structure, consistency, and inclusion of key topics. They found the top reports were in Brazil, Chile, Colombia, and Mexico, while Honduras was in a middle group and the remaining countries in Central America with published reports ranked in the bottom group. The analysis focused on historical trends in macroeconomic and financial performance with little emphasis on forward-looking prospects. Currently, all countries conduct stress testing analysis, and they are moving forward to assess risks arising from banks of systemic relevance identified with Basel guidelines criteria of size, substitutability, interconnectedness, and complexity, holding periodic regional training workshops.

Macroprudential Policy Instruments in CAPDR

How have macroprudential policy instruments been used to mitigate systemic risks to financial stability in CAPDR? This section draws on results from a survey of country authorities in late 2017 to document the use of macroprudential policy instruments in the region. The section first reviews the design of the survey and the methodology used to summarize the results of the survey into indexes of the use of macroprudential policies in CAPDR. It then provides an overview of the use of macroprudential policies in CAPDR based on the survey results.

Survey Design and Methodology for Macroprudential Policy Indexes

The survey is annual, covering 2000 to 2017, and updates and extends the survey conducted by Delgado and Meza (2011).⁶ Compared to other surveys of

⁶Results were cross-checked with those from Delgado and Meza (2011), Cerutti and others (2015), and IMF (2018), with IMF country economists and, if needed, were clarified with the authorities.

TABLE 13.4.

Macroprudential Policy Measures in Central America Survey	
Type of Measure	Measure
Broad-based	
	<ul style="list-style-type: none"> • Counter-cyclical capital buffer • Leverage ratio • Dynamic loan-loss provisioning • Caps on credit growth • Credit ceilings • Loan-to-deposit limits
Sector-specific	
	<ul style="list-style-type: none"> • Sectoral capital requirements (risk-weights) • Maximum loan-to-value ratios • Maximum debt and/or debt-service-to-income ratios • Caps on sectoral credit growth • Generic provisions for foreign currency loans to unhedged borrowers in specific sectors • Specific capital requirements for foreign currency loans to unhedged borrowers in specific sectors • Mandatory provisions on exposures to specified sectors • Limits on credit concentration to specific sectors
Liquidity	
	<ul style="list-style-type: none"> • Liquidity buffer requirements • Stable funding requirements • Liquidity charges • Reserve requirements on domestic currency and/or foreign currency deposits • Constraints on open foreign currency positions • Specific capital requirements for net open foreign currency positions • Constraints on foreign currency funding • Limits on maturity mismatches on bank balance sheets • Limits on net non-core funding dependence ratio • Minimum core funding ratio • Reserve requirements on external credit lines to banks • Limits to foreign investment by domestic pension funds • Tax on capital inflows
Structural	
	<ul style="list-style-type: none"> • Limits on exposures between financial institutions • Capital surcharge • Sectoral capital requirements • Liquidity tools • Minimum margin requirements • Changes to market infrastructure

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macroprudential policy that include CAPDR countries, this survey has more extensive instrument and calibration coverage. It has more recent data than Cerutti and others (2015) and similar instrument coverage to the IMF's Macroprudential Policy Survey (IMF 2018). However, unlike IMF (2018), which includes information for only 2017, this survey includes time series information on the use and calibration of each specific instrument.

The comprehensive survey includes macroprudential policy measures designed to tackle both the time and cross-sectional dimensions of systemic risk. Macroprudential policy instruments are categorized into four broad categories (see Table 13.4), similar to the characterization in IMF (2014a, 2014b), and consistent with the underlying aspects of systemic risk they seek to address: (1) broad-based tools to enhance the resilience of the overall financial system and

reduce the procyclicality of lending, (2) sector-specific tools to address risks associated with lending to specific sectors (tools directed toward households and corporates were surveyed separately), (3) liquidity tools to mitigate systemic liquidity and currency risks, and (4) structural tools to reduce risks associated with interconnections in the financial sector. Across those four broad categories, the survey includes information on the use of about 45 distinct macroprudential policy instruments. Also included are measures targeted toward nonbank financial institutions and an “other” category for the authorities to describe measures in use to mitigate systemic risk but not explicitly included in the instruments surveyed.⁷ This structure is broadly consistent with that of IMF (2018).

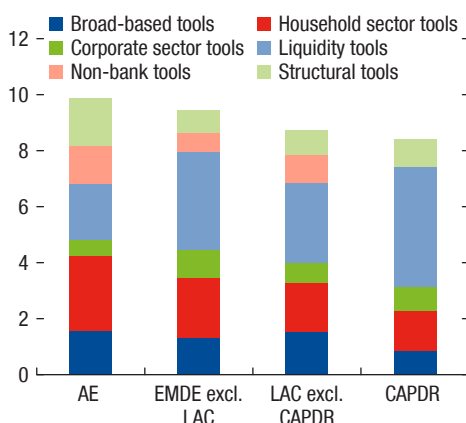
The survey requested information on the use and calibration of each macroprudential instrument. CAPDR countries were asked for each year of the sample period whether a given instrument was in use, its precise definition and calibration, and for detailed information on the design of the instrument, including references to underlying legislation.

Survey results were used to calculate indexes on the use of macroprudential policies in each country. For each instrument, a binary index was constructed, set equal to 1 if the policy was in use and 0 otherwise. These were then aggregated into distinct indexes for each of the four broad categories of macroprudential tools, with each index calculated as the simple sum of the scores on each of the instruments included in a category. Given that the number of possible policy instruments differs across the four categories, the indexes are not directly comparable across categories, but are useful to provide a sense of the use of macroprudential policy instruments across CAPDR countries. Following Cerutti and others (2015), an aggregate index is constructed for tools targeted toward borrowers and another is built for tools targeted toward financial institutions. The borrower-oriented index includes maximum loan-to-value ratios, debt-to-income, and debt-service-to-income ratios targeted to either households or firms. All other measures are assumed to be targeted toward financial institutions. Finally, an overall Macroprudential Policy Index (MPI) is constructed as the simple sum of the scores on all policies included in the survey.

Intensity-based indexes were also calculated for each macroprudential instrument in the survey. These indexes take advantage of detailed information on the calibration of each macroprudential measure. For each instrument, the intensity index is assigned a value of 0 if its calibration has not changed, -1 if it was loosened, and +1 if it was tightened in a given period. This follows the approach in Akinci and Olmstead-Rumsey (2015). Similar to the binary indexes, the individual indexes are then aggregated for each category of macroprudential instrument and overall by summing over the instruments included in the given category to have intensity-based measures. Given that some measures may be loosening and others tightening at a given time, these intensity-based measures give an idea of the net stance of macroprudential policies.

⁷No responses were provided on these categories and hence the results are not discussed.

Figure 13.2. Number of Instruments Implemented
(Average number per region per type of instrument)



Source: IMF 2017 macroprudential survey.

Note: CAPDR result is based on independent macroprudential survey on CAPDR countries.

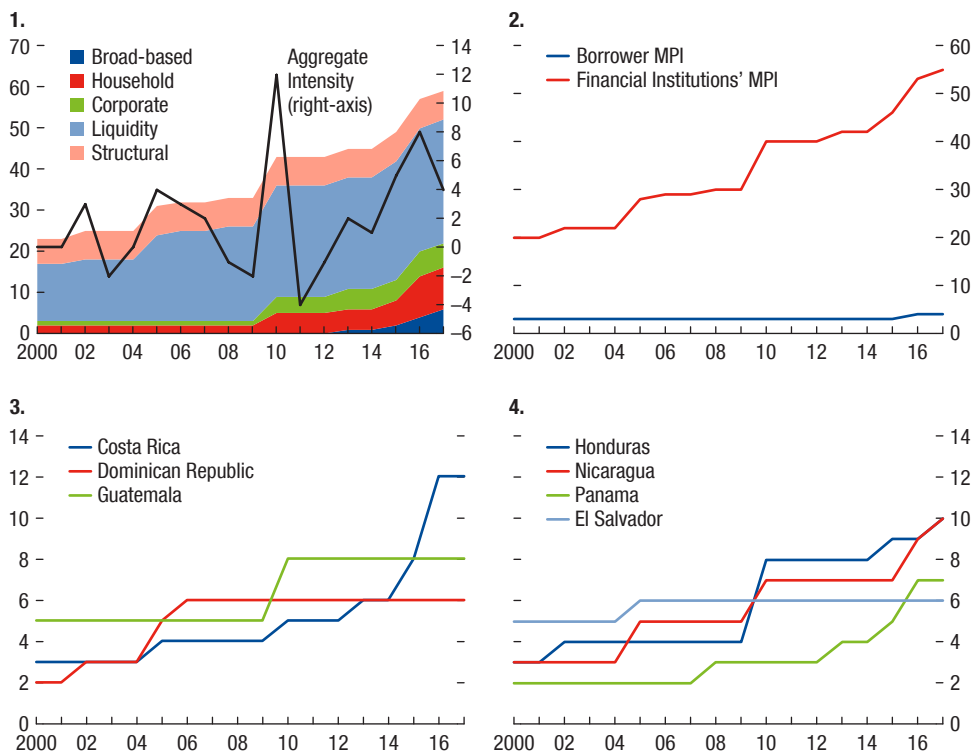
CAPDR = Central America, Panama, and the Dominican Republic; AE = advanced economies; EMDE = emerging market and developing economies; LAC = Latin America and the Caribbean.

Results

CAPDR countries are increasing their use of macroprudential policies. The number of macroprudential policies measures used in the region increased from 23 in 2000 to 59 in 2017, according to the survey (Figure 13.2). The use of macroprudential policies accelerated after the global financial crisis, when the first broad-based measures in the region were introduced (Figure 13.3). On average, eight tools were in place in 2017 in each CAPDR country, from three in 2000. This compares to an average of 9.9 tools employed by advanced economies and 9.1 for all emerging market and developing economies in 2017 (IMF 2018). Based on the number of new macroprudential policies introduced, Costa Rica, Honduras, and Nicaragua and, to a lesser extent, Panama have been the most active countries in expanding their toolkits after the crisis (Figure 13.3). Policies in the Dominican Republic, Guatemala, and El Salvador have remained relatively stable (based on the number of instruments in use). Policies remain primarily directed toward financial institutions rather than borrowers, as evidenced by the borrower-oriented and financial institution MPIS.

Consistent with the greater number of tools in the region after the global financial crisis, the tendency has been toward a net tightening of macroprudential policies. While some instances of net loosening have happened in some countries,

Figure 13.3. Central America: Macroprudential Policy Index
(Number of active macroprudential policy tools)



Sources: Country authorities, author calculations, and IMF staff estimates.
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these have been associated primarily with reductions in reserve requirements, which remain an important monetary policy tool in many countries. This is discussed further when assessing the use of liquidity tools in the region.

Broad-based Macroprudential Policy Tools

Broad-based macroprudential policy tools are designed to ensure that financial systems build enough capital buffers in stable periods to absorb losses in downturns and avoid procyclical lending. The CAPDR region has focused on strengthening microprudential regulation to build capital buffers. Such strengthening is an important precursor to the use of broad-based macroprudential policy tools, which have only recently been deployed in the region. The focus has primarily been on strengthening capital and leverage requirements and in some cases,

dynamic provisioning requirements (DPR), while caps on credit growth or credit ceilings and limits on loan-to-deposit ratios have not been used:

- **Capital:** The transition toward Basel III capital requirements is at the early stages, with the region yet to implement capital conservation and/or countercyclical capital buffers. Such buffers are designed to cover unexpected losses that occur in times of financial stress, by providing additional capital to be drawn on.⁸ In contrast, the capital conservation buffer is in use in 76 countries, including 46 emerging market and developing economies and six countries in the broader Latin America and Caribbean region. Countercyclical capital buffers have also therefore so far played a limited role globally, with only seven countries with active positive buffer requirements as of 2018, despite 35 countries with a framework in place (IMF 2018). Looking ahead, the priority will be for the region to continue strengthening microprudential regulation by completing the transition toward Basel III capital requirements. Capital conservation and/or countercyclical capital buffers could then be considered together in the context of existing DPR frameworks (see below).
- **Leverage ratio:** Leverage ratios complement risk-based capital requirements by containing the buildup of systemic risk through excessive leverage of financial institutions in a boom period.⁹ Three CAPDR countries have recently introduced leverage ratios (Honduras in 2017, Nicaragua in 2016, and Panama in 2015), among 35 countries globally with limits on leverage ratios (IMF 2018). The minimum leverage ratio is broadly defined by these countries as primary (or Tier 1) capital over the sum of total non-risk-weighted assets (consistent with the Basel III accord), but Honduras and Nicaragua include contingent assets in their calculations. Honduras and Nicaragua set the minimum leverage requirement at a stricter 3.75 percent, while Panama sets it at 3 percent, in line with the minimum leverage ratio requirement of 3 percent under Basel III. As the transition toward Basel III continues, the rest of the countries in the region are expected to adopt leverage ratio requirements.
- **Dynamic loan-loss provisioning requirements:** DPR is complementary to countercyclical capital buffers. It requires loan-loss provisioning to cover expected losses over an average economic cycle and is therefore more countercyclical than specific provisions based on incurred asset quality deterio-

⁸Basel III has introduced two types of capital buffers: the capital conservation buffer is fixed at 2.5 percent in common equity Tier 1 (CET1), while the level of the countercyclical capital buffer is raised when a boom in the credit cycle is observed and lowered in the bust phase (that is, in a countercyclical manner) within the range of 0 to 2.5 percent. See BCBS (2010) for the Basel III framework. While these capital buffers are not considered a “regulatory minimum,” a bank needs to restrict payout of its earnings (hence conserving its capital) where there is a breach of the required buffer level.

⁹The leverage ratio is also required under Basel III (see BCBS 2010).

ration. Panama introduced DPR in 2013 (with application starting in 2014), followed by Costa Rica in 2016 and Nicaragua in 2017 (with a three-year phased implementation). The popularity of DPR in the CAPDR region largely matches the broader Latin American and Caribbean region, where 10 countries have put in place DPR frameworks (including those in CAPDR), with the region on average utilizing this tool more than any other in the world (IMF 2018). While the precise design of each CAPDR countries' DPR differs, it is consistent with the underlying motivation of smoothing provisioning requirements over the cycle; the specifications broadly resemble the "through-the-cycle accumulations systems" in Wezel and others (2012).^{10,11} Banks are required to maintain their DPR in addition to the minimum regulatory capital requirement. Thus, DPR in the region bear some similarity with capital buffers, besides their role in loan-loss provisioning.

The additional provisions accumulated during the expansionary phase of the cycle are then available to be drawn down in the contractionary phase. In Panama, the Superintendency of Banks decides when the draw-down phase starts, while in Nicaragua that is based on the moving average of quarterly GDP growth in the last four quarters relative to the historical average. In Costa Rica it is automatic and derived from the formula used to calculate the DPR.¹² Given that DPR use in the region is in its infancy and has coincided with a period of credit expansion, it remains to be seen if DPR will work in a countercyclical manner in downturn periods. This is particularly true in countries (such as in Panama) where the effectiveness of the DPR frameworks in place relies on the ability of policymakers to determine an appropriate start for the draw-down phase.

Sector-Specific Tools

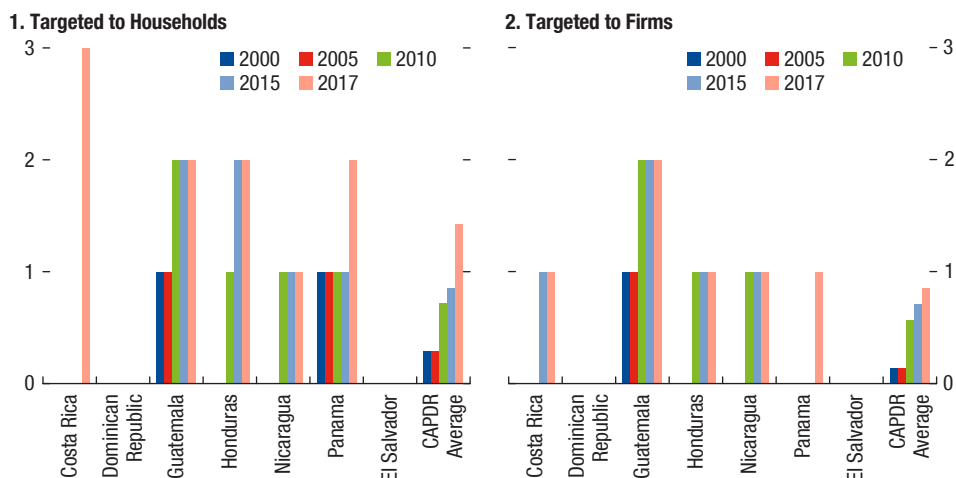
Sector-specific macroprudential policy tools to address the procyclical buildup of risks in specific sectors, usually the household (Figure 13.4) or corporate sectors, are in the early stages of development in CAPDR. Existing measures are focused

¹⁰In Panama, the level of DPR for each bank is calculated every quarter based on loans outstanding (risk-weighted assets-based) and the quarterly change in the amount of risk-weighted loan exposures, and quarterly variation in specific provisions. In Nicaragua, the level of DPR is based on a comparison between banks' specific provisions and the average latent loss in their loan portfolios. In Costa Rica, DPR remain in a transitory period until the level reaches the desired threshold and beyond that it will depend on the level of specific provisions, a minimum DPR requirement, the riskiness of the credit portfolio, and banks' capital adequacy. Each bank must provision 7 percent of the positive difference between income and expenses before taxes on a monthly basis as a transitory measure until the DPR has reached its intended level. The percent was chosen to achieve the desired level of dynamic provisions over a 9–10-year horizon.

¹¹With some important differences. For example, the draw-down phase in Panama's DPR framework is restricted and subject to the decision of the bank superintendent, and the use of RWA is not a common feature of DPR.

¹²Specifically, if the moving average of quarterly real GDP growth is lower than the historical average of the annual average quarterly growth of real GDP since the first quarter of 2006.

Figure 13.4. Central America: Macroprudential Policy Tools
(Number of active measures)



Sources: Country authorities and author calculations.

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primarily on reducing risks associated with foreign currency lending, particularly to unhedged borrowers, and more generally, dollarization in some of the region's highly dollarized economies. For example, in 2016 Costa Rica introduced both generic provisions and specific capital requirements for foreign currency loans to unhedged household borrowers. These complement existing capital requirements for foreign currency lending to unhedged corporate borrowers. Guatemala, Honduras, and Nicaragua also have specific capital requirements for foreign currency loans to unhedged borrowers, both household and corporate.¹³ However, even existing sector-specific tools have yet to be used in a countercyclical manner in the region.

Sectoral capital requirements (or risk-weights) that vary depending on the underlying loan-to-value ratio have also been used by Guatemala and Panama to mitigate household-related credit risks. These measures help to discourage rapid credit growth by raising the cost of capital while increasing the resilience of lenders by requiring additional buffers against negative shocks stemming from those sectors.^{14,15}

¹³Such policies are not applicable in the region's dollarized economies (El Salvador and Panama).

¹⁴Sectoral requirements can also be imposed on a segment of household or corporate borrowing.

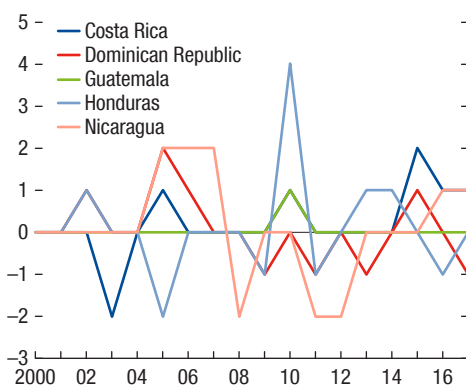
¹⁵Mandatory provisions on banks' exposures to specified sectors, detached from the borrowers' intrinsic risk, would have a similar effect.

Quantitative caps on new credit, using measures of borrowers' creditworthiness have been used more selectively. Measures of creditor quality include the loan-to-value ratio, debt-to-income ratio, or debt-service-income ratio. These can directly restrict credit supply to excessively leveraged or indebted borrowers, while improving financial resilience by lowering the probability of default or loss given default by restricting high-risk credit. Guatemala is the only country with a maximum loan-to-value ratio (for both households and firms), while Costa Rica and Panama are the only countries with limits on debt-service-to-income ratios (for households). This is consistent with broader trends in the Latin American and Caribbean region, where only about a quarter of countries in the region have utilized these types of tools targeted toward households in particular, compared to about half of countries in Asia, Europe, and the Middle East (IMF 2018).

Liquidity Tools

Liquidity tools are the most widely used macroprudential policy instruments in the CAPDR region (Figure 13.5). Liquidity tools aim to ensure the resilience of the financial system against systemic liquidity shocks. Such liquidity risks could originate from banks' reliance on noncore funding (short-term, wholesale or foreign currency), which may impair their ability to obtain funding in stressed times.

Figure 13.5. Central America: Liquidity Instrument Intensity
(Intensity index per country)

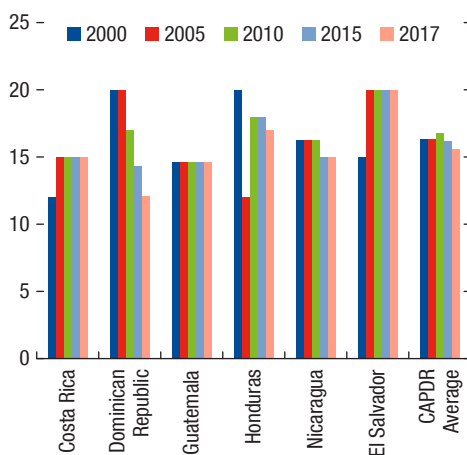


Sources: Country authorities and IMF staff estimate.
Note: Excludes El Salvador and Panama, where liquidity instruments have not been loosened. For convenience, references to Central America refer to the IMF subregion Central America, Panama, and the Dominican Republic (CAPDR). The Central American countries in this group are: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.

As in CAPDR, liquidity tools are also the most frequently used macroprudential tools globally. On average, CAPDR countries use 4 liquidity tools compared to 2.8 in the broader Latin American and Caribbean region and 3.4 for emerging market and developing economies (IMF 2018).¹⁶ Liquidity tools are also the only tools that the CAPDR region, except for El Salvador and Panama, has to date loosened, as evidenced by the intensity-based liquidity indexes.

Reserve requirements on deposits out of the liquidity tools are the most actively used macroprudential policy instrument in the region (Figure 13.6), although it is difficult to evaluate the extent to which these requirements have been used for monetary policy versus macroprudential objectives. All countries, except Panama, which does not have a central bank, have reserve requirements on deposits, applicable to both domestic and foreign currency deposits.¹⁷ Some countries have differentiated requirements on domestic and foreign currency deposits, with the Dominican Republic and Honduras maintaining higher requirements on foreign currency deposits. In general, the region's reserve requirements have remained relatively stable over time, although some countries have used reserve requirements to either directly influence the credit cycle or, more specifically,

**Figure 13.6. Macroprudential Policy Tools:
Reserve Requirements on Domestic
Currency Deposits**
(In percent of deposits)



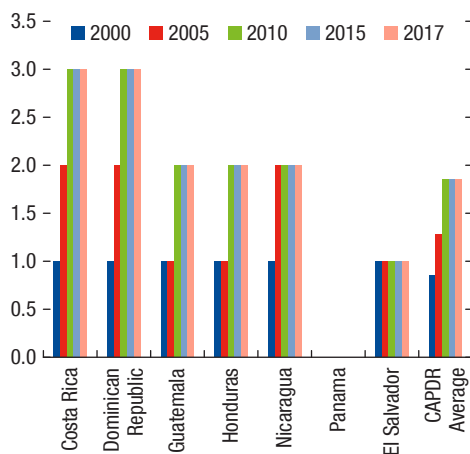
Sources: Country authorities and author calculations.

Note: CAPDR = Central America, Panama, and the Dominican Republic.

¹⁶Based on results from IMF (2018), which has a less detailed decomposition of liquidity measures than the CAPDR survey.

¹⁷El Salvador also maintains reserve requirements on external credit lines to banks.

**Figure 13.7. Macroprudential Policy Tools:
Liquidity Tools Targeted to Contain
Currency Mismatches**
(Number of active measures)



Sources: Country authorities and author calculations.
Note: Panama is dollarized. Tools include constraints on and specific capital requirements on net open foreign currency positions, reserve requirements on foreign currency deposits, and constraints on funding in foreign currency. CAPDR = Central America, Panama, and the Dominican Republic.

foreign currency lending, or as an instrument of monetary policy. The loosening of liquidity-based macroprudential policies in the region has been almost exclusively associated with reductions in reserve requirements, but it is difficult to assess whether this reflects a loosening of macroprudential versus monetary policy or a longer-term reduction in reserve requirement ratios to bring the region's relatively high requirements in line with international practice. Nevertheless, some countries in the region increased reserve requirements after the global financial crisis as an instrument to avoid excessive credit growth.

The region is also containing currency mismatches with constraints on open foreign currency positions present in all countries with the obvious exception of those that are formally dollarized (Figure 13.7). The reliance on this type of instrument is consistent with global trends, where 75 countries have in place limits on net foreign exchange positions (IMF 2018). In CAPDR, these requirements have also been complemented with specific capital requirements on net open foreign-exchange positions in Costa Rica, the Dominican Republic, and Nicaragua.

With respect to formal liquidity coverage requirements, the region is at the early stages of transitioning toward the minimum liquidity coverage ratio under Basel III, which aims to strengthen the short-term resilience of the liquidity risk

profile of banks. Only Costa Rica, Nicaragua, and Panama have formal liquidity coverage ratio requirements.¹⁸ This compares to 74 countries globally that have adopted the liquidity coverage ratio, eight of which are in Latin America and the Caribbean, including those in CAPDR, and 44 in emerging market and developing economies (IMF 2018). The region has yet to adopt Basel III's Net Stable Funding Ratio, which aims to act on bank funding structure by requiring the amount of stable funding to match banks' holding of long-term assets.¹⁹ Limits on net noncore funding, minimum core funding ratios, and taxes on capital inflows have yet to be implemented in the region and remain among the least used liquidity tools internationally (IMF 2018).

Structural Tools

The region is beginning to consider using structural macroprudential policy tools designed to increase the loss absorbency of financial institutions, particularly those of systemic importance. Structural macroprudential policy tools are designed to mitigate systemic risks by increasing the resilience of systemically important financial institutions and reducing interconnections within the financial system. Assessing the systemic importance of financial institutions is a prerequisite for CAPDR to move ahead with structural macroprudential tools. A first step is assessment of the potential impact of risks associated with individual financial institutions on stability in the broader financial system. Costa Rica and Panama are at the forefront, having recently developed a methodology to designate systemically important banks, which is based on indicators such as size, interconnectedness, cross-jurisdictional activities, complexity, and substitutability consistent with Basel Committee on Banking Supervision (2013a) recommendations.²⁰ The rest of the region will need to formalize this process, adapting to the size of their own financial systems, as a prerequisite to intensifying supervision of systemically important banks and developing macroprudential policies to address risks from these institutions. It will then be able to consider joining 61 other countries globally, including five in Latin America, that have introduced capital surcharges for systemically important institutions (IMF 2018).²¹

¹⁸Liquidity coverage ratio implementation at its 100 percent minimum under Basel III is being phased in, with only Panama having completed the full transition in early 2018. In Costa Rica, the liquidity buffer was set at 80 percent in 2017, while in Nicaragua it was 70 percent at the time of the survey and had increased to 80 percent as of July 1, 2018. Panama also has a regulatory requirement for liquidity called the legal liquidity index, defined as the ratio of liquid assets as a share of qualifying deposits, set at a minimum of 30 percent.

¹⁹The liquidity coverage ratio is defined as the ratio of high-quality liquid assets over assumed cash outflow in 30 days of severe liquidity stress (see BCBS 2013a).

²⁰Cross-jurisdictional activities are also considered as a country-specific factor in Panama's methodology, which is appropriate considering the importance of regionally active financial conglomerates. This is consistent with the BCBS (2012) methodology for global systemically important banks, not included in the BCBS (2013b) methodology for domestic systemically important banks.

²¹The five Latin American countries that have capital surcharges for systemically important financial institutions are Argentina, Brazil, Mexico, Paraguay, and Uruguay.

Some progress has been made to address risks posed by interconnectedness of financial institutions through concentration limits. To limit the concentration risk that could arise from the failure of a single counterparty, all countries in the region maintain limits on exposures to single counterparties (or individual financial institutions), ranging between 20 percent (Costa Rica, Dominican Republic) to 30 percent (Honduras, Nicaragua) of their capital, among 40 countries in the world to do so (IMF 2018). These concentration limits have been in place throughout the duration of the survey period, with no changes to their calibration in any of the CAPDR countries. While these concentration limits are broadly consistent with the BCBS standard (BCBS 2014), the region should also strive to assess the adequacy of the limits based on a detailed analysis of interconnections within the region's financial system.

THE EFFECTIVENESS OF MACROPRUDENTIAL POLICY IN CAPDR

How effective have the macroprudential policies implemented by CAPDR countries been in reducing systemic risk in CAPDR? This section assesses how the macroprudential policies used by the region have affected growth in real credit to the private sector, as a proxy for systemic risk, using panel regressions for the CAPDR countries. The overall MPI and the various subindexes for each of the broad categories of macroprudential policies are considered separately. The benchmark regression model is:

$$Y_{it} = \beta_1 \text{MPI}_{,it-1} + \beta_2 X_{,it-1} + \alpha_t + \gamma_i + \varepsilon_{it} \quad (1)$$

where Y_{it} is a measure of systemic risk, typically real growth in credit to the private sector in country i at time t .²² $\text{MPI}_{,it-1}$ is the aggregate MPI, or its various subindexes for each of the broad categories of macroprudential policies. The regressions include a set of control variables, $X_{,it-1}$, all lagged one time period. The control variables include real GDP growth, a dummy variable capturing the presence of a banking crisis as defined by Laeven and Valencia (2013), the real monetary policy interest rate, and appreciation/depreciation in the real effective exchange rate. α_t is a time-specific fixed effect, and γ_i are country-specific fixed effects.²³

Macroprudential policies have been effective in reducing systemic risk in the region. The results of the benchmark specification (Table 13.5, column 1) suggest that a tightening of policies has a negative and statistically significant impact on

²²See Beaton and others (forthcoming) for more details on the regressions, their estimation, and the results. Real growth in credit to the private sector is an imperfect proxy for systemic risk as it may also reflect financial deepening, but is used here as a proxy given its wide availability over a long time period for the region. The credit gap, which is a better measure of systemic risk, is considered in Beaton and others (forthcoming) as an alternative dependent variable, but is not available for a long time period for all countries in the region.

²³For El Salvador, Nicaragua, and Panama, where there is no policy interest rate; the real lending rate is included instead.

TABLE 13.5.

The Effectiveness of Macroprudential Policy in Central America				
	(1)	(2)	(3)	(4)
	Real credit growth	Real credit growth	FX credit as share of total credit	FX credit as share of total credit
Macroprudential policy index _{t-1}	-0.849* (0.394)			
Liquidity macroprudential policy index _{t-1}		-1.636** (0.553)	-1.161** (0.390)	
FX-oriented macroprudential policy index _{t-1}				-0.928* (0.424)
Real GDP growth _{t-1}	0.780 (0.525)	0.761 (0.468)	0.00687 (0.356)	0.0418 (0.379)
Real effective exchange rate (+ appreciation) _{t-1}	0.240*** (0.0367)	0.276*** (0.0309)	-0.111 (0.105)	-0.146 (0.106)
Real monetary policy interest rate _{t-1}	0.00349 (0.651)	0.0259 (0.633)	-0.0355 (0.230)	-0.0800 (0.231)
Banking crisis dummy (1 = banking crisis, 0 = none) _{t-1}	-19.68 (18.52)	-19.24 (17.94)	-3.716 (4.721)	-4.793 (5.120)
Observations	111	111	82	82
R-squared	0.494	0.502	0.309	0.280
Number of countries	7	7	5	5
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Note: For convenience, references to Central America refer to the IMF subregion Central America, Panama, and the Dominican Republic (CAPDR). The Central American countries in this group are: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.

credit growth. This result is broadly comparable to that in the literature based on broader panels of countries with more limited categories of macroprudential policies included in the MPI indexes (for example, Cerutti and others 2015, Akinci and Olmstead-Rumsey 2015).

The results of the regressions including the MPI subindexes for each of the broad categories of macroprudential policies suggest that liquidity macroprudential policy tools have been the most effective at mitigating credit growth in the region. The liquidity sub-index is the only sub-index where the index has a statistically significant negative effect on real credit growth.²⁴ This result is consistent with the more intense use of this category of macroprudential policies in the region relative to the other categories. As many of the liquidity tools have been targeted toward addressing the buildup of foreign-exchange-related risks to financial stability, as an alternative, the impact of liquidity tools on the share of foreign exchange credit in total credit was also assessed, and indeed these tools were found

²⁴Results for the sub-indexes for the other categories of macroprudential policy tools are available from the authors and in Beaton and others (forthcoming).

to have been effective at reducing the share of foreign exchange credit in CAPDR countries. Consistent results are found when the set of macroprudential instruments is limited to those explicitly addressing foreign-exchange-related risks. While some specific categories of macroprudential tools have yet to play an important role in mitigating systemic risk in CAPDR, they remain important in the toolkit for tackling systemic risk. The finding that these tools have yet to have had a significant effect on credit growth in the region reflects the limited use of these tools in the region.

CONCLUSIONS

With some variations, the macroprudential institutional setting in the region is consistent with risks stemming from the bank-dominated financial system structure and the institutional supervisory framework. In all countries except Panama, the central bank plays a prominent role in macroprudential oversight, policy formulation, and dissemination. In most cases, this function is executed in consultation with an interagency MPC. Operational control of macroprudential policy instruments, however, usually lies with multiple agencies. This institutional framework parallels the one developed in the largest Latin American countries over the past decades.

The range and number of instruments accelerated after the global financial crisis, when the first broad-based measures were introduced in the region. However, the number of macroprudential policy tools remains below the average for Latin American countries and for emerging market and developing economies, except for liquidity tools. Reserve requirements are the most actively used macroprudential policy tool in the region, although it is difficult to evaluate the extent to which these requirements have been used for monetary policy versus macroprudential objectives.

Based on data from the dedicated survey of macroprudential policy instruments covering 2000–17, the chapter analyzed how macroprudential policies have affected growth in real credit to the private sector, as a proxy for systemic risk, using panel regressions for the CAPDR countries. While very few cases were observed of instruments being used within a macroprudential policy function, they have been effective in reducing systemic risk. In particular, liquidity macroprudential tools have been most effective at mitigating the effect of credit growth and the buildup of foreign-exchange-related risks on financial stability in the region.

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