

Macroeconomics

for Emerging East Asia

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14. Macroprudential Policy

A. Function

Managing systemic risk

Contending with global capital flows

Coordinating with monetary policy

B. Policy Instruments

Identification of instruments

Catalog of options

Use in Emerging East Asia

C. Policy Framework

Domestic institutions

International institutions

D. East Asian Experience

Cross-country comparison

The Korean case

E. Averting and Weathering Crises

Data Note

Bibliographic Note

Bibliographic Citations

List of Boxes

Box 14.1 Capital Controls

Box 14.2 Basel Accords I, II, and III

List of Tables

Table 14.1 Macroprudential Policy Instruments

List of Charts

Chart 14.1 Change in Foreign Loan Liabilities, Select Economies, 2005-2020

Chart 14.2 Policy Use by Instrument, 1997-2019

Chart 14.3 Policy Use by Economy, 1997-2019

Chart 14.4 Policy Use in Korea, 2022-2019

14. Macroprudential Policy

Macroprudential policy aims at safeguarding stability in the financial system. The system as a whole can become vulnerable to loss contagion even when institutions on an individual basis maintain strong balance sheets. Systemic risk tends to build and subside in cyclical fashion, with foreign capital flows contributing to the flux. Macroprudential policy pushes back against this ebb and flow through adjustment in financial regulation.

The Great Financial Crisis of 2008 hit the US against a backdrop of output growth at potential with inflation low and stable. The macroeconomy appeared to be on a solid footing even as the financial system had become vulnerable to distress. Although the odd observer had warned of impending crisis, someone is always predicting crisis, generally wrongly. Most everyone was caught by surprise at the extent of the financial turmoil and the severity of the impact on the real economy. The lesson learned, or at least powerfully reinforced, was that preserving stability in the financial system requires careful attention to aggregate indicators and judicious regulatory intervention. Macroprudential policy serves this purpose.

Financial institutions have long been subject to regulation to contain risks to their own depositors and creditors. But even with institutions held to sound practices on an individual basis, the system as a whole may overshoot in creating credit and become fragile. Excesses may be concentrated in certain sectors, such as housing, or certain asset classes, such as foreign loans. Regulators have devised a variety of macroprudential policy instruments for use in guarding against such excesses. For example, loan-to-value caps on mortgages for home purchase restrict the loan amount to some portion of the home's value, with this portion lowered when the housing market is overheating or raised when the market is sluggish. For another example, limits on foreign borrowing by banks guard against the risk of straitened access to foreign exchange undermining capacity for debt service, with these limits adjusted based on the magnitude of foreign debt exposure in the aggregate.

A full rundown of the various instruments used to serve macroprudential purposes is reserved for the second section of this chapter. First, we elaborate in section one on the function of macroprudential policy. Once the policy instruments have then been laid out in the second section, we go on to discuss the institutional framework, both domestic and international, in which policy is conducted. That is followed by a survey of macroprudential policy use in Emerging East Asia with particular attention to the Korean case. Finally, we consider prospects for macroprudential policy to aid in averting and weathering crises.

A. Function

We begin this section by discussing the nature of systemic risk, why it tends to rise and fall in cyclical fashion, and how macroprudential policy functions to manage it. Global capital flows in and out of an economy can drive systemic risk, so we then take up the use of

macroprudential policy to deal with this challenge. Finally, we consider how macroprudential policy overlaps with monetary policy and how the two policy arms may be coordinated.

Managing systemic risk

Financial risk takes on both micro and macro dimensions. At the micro level, risks of an idiosyncratic nature can threaten an individual institution without spilling over to other institutions. Regulatory policy curbs such idiosyncratic risk in a variety of ways to protect an institution's depositors and creditors. For example, capital adequacy standards ensure a sufficient equity position that an institution's owners will bear the brunt of any losses if loans go bad. Other examples include minimum requirements on the ratio of liquid assets to liabilities to ensure funds will be readily available to meet obligations and limits on foreign currency liabilities to guard against payment difficulties due to depreciation in the domestic currency. Many of these same types of regulations are incorporated into macroprudential policy to deal with risk on a systemic level, but with management oriented toward financial institutions in the aggregate.

At the macro level, risk extends to broad disruption in financial services due to asset markets freezing up or financial institutions failing in numbers. Once this process begins, contagion can break loose as loss of confidence breeds on itself. If holders of a particular asset type move to sell en masse and buyers are lacking, the price of the asset will collapse which can then trigger further pursuit of liquidity only to bring markets for other assets to the brink. Similarly, if a major financial institution becomes stressed, doubts can cascade to other institutions to set off waves of withdrawals and contraction of lending. Disruption can then spillover to the real economy as strained access to credit causes business activity to suffer with feedback in turn on the financial system as borrowers go into default.

Systemic risk rests on both structural relationships among institutions and cyclical processes involving feedback mechanisms over time. On the structural front, financial institutions rely on loans from one another. If one institution is unable to repay its creditors, those creditors in turn will have trouble repaying their creditors, and so on with broad ripple effects. Systemically important institutions that provide short-term wholesale funding to other institutions on a large scale can be particularly powerful drivers of broad shifts in credit conditions. With that, their failure can be catastrophic, and thus governments are loathe to allow it – “too big to fail”, as it's known. Yet bailouts are very costly and send the wrong message on risk taking.

On the cyclical front, upswings and downturns tend to be self-reinforcing ... until, that is, they overshoot and the course reverses. In the upswing, credit expansion drives business growth which generates even more opportunities for credit and with that, even more business growth; in the downturn, credit tightening starves business activity which limits new opportunities for credit thus undermining activity even further. Feedback processes also come into play between credit and asset prices. An infusion of credit – to the economy broadly or in support of particular types of asset purchase – drives demand which pushes up asset prices. Higher asset prices in turn justify greater borrowing against the value of the assets. Feedback of this sort is commonly observed in housing markets where mortgage loans entitle the lender to take ownership of the property if the borrower defaults. Lenders and borrowers are reassured by rising property values, readily believing that prices can only go up. This belief itself can sustain momentum for quite some time. Eventually, however, property values diverge from rental returns to such a degree

that the illusion is no longer viable and the bubble bursts. Once the tipping point is reached, the interaction runs in reverse: property values begin to fall so lending tightens which undermines market demand causing prices to go into a downward spiral. Over the course of the cycle, risk builds as credit expands and prices boom, and then melts away during the bust that follows. This is true whether the boom and bust unfold in property markets or stock markets or foreign currencies or what have you.

Macroprudential policy aims to dampen the cyclical processes and impede the structural impulses among institutions that give rise to systemic risk. With respect to cyclical processes, the objective is to restrain booms and build resilience against busts. Under a home price boom, for example, authorities can lower the cap on the loan-to-value ratio for mortgages in order to tighten credit. They can also increase loan loss provisions that financial institutions are required to set aside so that if and when the bust comes and loans go into default, reserves are on hand for the institution to continue meeting its obligations. With respect to structural linkages, the biggest source of risk derives from major institutions that supply funds broadly to other institutions. Policy action on this front involves identifying systemically important institutions and subjecting them to higher regulatory standards to strengthen their balance sheets against shock and forestall contagion.

Contending with global capital flows

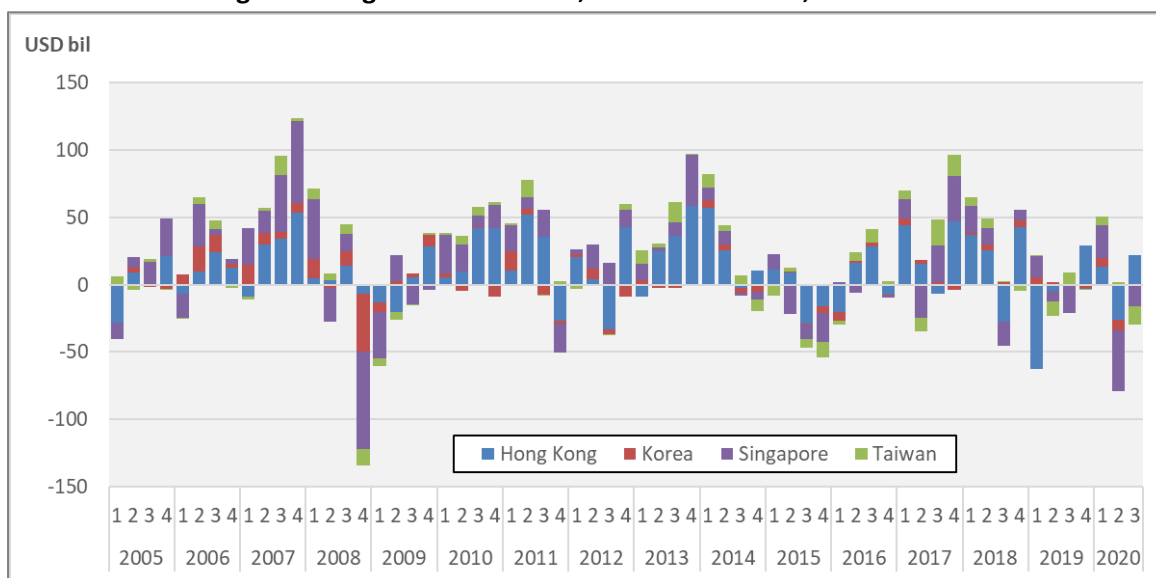
Systemic risk in emerging economies is aggravated by flows of global capital moving in and out, driven largely by external forces. Under pressure of inflows, domestic interest rates are depressed and asset prices are buoyed, and this encourages relaxation of lending standards. A mismatch results when borrowers incur obligations in foreign currencies against revenue streams in domestic currency. This mismatch carries risk associated with potential future depreciation in the local currency, a risk intrinsic to the dynamics of foreign capital pushing the value of the local currency up on its way in and down on its way back out. Should foreign loan inflows in particular come to a “sudden stop”, continued debt service payment will require outflows that may be hard to keep up as the value of the domestic currency tumbles. This is especially so if borrowing was short term and must be paid back quickly rather than rolled over as may have been anticipated. Rising interest rates and falling asset prices will compound the economic hardship and financial stress.

Global capital flows to and from emerging economies are influenced by monetary policy in the major advanced economies and by the general vicissitudes of global risk appetite. When monetary authorities in the US and the EU lower interest rates, investors go looking for higher returns worldwide; conversely, when those authorities raise interest rates, global capital retreats to safer ground. Other factors enter into the zeitgeist as well to influence mass psychology on risk taking. When risk sentiment is on, investors are eager to bet on emerging markets; when it shuts off, they seek safe harbor in the US and Europe.

The volatility of global capital flows is captured in Figure 14.1 as measured by changes in foreign loan liabilities for Hong Kong, Korea, Singapore, and Taiwan (these being chosen for their longstanding openness to foreign capital and data availability). Inflows and outflows tend to move in sync across the four economies indicating the importance of outside factors in the direction and magnitude of flows. Two periods of sustained outflow stand out: 2008Q4 (fourth quarter) to 2009Q1; and 2015Q3 to 2016Q1. On the inflow side, movement was particularly strong in 2007 and was cumulatively substantial during the interim between the major outflow

periods. Later years brought more quarterly volatility than seen previously. The outflow of 2008-2009 represented a flight from risk in the wake of the Great Financial Crisis. Similarly in 2015-2016, risk sentiment fell off, the provocation this time being a default on sovereign debt by Greece with ominous implications for the European Monetary Union. The prolonged inflows to emerging markets during the interim between these two risk-off events were motivated by low interest rates in the US and Europe and the search by investors for higher yield.

Chart 14.1 Change in Foreign Loan Liabilities, Select Economies, 2005-2020



Macroprudential policy can help to mitigate the impact of capital flow volatility on emerging market economies. The aim is to ensure that balance sheets of financial institutions can withstand capital flow reversals and exchange rate fluctuations. Instruments for achieving this include limits on foreign borrowing and protections against currency mismatch. Standards can be tightened during periods of heavy capital inflow and loosened again when inflows subside or reverse direction. The key is to ensure capacity to maintain debt service payments under changing circumstances.

Coordinating with monetary policy

Macroprudential policy and monetary policy work with overlapping effect. Both bear on credit growth, asset prices, and risk taking. Monetary policy does so broadly through manipulation of the size of the central bank balance sheet with direct effect on interest rates and exchange rates and ultimate effect, with a lag, on output and inflation economy wide. Macroprudential policy takes a more targeted approach, pointing at particular types of assets and channels of credit with consequences mainly for financial stability and less feed through to output and inflation broadly.

If the financial cycle and the business cycle are hitting boom or bust in tandem, the two arms of policy can be used in a mutually reinforcing way to tighten or loosen as the case may be. But nuanced differences in how monetary and macroprudential policy play out also allow them to be used in complementary or offsetting fashion. For example, if the housing market is

overheating with prices rising into bubble territory, macroprudential policy can be used to restrain home mortgage lending. The consequent cooling of home buying can, however, have knock on effects for construction, home furnishings, and appliances to impose a drag on the economy more broadly. To offset this, a more expansionary monetary policy can be implemented to sustain economic growth at potential.

For another example, if inflation is escalating, a tightening of monetary policy may be called for. In turn, however, rising interest rates may stress some borrowers with implications for the health of the financial sector. Macroprudential policy may then be taken up in counterpoint to ease regulatory costs on financial institutions. Conversely, a low interest rate policy implemented to stimulate a sluggish economy may encourage excessive risk taking in the financial sector. Under these circumstances, a judicious use of macroprudential policy can keep risk in check.

Coordinated use of macroprudential and monetary policies can also mitigate disruption from foreign capital flows. A capital inflow that is met with central bank purchase of foreign currency to stabilize the exchange rate has an expansionary effect on domestic money and credit. The central bank could potentially offset this with sterilization of the forex purchase through the sale of bonds to absorb the money increase. This would have the untoward effect, however, of keeping interest rates high and credit tight which would only encourage more capital inflows. On the other hand, foregoing the sterilization and allowing the money supply to increase and credit to expand could lead to excessive risk build up in the financial system. The stage is thus set for macroprudential policy tightening to tamp down financial excess in conjunction with monetary policy responding to absorb the capital inflow and stabilize the exchange rate.

Of final note, macroprudential policy shares with monetary policy a greater effectiveness in restraining booms than in stimulating recovery from busts. When the economy is slumping, monetary policy can bring down interest rates and give banks the capacity to lend, but capacity may not be enough to overcome widespread pessimism about the future. Similarly, macroprudential policy can ease regulatory standards and enhance incentives for lending, but financial institutions and their customers must wish to take advantage of these incentives. Fortunately, one more arm of macroeconomic policy stands ready to take up the mantle of stimulus in troubled times, and that is fiscal policy. The government can spend when no one else will, provided the government has maintained its creditworthiness and can borrow on manageable terms. Thus, the three arms of policy all have their places.

B. Policy Instruments

A great variety of macroprudential policy instruments has been utilized to varying degrees by the economies of Emerging East Asia. We begin this section by considering what qualifies as a macroprudential instrument. We then catalog the options and look at their implementation in the region.

Identification of instruments

Classification schemes for macroprudential instruments can run to dozens of categories. In principle, inclusion should be based on applicability of an instrument to macroprudential purposes. The problem with this principle is that some prospective candidates can be applied to more than one end. For example, changes in reserve requirements are tallied in macroprudential

data sources because they can conceivably be aimed at macroprudential goals even as their more standard purpose is to serve monetary policy.

Applying differentiated reserve ratios to foreign versus domestic currency deposits is more suggestive of a macroprudential than a monetary policy motive. For foreign currency deposits, the impact of changes in reserve requirements on domestic money supply is of little consequence such that the macroprudential motive of providing a buffer to meet potential capital outflows comes to the fore. Yet the case of differentiated reserve requirements on foreign currency deposits is not clear cut either. This instrument can be used as a capital control as well as a macroprudential instrument. Capital controls are discussed in Box 14.1.

Box 14.1 Capital Controls

Capital controls are imposed by governments to limit the movement of funds across borders. As some macroprudential instruments can have this effect as well, the distinction comes down to intent. Conceptually, capital controls are motivated by a desire to preserve stability in the balance of payments and exchange rates; by contrast, macroprudential policies are meant to safeguard stability in the financial system. While the distinction is clear enough in principle, the outcomes with respect to external stability and domestic financial stability tend to commingle making intent difficult to discern merely from the fact of policy action.

China has made concerted use of capital controls in managing a gradual opening of its financial account on the balance of payments, pulling back or moving forward in response to exchange rate pressures. Foreign investment in China's stock market (renminbi denominated shares) was first permitted in 2002 under the Qualified Foreign Institutional Investment (QFII) program which set quotas on inflows and conditions on withdrawals. By 2012 the quota on QFII investment stood at just \$30 billion. The years that followed saw aggressive increases until finally in 2020 the quota was lifted altogether, by which time QFII market capitalization surpassed \$150 billion. On the outflow side, since 2010 individuals have faced a conversion limit on renminbi to US dollars of \$50,000 a year. While this amount has been held fixed, the purposes for which conversion has been allowed and the strictness with which the rules have been enforced have varied in connection with the direction of pressure on the exchange rate. When the renminbi was depreciating in 2016, restrictions were tightened on the pooling of quotas among family and friends; conversely, in 2021 with the renminbi appreciating, consideration was given to allowing conversion for previously off-limits investment in foreign securities.

Identifying these Chinese measures as capital controls is straightforward enough since they pertain to the balance of payments and exchange rate stabilization; yet distinguishing capital controls from macroprudential policy is not always so easy. For example, limiting foreign borrowing by domestic banks serves both to inhibit capital inflows and to contain currency mismatches on bank balance sheets in mitigation of systemic risk. The same goes for requiring banks to hold higher reserves against foreign currency deposits than against domestic currency deposits. Such ambiguities are typically handled in data analysis by treating the measures as macroprudential policies when that is the subject of study and as capital controls when that is the subject of study, motivations being too difficult to discern and disentangle.

In identifying macroprudential policy instruments, the focus is on motive. In the policy formulation process, motive is explicit. The ambiguities arise only in the effort to analyze data without recourse to the policymaking context. The ambiguities are, then, a caveat for data analysis rather than a problem for policy implementation, although when conducting policy there is a need to be aware of side effects implied.

Catalog of options

A classification scheme for macroprudential policy instruments as they apply to financial institutions is presented in Table 14.1. We discuss elements of this scheme in turn.

Table 14.1: Macroprudential Policy Instruments

Capital requirements & buffers	Capital requirement given as a ratio of equity to risk-weighted assets. Additional buffers may apply, including countercyclically such that the ratio rises as aggregate credit growth increases and is relaxed during an economic downturn. May vary by sector (e.g., household, corporate).
Limits on credit	Limits on credit growth or volume with penalties for exceeding. May vary by sector or be tailored by loan characteristics (e.g., maturity, size), institution characteristics, or other factors.
Liquidity requirements	Requirements on the ratio of liquid assets to liabilities.
Limits on leverage	Limits on leverage expressed as a ratio of some measure of debt to equity.
Loan loss provisions	Required allowance to be set aside against risk of loss on loan assets. May be dynamic such that reserves are built up faster during boom times. May vary by sector.
Borrower specific limits	Limits on loan-to-value ratios or ratios of debt service or loan size to borrower income. May vary by loan purpose (e.g., housing, motor vehicles, commercial real estate).
Tax measures	Taxes and levies on transactions, assets, or liabilities (e.g., stamp duties, capital gains taxes).
Foreign exchange regulations	Regulations on foreign exchange positions, exposures, funding, lending, or currency mismatch.
Restrictions on systemically important financial institutions	Measures applied to mitigate risk from systemically important financial institutions, both domestic and global (e.g., capital or liquidity surcharges).
Reserve requirements	Reserve requirements for macroprudential purposes, as distinct, in principle, from monetary policy purposes (although in practice, differentiation is difficult). May vary by currency.

Capital requirements have long been foundational to regulating individual financial institutions, and with the growing use of macroprudential policy have taken on a role at the aggregate level as well. The idea is to ensure owner equity is adequate to absorb prospective losses to a reasonable degree of likelihood. Capital requirements are specified as a ratio of capital to risk-weighted assets where heavier weights apply to riskier assets. Policy action involves adjusting the capital ratio or the risk weights in response to changing risk conditions in the financial system as a whole or in elements of the system. Additional capital buffers may also be applied, including countercyclical buffers that are increased during booms and decreased during busts. Capital requirements serve to create resilience in the financial system for weathering shock.

A number of instruments may be used to block the procyclical feedback between credit and asset prices. A direct way of breaking this circuit is simply to impose limits on credit volume or credit growth, with possible specificity by loan purpose or borrower type. More indirect approaches work through lender incentives to both control credit growth and increase resilience against shock. For example, liquidity requirements mandate that institutions hold cash or other liquid but low-return assets against liabilities. This raises the cost of borrowing so as to mitigate

the build up of risk in connection with short-term wholesale funding through the financial market as opposed to more stable funding from deposits. Leverage ratios similarly discourage the reliance of financial institutions on borrowing and thus impede credit growth and the build up of risk. Loan loss provisions involve the setting aside of funds against future losses, with these set-asides treated as a cost on an institution's income statement. Finally, taxes can be imposed on all manner of transactions or financial positions so as to discourage lending or particular sorts of risk taking.

Instruments based on features of the retail borrower can be put to targeted use in controlling credit growth. Restrictions are set with respect to borrower income or the value of the asset purchase the borrower is financing, commonly a home. These restrictions safeguard the solvency of both borrowers and lenders. Debt- (or debt-service-) to-income ratios and loan-to-value ratios can be lowered during periods of soaring asset prices to inhibit purchase and raised during periods of slumping asset prices to encourage purchase.

Instruments involving foreign currency are important in managing systemic risk deriving from foreign capital flows. These can take many forms, some already discussed but tailored by currency, including: limits on borrowing; limits on lending; loss provisions on loans; constraints on currency mismatch between assets and liabilities; taxes; or reserve requirements on deposits.

Systemically important financial institutions (SIFIs) are subjected to more stringent regulation. SIFIs are large institutions that play an oversized role in providing wholesale funding to other institutions. Their failure would reverberate throughout the financial system with serious consequences for the real economy as well. The "too big to fail" status of SIFIs implies the government would have to bail them out. To protect against any such eventuality, and the moral hazard a bailout would engender, special attention to standards must apply to SIFIs to ensure any excessive build-up of risk is quickly curtailed.

Finally, adjustment in reserve requirements can serve macroprudential purposes given that reserves act as security against deposits and thus help to contain systemic risk. Typically, however, the motivation is to manage growth of the money supply rather than to control systemic risk, and adjusting reserve requirements is thus generally intended to serve monetary policy rather than macroprudential policy.

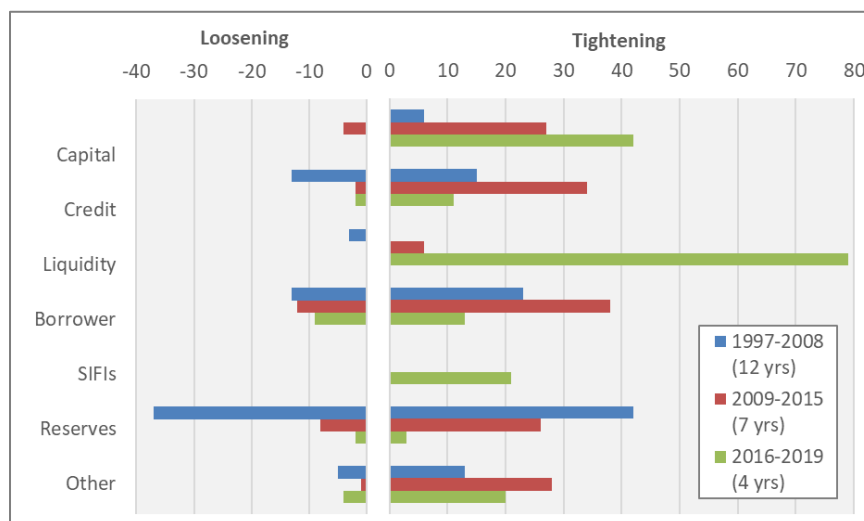
In general, macroprudential policy instruments are designed to be adjusted over the course of the financial cycle or in response to the build-up of risk in particular realms. These instruments are readily tailored to meet specific risk threats: by sector; by activity; by locality; or by currency. This affords an abundance of options in policy implementation. Circumstances may at times call for tightening on one front and loosening on another. Or, instruments may be used in complementary fashion, keeping adjustment incremental along each front to limit disruption.

Use in Emerging East Asia

Emerging East Asian economies have relied increasingly on macroprudential policy since the Great Financial Crisis, as have countries in the rest of the world. Use by instrument and by time period is shown in Chart 14.2, where use refers to discrete changes in the values of policy instruments and a distinction is made between tightening and loosening.

A number of observations are worth highlighting. First, tightening accounts for far more of the policy actions than loosening. One reason for this is that a newly established instrument can at its inception only be tightened, and not until it has been tightened to some degree can it be loosened with much relevance. Further, tightening and loosening are not symmetrical actions.

Chart 14.2 Policy Use by Instrument, 1997-2019



Tightening serves to reduce risk and restrain credit growth whereas loosening does not simply do the opposite in the sense of increasing risk and stimulating credit growth; nor would increasing risk in the financial system ever be seen as a goal to be pursued. Rather, loosening comes most decisively into play when the financial system is under duress with loans going bad and credit drying up. Under such circumstances, relaxing constraints on financial institutions reduces their costs and gives them capacity to absorb losses. The reason for building buffers through macroprudential tightening is precisely to allow these buffers to be drawn on in times of stress so that collapse of financial institutions can be avoided. With the financial system in a downward spiral, risk does not increase upon the loosening of restrictions; rather, bad debts are unwound as the outcomes of risky undertakings are realized. By giving financial institutions space to absorb irretrievable losses, balance sheets can be restored to a sound footing on which credit growth can begin anew, and eventually macroprudential buffers can be rebuilt. Macroprudential policy has taken off largely since the Great Financial Crisis. Within that time frame, compelling occasion for loosening of macroprudential regulations has, fortunately, not come to pass.

Second, changes in the reserve requirement ratio have seen heavy use going back decades, with loosening almost as common as tightening. This is predominantly a manifestation of monetary policy rather than macroprudential policy. That is, the motive was to influence growth in the money supply rather than to manage risk in the financial system. Remaining charts in this chapter thus exclude this instrument from the analysis.

Third, in the 2016-2019 period, use of capital requirements and liquidity regulations jumped sharply, and measures specific to systemically important financial institutions emerged on the scene. This represents new frontiers of policy making opening up and being popularized. By contrast, credit controls and borrower based restrictions have had a longer history, and with that loosening actions are more in evidence for these instruments. Indeed, in the recent 2016-2019 period, loosening was almost as common as tightening for borrower based restrictions. These restrictions are commonly directed at the housing market where more balanced guidance can be exercised to good effect.

C. Policy Framework

The vast array of policy instruments available and the many related indicators to be monitored suggest that macroprudential policy is up against major bureaucratic challenges. Moreover, the ramifications of getting it wrong can spill over to other economies and even the world at large, as the Great Financial Crisis taught us. In this section, we consider the institutional framework, in both domestic and international aspects, that provides context for the conduct of macroprudential policy.

Domestic institutions

No one model of governance predominates for managing macroprudential policy. All economies within our purview have established a macroprudential authority of some sort, but the specifics differ. The central bank generally plays a role, and so too do financial regulators with these regulators sometimes, but not always, housed inside the central bank. Within Emerging East Asia, the central bank is in charge of macroprudential policy in Cambodia, Indonesia, Laos, Malaysia, Singapore, Thailand, and Vietnam. In China, a commission directly under the State Council (China's cabinet) holds responsibility for financial stability with member units encompassing the central bank, the financial regulators, the Ministry of Finance, and other agencies. In Hong Kong, responsibility lies with the Financial Secretary assisted by the Secretary for Financial Services and the Treasury. In Korea, responsibility is shared among the central bank, the Financial Services Commission, the Ministry of Economy and Finance, and other agencies. In the Philippines, responsibility is vested in the Financial Stability Coordination Council which is chaired by the governor of the central bank and includes the heads of other agencies as members.

The central bank typically plays a key role in macroprudential policy due to the integral relationship between monetary policy and the financial system. Hong Kong is exceptional within Emerging East Asia in not having a discretionary monetary policy since money supply is dictated by the exchange rate peg. This undercuts the need for the monetary authority to play a role in macroprudential policy even as it elevates the importance of macroprudential instruments as tools of discretionary action. Adjustment of macroprudential regulatory parameters can affect the growth of credit where no scope exists in Hong Kong for manipulating the standard instruments of monetary policy – the interest rate and the exchange rate.

To inform policymaking, a large assortment of indicators must be monitored. Important among these are credit-to-GDP ratios, the rate of credit growth, asset prices, debt service costs relative to income, and foreign capital flows, all broken down along various lines into component parts. For none of these indicators do there exist clearcut thresholds that signify financial health or looming danger. Credit can increase for good reasons, for example: financial deepening as the financial system develops and becomes more sophisticated; broadening of financial inclusion as lower income households gain access to financial products; or rising standards of living generally. Beyond assessing magnitudes and trends then, analysts develop economic models and conduct stress tests. Stress tests are intended to reveal how the balance sheets of financial institutions would be impacted by shocks to such variables as interest rates, exchange rates, asset prices, foreign capital flows, or GDP growth. Macroprudential policy is aimed at ensuring resilience to these kinds of shocks to a reasonable degree of probability.

Armed with such data and analysis, decisions on how to adjust the instruments of macroprudential policy still come down to heavy reliance on judgment. Not a great deal is known about how adjustments in the instruments affect outcomes. The macroprudential policy toolbox has a relatively short history of use under fairly limited conditions. The empirical research done to date has focused mainly on dichotomous measures of policy action of the sort presented in the charts of this chapter; that is, an action is treated as a tightening or loosening of some instrument. Systematic data on the degree of tightening or loosening are scant.

In sum, the framework for conducting macroprudential policy involves diverse elements of government bureaucracy coming together to review data on a vast array of variables that are related to each other in complex ways and connected to policy instruments in poorly understood fashion.

International institutions

Three international bodies provide guidance and support for the formulation of macroprudential policy. The Basel Committee on Banking Supervision focuses on banking. The Basel Committee was established in 1974 within the Bank for International Settlements, a “bank for central banks” headquartered in Basel, Switzerland. The Committee offers a forum for international cooperation and sets regulatory standards, articulated in a series of Basel Accords as detailed in Box 14.2.

Box 14.2 Basel Accords I, II, and III

The Basel Committee on Banking Supervision has promulgated three accords known as Basel I (1988), Basel II (2004), and Basel III (2009) aimed at providing guidance on bank regulatory standards.

Basel I was officially titled the Basel Capital Accord. Its focus was on establishing a capital adequacy standard that would ensure owner equity would bear the brunt of losses. The need for such a standard became apparent when the Latin American debt crises of the 1980s put the solvency of major international banks in jeopardy. Basel I set a minimum ratio for capital to risk-weighted assets at 8 percent. The challenge in crafting such regulation lies in assigning the risk weights to various asset classes, with this challenge compounded by ongoing innovation in financial products.

Basel II was designed to improve risk assessment in an evolving financial environment and to better ensure compliance with standards. Bank exposure to exchange rate fluctuations, commodity price movements, traded debt securities, and derivative products received needed attention in the risk calculus. In addition, review and disclosure protocols were strengthened.

Ultimately, however, these measures proved insufficient to prevent the Great Financial Crisis of 2008. In the aftermath, Basel III was formulated to go beyond the prior focus on capital adequacy and address leverage and liquidity risks. A bank can meet capital adequacy requirements under normal market conditions and still be unable to liquidate assets quickly enough to cover withdrawals or otherwise meet obligations when panic strikes and markets seize up. Basel III imposes limits on leverage, sets requirements for cash holdings, and places guardrails on maturity mismatches. Further, it provides for the identification of systemically important banks to be held to more rigorous standards.

The dynamism of the financial system is such that regulators are always struggling to keep up. Apart from the major overhauls of the three Basel Accords, the framework is subject to constant tweaking in view of new risk threats.

Membership in the Basel Committee encompasses 45 institutions from 28 jurisdictions. From Emerging East Asia, the following institutions are members: the People’s Bank of China

and the China Banking Regulatory Commission; the Hong Kong Monetary Authority; Bank Indonesia and the Indonesia Financial Services Authority; the Bank of Korea and the Korea Financial Supervisory Service; and the Monetary Authority of Singapore. Observer status is held by the Central Bank of Malaysia. Beyond its formal membership, the Committee networks with emerging economies to solicit input and seek consolidation of standards.

The imperative of creating an oversight body with a scope beyond banking became clear with the Great Financial Crisis. In 2009, formation of the Financial Stability Board (FSB) was endorsed by the G20 countries, and the organization was formally established in Basel, Switzerland in 2013. A precursor organization existed in the Financial Stability Forum, founded in 1999 by the G7 countries, but by 2009 the need for broader representation of emerging economies had become clear. The FSB has a broad mandate to promote international financial stability. It carries out this mandate by assessing vulnerabilities in the global financial system and advising on needed actions; promoting coordination and exchange among relevant authorities; and reviewing and coordinating the work of international standard-setting bodies.

Members of the FSB from Emerging East Asia include: from China, the Vice Minister of Finance, the Governor of the People's Bank, and the Chair of the China Banking and Insurance Regulatory Commission; from Hong Kong, the Chief Executive of the Monetary Authority; from Indonesia, the Assistant to the Minister of Finance and the Governor of Bank Indonesia; from Korea, the Governor of the Bank of Korea and the Chair of the Financial Services Commission; and from Singapore, the Managing Director of the Monetary Authority. In addition to national government officials, FSB membership extends to officials of multilateral organizations, among them the International Monetary Fund, the World Bank, the Bank for International Settlements, and the Basel Committee on Banking Supervision.

Finally, the International Monetary Fund contributes importantly to safeguarding global financial stability in a number of ways: monitoring financial policies, identifying risks, and advising the governments of its 190 member countries; assessing global financial developments and coordinating international responses; gathering systematic data on macroprudential policy and maintaining a public database; and conducting research for broad dissemination.

The Basel Committee, the FSB, and the IMF work closely with each other through integrated organizational structures. A strong institutional framework for overseeing the global financial system is vital given that systemic risk emanates not just nationally but internationally. Major financial institutions conduct business worldwide. Moreover, they conduct business with each other so the principle of systemic importance pertains worldwide. For the health of the global financial system to be sustained, the same well-designed rules must apply to all internationally engaged institutions and confidence must prevail that all are abiding by these rules.

D. East Asian Experience

As noted in the discussion of Chart 14.2, Emerging East Asia has ramped up its use of macroprudential policy over time. In this section we break down the patterns by economy. We then focus on the case of Korea, an early adopter of macroprudential policy.

Cross-country comparison

Chart 14.3 shows use of macroprudential policy instruments by economy. As in Chart 14.2, a preponderance of tightening is evident, and this applies across all economies. Again too, an increasing use over time is apparent and applies to all economies. Note that each successive period pertains to a shorter span of years so on an annualized basis the increases from period to period are greater than the simple bar lengths reflect.

Hong Kong and China are revealed to be the heaviest users of macroprudential policy instruments. Hong Kong’s recourse to these instruments was foreshadowed in the sub-section on domestic institutions where the lack of discretionary monetary policy was noted. Where the interest rate and exchange rate are not manipulable to influence the growth of credit, macroprudential instruments can serve this purpose. A monetary policy motive for active management of financial regulation thus looms large in Hong Kong.

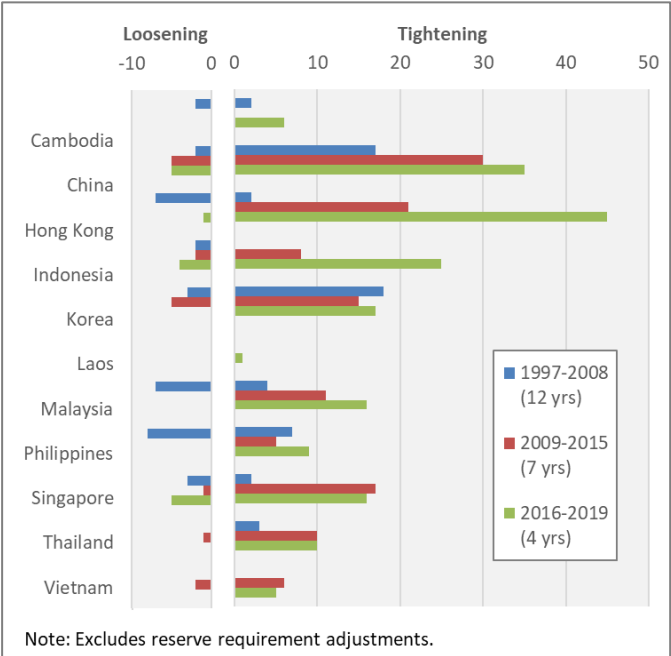
China’s use of the standard instruments of monetary policy is also constrained but for different reasons. The financial system in China is dominated by state owned banks lending to state owned enterprises such that the interest rate is not the foremost arbiter of credit decisions. Rather than targeting an interest rate then, the central bank steers policy with reference to monetary aggregates, as discussed in Chapter 11. Within this framework as well, macroprudential policy instruments become appealing tools of monetary policy.

The Hong Kong and China cases demonstrate the need for circumspection in interpreting the use of instruments identified with macroprudential policy. These instruments influence money supply growth even as they serve to manage risk in the financial system. In economies with flexible exchange rates and market driven financial systems, the interest rate and/or exchange rate can take the lead in the conduct of monetary policy allowing for a more focused application of macroprudential policies on managing systemic financial risk.

The Korean case

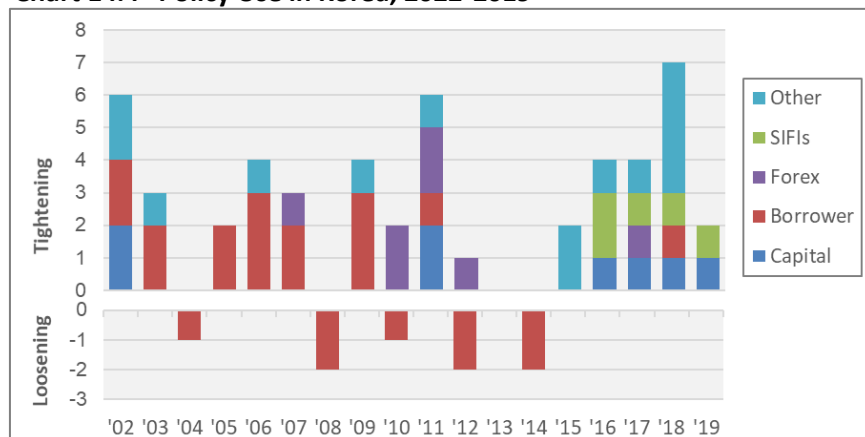
Korea was an early adopter of macroprudential policy, as Chart 14.3 illuminates. The country’s long open financial account on the balance of payments and resulting reliance on foreign borrowing exposed it to crippling shocks with both the Asian Financial Crisis and the Great Financial Crisis. In the recovery from the Asian Financial Crisis, banks shifted their lending away from large corporations, which turned to the capital markets for financing, and toward households. Easy lending to support home purchases fueled a boom in housing prices that gained momentum with soaring prices justifying ever more lending. The authorities sought to

Chart 14.3 Policy Use by Economy, 1997-2019



break the cycle by imposing loan-to-value ratios in 2002. However, once lending solidified at a given loan-to-value ratio, the procyclical movement of credit and housing prices could re-ignite. In 2005 then, the authorities tried another tack by introducing debt-to-income ratios to rein in lending, income providing a more solid anchor than housing prices. These borrower based

Chart 14.4 Policy Use in Korea, 2002-2019



instruments have been put to active use through the years, as Chart 14.4 shows. The authorities have leaned by turns to tightening or loosening as conditions warranted. Restrictions are manipulated specific to locality, lender type, and borrower characteristics.

The Great Financial Crisis called

attention to the need for macroprudential instruments to manage foreign exchange risks. In the wake of the crisis, the flight of capital to safety left emerging market banks unable to rollover or repay short-term foreign currency loans as the value of local currencies fell. To limit the coupling of currency and maturity mismatches on bank balance sheets, Korea introduced a number of new safeguards. Specifically, a leverage cap was set on bank positions in forex derivatives (such as currency futures, forwards, and interest rate swaps), which create exposure to exchange rate risk. Further, a “macroprudential stability levy” was instituted to tax foreign currency debt at maturities of less than one year. Finally, a liquidity coverage ratio was imposed to require banks with foreign exchange liabilities above a certain threshold to hold liquid foreign currency assets against these liabilities. This package of forex instruments allows for exchange rate risk to be managed in different aspects.

By 2016, growing awareness of the risks associated with the interconnectedness of banks, and in particular the role of large institutions in providing wholesale funding, prompted measures directed at systemically important financial institutions. Korean authorities identified four bank holding companies and one bank as systemically important. These institutions are required to hold additional capital buffers.

Korea’s macroprudential policies have succeeded in meeting key objectives: housing price increases have been contained; bank reliance on short-term foreign currency debt has been curtailed; and procyclicality between the financial cycle and the economic cycle has been weakened. The ultimate test of macroprudential management, however, lies in how well the financial system averts or weathers crises. On this, there is not yet a clear verdict.

E. Averting and Weathering Crises

As for crises that are successfully averted, we have no awareness; we are aware only of those that become manifest. Once a crisis erupts, the warning signs are always apparent in hindsight: a rapid build up of credit relative to GDP; ballooning asset prices; widening

mismatches by currency or maturity on balance sheets. Yet there are no hard and fast rules as to how much is too much for any of these indicators.

Macroprudential policy intervention involves a great deal of judgment. In monetary and fiscal policy as well, judgment is involved. But for these more established arms of policy, the objective is in the nature of fine tuning movement of the economy along a more or less identifiable path marked by economic growth at potential with inflation low and stable. Feedback on policy performance is ongoing; the policy toolkit is concise; and the mechanisms by which the tools work are fairly well understood. By contrast, for macroprudential policy the ultimate objective of building resilience is vaguely defined; timely feedback is absent; and the policy tools are multitudinous with their workings obscure.

As if these challenges to implementing macroprudential policy were not enough, the costs of restrictions are obvious, immediate, and borne by well-identified stakeholders while the benefits are nebulous, delayed, and felt by society at large. Macroprudential policies limit the current opportunities of businesses to make money. In exchange, the society of the future may possibly avoid the collapse of financial institutions and an economic recession. The titans of finance will tend to resist the impositions of macroprudential intervention. And given the rarity and unpredictability of financial distress, the political will to act against these vested interests will be difficult to marshal. Global standard setting bodies have been helpful in elevating the decisions above the domestic political fray. The occasional financial crisis tends also to be a game changer in focusing consensus.

Crises when they do occur are damaging enough to leave deep and lasting impressions. The best that can be hoped is that we learn something from the experience. With that, we turn attention to the topic of crises in the next chapter.

Data Note

The Bank for International Settlements is the source of data on changes in foreign loan liabilities in Chart 14.1

The International Monetary Fund maintains two overlapping databases on macroprudential policy that provide the source material for Charts 14.2-14.4. The Integrated Macroprudential Policy (iMaPP) Database is downloadable in a spreadsheet that contains monthly data from 1990 to an endpoint subject to updating (2016 for the analysis of this chapter). Policy actions are coded as +1 for tightening and -1 for loosening across 27 categories. The Data Query tool provides access to data from 2016 to the most recent year of compilation (2019 for the analysis of this chapter) in the form of detailed descriptions of policy actions that must be manually coded to conform with the iMaPP database, a process that involves judgment.

The IMF Data Query database also contains information on institutional frameworks for macroprudential policymaking that informed the discussion of domestic institutions.

Bibliographic Note

The multilateral organizations that oversee macroprudential policy are important sources of research and analysis. A 2013 International Monetary Fund paper provides an introduction. A 2017 Bank for International Settlements compendium of papers offers discussion of issues with contributions from Asian macroprudential authorities. A 2020 BIS paper considers macroprudential policy in emerging Asia in connection with foreign capital flows.

Insightful discussions of strategy for coordinating macroprudential, monetary, and exchange rate policies in the context of global financialization are to be found in Filardo et al. (2016), Obstfeld (2015), and Yellen (2014).

On the Korean case, the Bank of Korea website, an International Monetary Fund Technical Note (2020) and BIS (2017) are informative.

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