

# CHAPTER 5

## Macroeconomic and Financial Sector Policies

*Unprecedented monetary policy accommodation in advanced economies and a large, coordinated fiscal stimulus by Group of Twenty countries helped to support a solid rebound in global output in 2010. Global growth subsequently slowed to a sluggish pace by prerecession standards, however, and many emerging market and developing economies have been struggling to unwind their fiscal stimulus and contain a buildup of debt. The experience of the 2009 global recession highlights not only the need for well-timed, appropriately calibrated domestic stabilization policies but also the benefits of international cooperation and coordination in support of strong and sustained global growth and financial system stability. Sound policy frameworks can help create room for stabilization policies, such as fiscal rules to safeguard fiscal sustainability or macroprudential policies and capital flow management measures to better manage systemic risks.*

### Introduction

In 2009, the global economy experienced the deepest recession since the Great Depression of the 1930s. Yet global growth rebounded within a year, reflecting in part the use of macroeconomic stabilization policies in many advanced economies, as well as in emerging market and developing economies (EMDEs). For the first time during a major global crisis, EMDEs actively employed a wide range of countercyclical monetary and fiscal policies to stem contagion and boost postcrisis recovery. Many EMDEs lowered policy interest rates, intervened heavily in foreign exchange markets to maintain exchange rate stability, and implemented fiscal stimulus packages.

Robust growth before the 2009 global recession had allowed EMDEs to improve their fiscal and external positions, and to strengthen their macroeconomic policy frameworks. Policy space had widened in several dimensions. Lower inflation created room for expansionary monetary policies. Fiscal balances had improved, from a deficit of 0.8 percent of gross domestic product (GDP) in 2002, on average, to a surplus of 2.4 percent in 2007. EMDEs had strengthened external buffers, too, because their foreign exchange reserves had increased substantially—70 percent of EMDEs increased their international reserves by more than 10 percentage points of external debt, while one-quarter of EMDEs increased them by more than 50 percentage points.<sup>1</sup>

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Note: This chapter was prepared by Wee Chian Koh and Shu Yu.

<sup>1</sup> Some suggest that global current account imbalances are a key factor contributing to the financial crisis (for example, Bernanke 2009; Portes 2009). They argue that excessive saving in EMDEs, reflected in current account surpluses (termed as “global saving glut”), put downward pressure on world interest rates and fueled a credit boom and risk-taking in major advanced economies, particularly in the United States, sowing the seeds of the global financial crisis.

Since the global recession, however, EMDEs have mostly depleted their policy buffers. This depletion is partly due to sluggish global growth and low commodity prices. EMDEs, as a group, have not yet fully unwound their fiscal and monetary stimulus, and they face elevated fiscal and current account deficits, and growing debt. As a consequence, many EMDEs are now less resilient to adverse shocks than they were in 2007.

The global recession highlighted several shortcomings in the financial sector policies of EMDEs. For example, precrisis financial regulation and supervision tended to focus on microprudential policies, aimed at the stability of individual financial institutions, rather than on the stability of the financial system as a whole. Furthermore, the risk-weighted capital requirements of Basel II have tended to be procyclical because requirements decline as risk ratings of bank loans improve, whereas during a contraction requirements tend to rise (Admati and Hellwig 2014; Gordy and Howells 2006).

Since the global recession, financial sector policies have undergone a major transformation. They now aim more explicitly at mitigating system-wide risks in order to safeguard financial stability. Prudential supervision shifted toward a more macroprudential focus, targeting the stability of the financial system as a whole. Restrictions on capital flows, a controversial policy measure before the global recession, have since been viewed more favorably from a macroprudential perspective.

Against this backdrop, this chapter examines the following questions:

- What macroeconomic and financial sector policies characterized EMDEs prior to the global recession?
- How have EMDE macroeconomic and financial sector policies evolved since the global recession?

**Contribution to the literature.** Chapter 5 constitutes the first extensive stocktaking of the evolution of macroeconomic policies used by EMDEs before, during, and after the global recession. Previous studies focused on subsets of policies, such as monetary policies or fiscal policies (Cukierman 2013; de Haan et al. 2018; Ramey 2019); policies during or shortly after the global recession (Akerlof et al. 2014; Blanchard et al. 2016; Taylor 2014); or macrofinancial linkages that propagated the financial crisis (Blanchard, Faruquee, and Das 2010; Claessens and Kose 2018). Most of these existing studies do not distill policy lessons specifically for EMDEs. The chapter also provides a detailed overview of financial sector policies in EMDEs, whereas the previous literature on such policies focuses on advanced economies (IMF 2018a). The chapter distills lessons from the global recession that are relevant to EMDE policy makers today.

**Main findings.** This chapter reports the following findings. First, during the global recession, unprecedented coordinated monetary stimulus (in advanced economies) and fiscal stimulus (in advanced economies and EMDEs) supported a rapid rebound in global growth. Three-fifths of EMDEs with floating exchange rates had lowered their policy interest rates by the first quarter of 2009. EMDEs also made use of other

measures to encourage bank lending, such as reducing reserve requirements; accepting a broader range of collateral as lender of last resort; injecting liquidity into, and recapitalizing, domestic banks; and channeling government-supported lending through development banks. In addition, the fiscal policy response was unprecedented, with large spending packages implemented by Group of Twenty (G20) economies.

Second, since the global recession, monetary policy has remained accommodative and fiscal stimulus has not been fully unwound in many EMDEs. By 2018, fiscal balances had returned to 2007 levels in only one-quarter of EMDEs and real interest rates had returned to 2007 levels in only one-half of them. Most of the EMDEs that have unwound their crisis-related fiscal stimulus were commodity importers. Many commodity-exporting EMDEs implemented procyclical policy tightening in response to the steep commodity price decline of 2011-16. Rising external, corporate, household, and government debt stocks, combined with wider fiscal and current account deficits, have increased the vulnerabilities of EMDEs to shocks.

Third, since the global recession, all advanced economies and about 70 percent of EMDEs have strengthened their macroprudential policy frameworks and the resilience of their financial systems. Several new instruments have been implemented under the Basel III framework to reduce systemic risk. EMDEs have been more aggressive than advanced economies in their use of macroprudential tools like foreign exchange and liquidity policies (for instance, limits on foreign currency loans and foreign exchange countercyclical reserve requirements) to mitigate their exposure to volatile capital inflows.

Fourth, the use of capital flow management measures as a tool to promote financial stability in appropriate circumstances has gained greater acceptance. During the global recession, many EMDEs strengthened existing capital flow management measures whereas others introduced new ones. Measures such as reserve requirements on foreign investment, taxes on currency outflows, taxes on interest and capital gains earned by nonresidents, minimum term requirements for holdings of central bank securities, and limits on foreign currency positions have often been used by EMDEs over the past decade.

Fifth, the global recession offers important lessons for policy priorities. Fiscal and monetary policy can be effective stabilization tools if they are implemented swiftly and, especially, if they are coordinated in response to global shocks. Policy stimulus, however, can have the unintended consequence of sowing the seeds for the next crisis if the stimulus is not unwound in a timely manner and if financial sector supervision and regulation are inadequate.

The rest of the chapter is structured as follows. First, the chapter describes the macroeconomic policies used by EMDEs before, during, and after the global recession. Second, it focuses on financial sector policies, including the emerging interest in complementing microprudential policies with macroprudential policies, and the renewed interest in capital flow management policies. Finally, it concludes and distills policy lessons.

## Macroeconomic policies

### Before the global recession: Growing policy space in EMDEs

Strong growth during 2002-07 widened policy space in many EMDEs. Lower inflation created room for monetary policy to ease substantially without undermining the credibility of central bank commitments to inflation control. Budget deficits narrowed and government debt declined, which provided governments the space to raise spending or cut taxes. Improved current account balances and rising international reserves strengthened the buffers against external shocks and boosted the confidence of investors.

**Monetary buffers.** Inflation remained in single digits in 82 percent of EMDEs during 2002-07, compared to only 35 percent in the preceding decade (box 5.1). Even in Latin America and the Caribbean (LAC), which had been plagued by persistently high inflation during the 1980s and 1990s, inflation was brought down to an average of 4.6 percent in 2002-07. In a notable case, Brazil's inflation rate in 2007 had fallen to 3.6 percent, compared to an average of more than 1,000 percent in the early 1990s. This broad-based disinflation reflected the strengthening by many EMDEs of their macroeconomic policy frameworks, including granting greater independence to their central banks over the conduct of monetary policy and moving toward more flexible exchange rate regimes (Ha, Kose, and Ohnsorge 2019; box 5.1).

**Fiscal buffers.** The fiscal position of many EMDEs improved as robust growth buoyed government revenues and lightened real debt burdens. Fiscal balances in EMDEs improved on average from a deficit of 0.8 percent of GDP in 2002 to a surplus of 2.4 percent in 2007. Government debt declined sharply from 76 percent of GDP in 2002 to 45 percent in 2007. The improvements were most pronounced in commodity exporters, which benefitted from the commodity price boom of the mid-2000s.

**External buffers.** Export-driven growth generated smaller current account deficits in EMDEs (up from 3.5 percent of GDP in 2001 to 1.2 percent in 2007), allowing a considerable accumulation of foreign exchange reserves (Goldstein and Xie 2009; Ocampo 2009). In about 70 percent of EMDEs, reserves increased by more than 10 percentage points of external debt between 2002 and 2007 and, in one-quarter of EMDEs, increased by more than 50 percentage points of external debt. The reserve buildup was most pronounced in the East Asia and Pacific (EAP) region, where reserves increased to 250 percent of external debt in 2007 (figure 5.1). China, with reserves of more than four times external debt in 2007, accounted for most of this increase. Among other major EMDEs, Brazil accumulated foreign reserves equivalent to 75 percent of external debt. The increases in current account surpluses and accumulation of international reserves were partly a reflection of exchange rate policies, because several countries intervened in foreign exchange markets to contain appreciation of their currencies, which both increased their reserves and helped maintain or improve their international competitiveness.

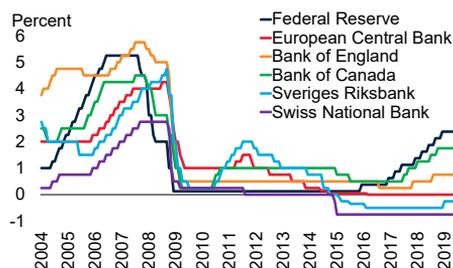
### During the global recession: Stimulus

Unprecedented coordination of monetary and fiscal stimulus, in the largest advanced economies and EMDEs alike, supported a strong rebound of global output in 2010.

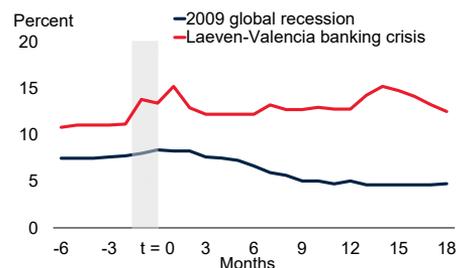
## FIGURE 5.1 Monetary policy since the global recession

*Unprecedentedly coordinated monetary policy accommodation in advanced economies supported a rebound in global growth. EMDE central banks also loosened their monetary policies, in contrast to previous crises. During the global financial crisis, a large number of EMDEs intervened in foreign exchange markets to support their currencies and to ensure an orderly financial system.*

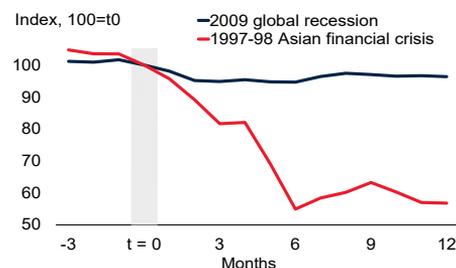
### A. Monetary policy in advanced economies



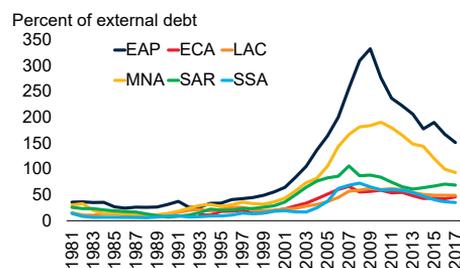
### B. EMDE policy interest rates around previous crises



### C. Nominal effective exchange rates in EAP around crises



### D. Foreign reserves



Sources: Bank for International Settlements; Darvas (2012); Laeven and Valencia (2018); Haver Analytics; World Bank.

Note: EAP = East Asia and Pacific; ECA = Europe and Central Asia; EMDEs = emerging market and developing economies; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; SAR = South Asia; SSA = Sub-Saharan Africa.

B. Median policy rates. The country sample (based on data availability) in the Laeven-Valencia banking crisis episodes consists of Argentina, Bulgaria, Colombia, Croatia, Czech Republic, Hungary, Malaysia, Philippines, the Russian Federation, and Vietnam. The starting dates ( $t = 0$ ) are defined by Laeven and Valencia (2018). The country sample in the 2009 global recession consists of 26 EMDEs.  $t = 0$  for the 2009 global recession is September 2008.

C. A decline denotes nominal effective depreciation. The East Asian countries are Indonesia, the Republic of Korea, Malaysia, Philippines, Singapore, and Thailand.  $t = 0$  for the crisis episodes (and global recession) are July 1997 and September 2008.

EMDE central banks, having accumulated large foreign reserves and tamed inflation before the crisis, were able to intervene heavily in foreign exchange markets in support of their currencies and lower policy interest rates. In addition, EMDE governments announced fiscal packages that included infrastructure investment, tax cuts, and social protection programs.

**Monetary stimulus in advanced economies.** In response to slowing output growth and escalating threats to financial stability, six major central banks—the U.S. Federal Reserve, the Bank of Canada, the Bank of England, the European Central Bank (ECB), the Sveriges Riksbank, and the Swiss National Bank—announced policy rate cuts

simultaneously in October 2008 (figure 5.1). It was the first-ever coordinated monetary policy response to a financial crisis or recession (BIS 2009).<sup>2</sup> By May 2009, policy rates of the major central banks had been reduced to nearly zero, except for the ECB and Bank of Canada, which stopped their rate cuts well before reaching the zero lower bound (Arteta et al. 2015). In several advanced economies, rate cuts were complemented with capital injections or emergency funding for financial institutions (U.S. Department of Treasury 2013).

Despite lower funding costs, banks globally tightened credit standards, so financial conditions faced by borrowers did not ease by nearly as much as the cuts in policy rates might indicate. To boost credit availability, major central banks subsequently broadened the scope of their policy to include quantitative easing programs—large-scale purchases of government bonds and private sector assets and credit provision—and forward guidance on monetary policy, both aimed at lowering longer-term rates (Carstens 2019). The asset purchases resulted in substantial changes in the size and composition of the balance sheets of central banks.<sup>3</sup>

The U.S. Federal Reserve also coordinated swap arrangements with other major central banks to address the shortage of U.S. dollar funding among non-U.S. banks. By the end of 2008, the U.S. Federal Reserve had extended swap lines to all major central banks as well as to Australia, Brazil, Denmark, the Republic of Korea, Mexico, New Zealand, Norway, and Sweden. Within Europe, central banks had similar swap arrangements for short-term funding in the euro and Swiss franc.

Although these policy responses addressed the immediate funding needs of banks and succeeded in averting a collapse of the financial system, the bankruptcy of Lehman Brothers in September 2008 caused serious concerns about the solvency of many systematically important financial institutions. As a result, additional measures were undertaken by governments in advanced economies to stabilize markets and institutions, including providing deposit and debt guarantees, capital injections to increase bank solvency, and asset purchases.

**Monetary stimulus in EMDEs.** Against the backdrop of a decade of low inflation, improved policy frameworks, and high international reserves, EMDEs also pursued monetary policy accommodation. Three-fifths of central banks in EMDEs with floating exchange rates lowered policy rates by the first quarter of 2009 (Ha, Kose, and Ohnsorge 2019).<sup>4</sup> Some low-income countries (LICs), mostly in Sub-Saharan Africa (SSA), eased

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<sup>2</sup>The Bank of Japan, with a policy rate already very low, at 0.5 percent, did not ease, but expressed strong support for the coordinated policy action.

<sup>3</sup>The U.S. Federal Reserve began its quantitative easing program in November 2008, the Bank of England in March 2009, and the ECB in May 2009. These programs of large-scale purchases of longer-term assets were intended mainly to lower longer-term interest rates, partly through a “signaling effect” (that is, by boosting investor confidence in these assets) and, more important, through a “portfolio balance effect” through which the asset purchases would reduce the availability of such assets to the private sector, thus raising their prices and lowering their yields.

<sup>4</sup>Based on 39 EMDEs with available data on exchange rate regimes and monetary policy rates. In the early stages of the crisis, EMDEs increased policy rates to stem rising inflation because growth remained robust, whereas in advanced economies growth had weakened. EMDEs started to cut rates in late 2008 and early 2009.

## BOX 5.1 Disinflation in emerging market and developing economies

*Emerging market and developing economies (EMDEs) have achieved a remarkable decline in inflation, from a median rate over 17 percent in 1974 to about 3 percent in 2018. This achievement has coincided with an even sharper decline in inflation in advanced economies. What may be called the “great disinflation” in EMDEs has been accompanied by growing inflation synchronization as evidenced by the emergence of a global inflation cycle. It has been supported by long-term trends such as the widespread adoption of robust monetary policy frameworks and strengthening of global trade and financial integration. The 2009 global recession also contributed to the decline in inflation. If the wave of structural and policy-related factors that have driven disinflation since the 1970s loses momentum or is reversed, however, policy makers may find that maintaining low inflation can be as great a challenge as achieving it.*

### Introduction

Emerging market and developing economies (EMDEs) have achieved a remarkable decline in inflation since the mid-1970s (Ha, Kose, and Ohnsorge 2019).<sup>a</sup> Median annual national consumer price index (CPI) inflation in EMDEs fell from stubbornly persistent double-digit rates during the 1970s to about 3 percent in 2018 (figure B5.1.1). By 2018, inflation was within or below central bank target ranges in three-quarters of the EMDEs that had adopted inflation targeting. The decline in inflation began in the mid-1980s in advanced economies and in the mid-1990s in EMDEs. By 2000, global inflation had stabilized at historically low levels.

Low and stable inflation has historically been associated with steady and faster economic growth and better development outcomes. But it remains to be seen whether EMDEs can continue to enjoy low inflation if the confluence of structural and policy-related factors that have fostered global disinflation over recent decades is not sustained.

Against this backdrop, this box addresses the following questions:

- How has EMDE inflation evolved?
- How important is global inflation in explaining national inflation in EMDEs?
- Can EMDEs sustain low inflation?

### Evolution of inflation: A remarkable conquest

**Disinflation.** EMDEs have witnessed a significant decline in inflation since the mid-1970s, with median annual national CPI inflation down from a peak of 17.6

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Note: This box was prepared by Jongrim Ha.

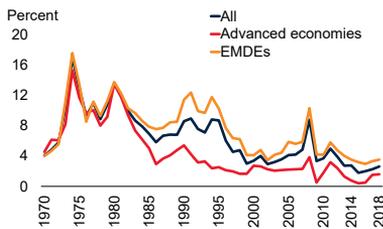
a. The “near-universal” character of the decline in inflation since the mid-1970s was recognized at an early stage by Rogoff (2003).

## BOX 5.1 Disinflation in emerging market and developing economies (continued)

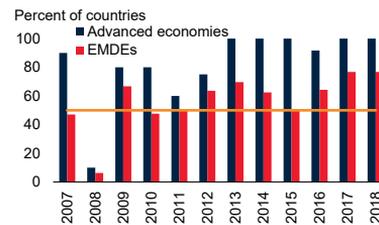
### FIGURE B5.1.1 Inflation and inflation expectations

EMDE inflation remains near the historic lows of 2015 despite a recent normalization in inflation in some advanced economies. Inflation is now below inflation targets (or within target ranges) in most EMDEs.

#### A. Median annual CPI inflation, by country group



#### B. Shares of advanced economies and EMDEs with inflation below targets (or within target ranges)



Sources: Bloomberg; Consensus Economics; Haver Analytics; World Bank.

Note: CPI = consumer price index; EMDEs= emerging market and developing economies; LICs = low-income countries.

A. Median year-on-year change in CPI for 29 advanced economies and 126 EMDEs (including 29 LICs).

B. All inflation rates refer to year-on-year inflation. Share of inflation-targeting countries with inflation below target (or within target range). Horizontal line indicates 50 percent.

percent in 1974 to 3.5 percent in 2018. Disinflation over recent decades has been broad-based across regions and country groups.<sup>b</sup> For example, disinflation occurred across all EMDE regions, including those with a history of persistently high inflation, such as Latin America and the Caribbean, and Sub-Saharan Africa (figure B5.1.2).<sup>c</sup> Even among low-income countries (LICs), inflation fell sharply between the mid-1970s (about 15 percent a year) and 2018 (3.9 percent), although there is larger variability in national inflation rates among LICs than among other EMDEs.

EMDE disinflation occurred against the backdrop of even sharper disinflation among advanced economies, where median inflation dropped from its highest rate in 60 years in 1974 (15.0 percent) to its lowest in 2015 (0.4 percent). Since 2015, it has risen somewhat to 1.6 percent in 2018 but remains below the median inflation target of advanced economy central banks. After 2008, below-target inflation and, in some cases, deflation became pervasive across advanced economies: for example, in 2015, inflation was negative in more than half of

b. Disinflation is a decline in inflation rates, regardless of inflation being negative (deflation) or positive.

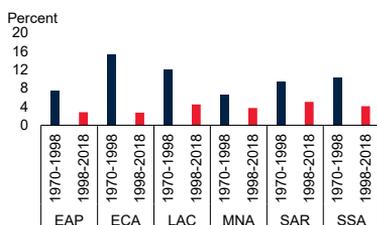
c. But inflation remains in double-digits in the Arab Republic of Egypt, the Islamic Republic of Iran, Nigeria, and Turkey, often reflecting currency depreciation.

### BOX 5.1 Disinflation in emerging market and developing economies (continued)

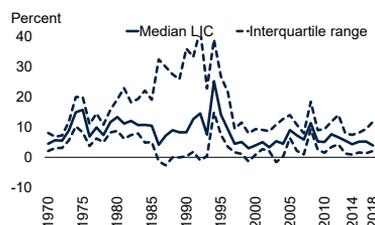
**FIGURE B5.1.2 Factors associated with disinflation**

*Inflation has declined in all EMDE regions and low-income countries. In most EMDEs, annual inflation is now below 5 percent. Lower inflation is associated with greater trade and financial openness. Inflation also tends to be lower in countries that employ inflation targeting and have more independent and transparent central banks.*

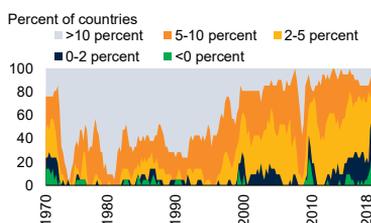
**A. Median CPI inflation, by region**



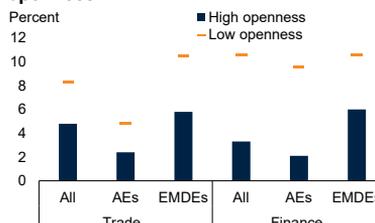
**B. Inflation in low-income countries**



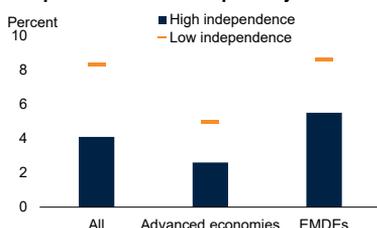
**C. Distribution of inflation in EMDEs**



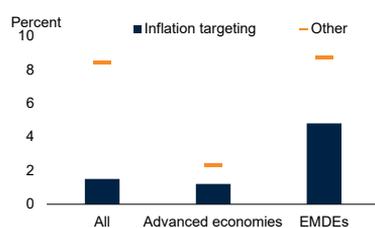
**D. Inflation, by trade and financial openness**



**E. Inflation, by index of central bank independence and transparency**



**F. Inflation, by monetary policy regime**



Sources: Ha, Kose, and Ohnsorge (2019); Haver Analytics; International Monetary Fund; Organisation for Economic Co-operation and Development.

Note: Median headline CPI (consumer price index) inflation of 29 advanced economies (AEs) and 123 EMDEs. EAP = East Asia and Pacific; ECA = Europe and Central Asia; EMDEs = emerging market and developing economies; LAC = Latin America and the Caribbean; LICs = low-income countries; MNA = Middle East and North Africa; SAR = South Asia; SSA = Sub-Saharan Africa.

B. Solid line shows median inflation and dotted lines refer to interquartile ranges, based on 29 LICs.

C. Inflation refers to quarter-on-quarter annualized inflation. Sample includes 50 EMDEs.

D. Columns indicate median inflation in countries with high trade-to-GDP ratios ("Trade") or high levels of financial assets and liabilities relative to GDP ("Finance") in the top quartile ("high openness") of 175 economies during 1970-2017. Horizontal bars indicate countries in the bottom quartile ("low openness").

E.F. Columns indicate median inflation in country-year pairs with a central bank transparency index in the top quartile (E) or with inflation targeting monetary policy regimes (F). Horizontal bars denote medians in the bottom quartile (E) or with monetary policy regimes that are not inflation targeting (F).

D.-F. Differences are significant at the 5 percent level.

### BOX 5.1 Disinflation in emerging market and developing economies (*continued*)

advanced economies. Some advanced economy central banks have struggled to lift inflation back to their inflation targets over the past decade.

**Drivers of low inflation.** Although the global financial crisis played a major role in pushing inflation down around the world over the past decade, a wide range of structural changes has supported the longer-term trend of disinflation. The most significant of these changes have been the widespread adoption of more effective and transparent monetary, exchange rate, and fiscal policy frameworks as well as globalization (figure B5.1.2).<sup>d</sup>

- *Macroeconomic policies.* In the second half of the 1980s and during the 1990s, many EMDEs implemented programs of macroeconomic stabilization and structural reform, and gave their central banks greater independence and clearer mandates to achieve and maintain low inflation. The adoption of more resilient policy frameworks has facilitated more effective control of inflation (Fischer 2015; Taylor 2014). Twenty-four EMDEs have introduced inflation-targeting monetary policy frameworks since the late 1990s; in the median EMDE, the Dincer-Eichengreen index of central bank independence and transparency rose more than 150 percent between 1990 and 2014. Inflation tends to be lower in countries that employ an inflation-targeting framework and that have more independent and transparent central banks. Changes in fiscal policy frameworks have also contributed: fiscal rules have been adopted in 88 countries, including 49 EMDEs (Ha et al. 2019). Other reforms, including labor market and product market liberalization, and the removal or easing of foreign exchange market controls, also assisted the disinflation process.
- *International trade and financial integration.* Inflation tends to be lower in economies that are more open to trade and financial flows. With regard to trade, in both the median EMDE and the median advanced economy, the ratio of trade (exports plus imports) to gross domestic product (GDP) increased by half between 1970 and 2017, to 75 percent of GDP in the case of EMDEs. Increasing international integration of product markets has contributed to lower inflation partly because increased openness to imports in consumption and production has increased competition in domestic markets. In addition, the growth of manufacturing production and exports in EMDEs (particularly China, where labor costs are relatively low) has played an important role in lowering CPI inflation worldwide. Increased financial integration has helped discipline macroeconomic policies: more financially

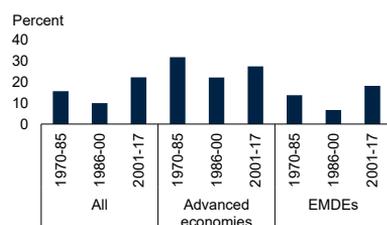
d. Other structural changes have also been important (Ha et al. 2019). For example, technological advances, including the digitalization of services and automation of manufacturing, have transformed production processes that attenuated inflation pressures. Population aging may also have contributed.

## BOX 5.1 Disinflation in emerging market and developing economies (continued)

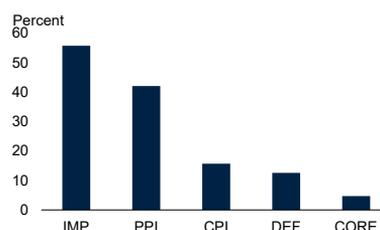
### FIGURE B5.1.3 Inflation synchronization

*Inflation has become increasingly globally synchronized. The “global factor” accounts for a greater share of inflation variance in advanced economies than in EMDEs, and is more important in explaining the variance of price indexes with a greater tradable goods and services content.*

#### A. Contribution of global factor to inflation variation



#### B. Contributions of global factors to inflation variation, by inflation measure



Sources: Ha, Kose, and Ohnsorge (2019); World Bank.

A. The results are based on a two-factor dynamic factor model with inflation using a sample of 99 economies (25 advanced economies and 74 emerging market and developing economies (EMDEs) for 1970-2017. The model includes global and group inflation factors. All numbers refer to median variance shares of total inflation variance accounted for by the global factor.

B. Global inflation factors are estimated with two-factor dynamic factor models for annual inflation for each measure in 38 countries (25 advanced economies and 13 EMDEs) for the period 1970-2016, the size of the sample being constrained by data availability. CORE = core consumer price index; CPI = headline consumer price index; DEF = GDP deflator; IMP = import price index; PPI = producer price index.

integrated economies are more likely to implement monetary policies targeting low and stable inflation (Kose et al. 2010). In EMDEs, international assets and liabilities tripled (although they remain only half the level of advanced economies).

### Global inflation cycle: Getting stronger

A critical feature of the international inflation experience of the past four to five decades has been the emergence of a “global inflation cycle” (Ciccarelli and Mojon 2010). This cycle is reflected in a growing contribution of a common “global factor” to the variation in country-level inflation rates. To analyze its importance, a dynamic factor model is estimated for annual CPI inflation rates in 25 advanced economies and 74 EMDEs during 1970-2017 (Ha, Kose, and Ohnsorge 2019). The model includes a common global factor as well as group factors specific to advanced economies and EMDEs, respectively. The presence of group factors allows the model to account for the large differences in country characteristics between advanced economies and EMDEs.

### BOX 5.1 Disinflation in emerging market and developing economies (*continued*)

**Global inflation factor.** Inflation has become increasingly globally synchronized (figure B5.1.3). The contribution of the global factor to inflation variation has grown over time: since 2001, it has almost doubled, and it now accounts for 22 percent of inflation variation (Ha, Kose, and Ohnsorge 2019). In this period, it explains about one-fifth and one-quarter, respectively, of inflation variation in EMDEs and advanced economies. Over the past four decades, the EMDE-specific factor has also become more important. The rising importance of these global and group-specific factors indicates that inflation synchronization has become more broad-based over time.

**Tradables versus nontradables.** The role of the global factor has been more prominent in price baskets with a larger tradables content. The global factor's contribution to inflation variation was largest for import prices (54 percent in the median country) and smallest for core CPI inflation (5 percent). Between these two extremes, the global factor's contribution to variation in producer price index inflation was 42 percent and that for GDP deflator growth was 13 percent and comparable to that for headline CPI inflation.

#### Maintaining low inflation: A challenge

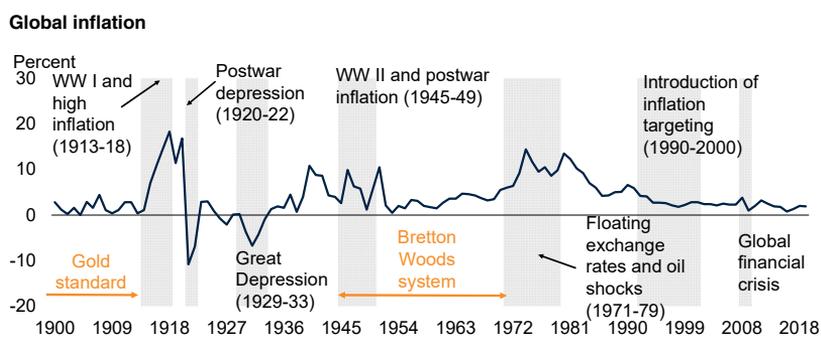
The future maintenance of low inflation cannot be taken for granted (Carstens 2018; Draghi 2015; Rogoff 2014). If cyclical and structural forces become less disinflationary over the next decade than they have been over the past five decades, inflation could rise globally. The strengthening global inflation cycle could put upward pressure on EMDE inflation. More important, structural and policy-related factors that have helped lower inflation over the past several decades may lose momentum or be reversed amid mounting populist sentiment.

- *Slowing globalization.* The rising protectionist sentiment of recent years may slow the pace of globalization or put it into reverse. New tariffs and import restrictions have been put in place in advanced economies and EMDEs since 2017. The risk of further escalation in trade restrictions by major economies remains elevated.
- *Weakening monetary policy frameworks.* A shift from a strong mandate of inflation control to objectives related to the financing of government would undermine the credibility of monetary policy frameworks and raise inflation expectations. In the past, declines in EMDE central bank independence and transparency have been associated with significantly less well-anchored inflation expectations and greater pass-through of exchange rate movements to inflation.
- *Weakening fiscal policy frameworks.* Growing populist sentiment or persistently weak economic growth could trigger a move away from rules-based, or otherwise disciplined, fiscal policies. Fiscal rules can become ineffective once

## BOX 5.1 Disinflation in emerging market and developing economies (*continued*)

### FIGURE B5.1.4 Low inflation episodes

Global inflation has been low and stable before: during most of the 1950s and 1960s under the Bretton Woods fixed exchange rate system and during the gold standard of the early 1900s.



Source: World Bank.

Note: Median of annual average inflation in a sample of 24 economies for which data are available across the full period.

commitment to them falters (Wyplosz 2013). Mounting public and private debt in EMDEs could also weaken commitments to strong fiscal and monetary policy frameworks. Government or private sector debt (or both) has risen in more than half of EMDEs since 2012, including in many LICs (World Bank 2018b). EMDE sovereign credit ratings have continued to deteriorate, with some falling below investment grade, reflecting concerns about rising government debt and deteriorating growth prospects.

If unwanted inflation makes a comeback, policy frameworks may be tested in EMDEs: inflation expectations in these economies are generally less well-anchored than in advanced economies, and the absence of strong monetary policy frameworks in many of them means that inflation is sensitive to exchange rate movements (Ha, Stocker, and Yilmazkuday 2019; Kose et al. 2019). Growing inflation synchronization also increases the risk of policy errors when the appropriate response depends on the origin of the underlying inflation shock (IMF 2018b).<sup>e</sup> EMDE central banks may struggle to contain inflationary pressures and may not receive adequate support from fiscal policy.

e. Major advanced economy central banks have also acknowledged the need to consider the global environment in setting monetary policy in light of the highly synchronized nature of global inflation (Bernanke 2007; Carney 2015; Draghi 2015).

### **BOX 5.1 Disinflation in emerging market and developing economies (*continued*)**

History teaches us that it is difficult to sustain low inflation. For example, the 1950s and 1960s under the Bretton Woods fixed exchange rate system and the period of the gold standard in the early 1900s were followed by sharply rising inflation (figure B5.1.4). The steep increase in oil prices in 1973-74 led to a rapid acceleration in global inflation, accompanied by sharp declines in growth in many countries (Kose and Terrones 2015). Global inflationary pressures also led to significant increases in domestic inflation in developing economies, including those that had experienced relatively low and stable inflation in the late 1960s and early 1970s (Cline 1981). All three episodes of sustained low inflation are characterized by inflation below 5 percent for an extended period. Such experiences illustrate the fact that maintaining low inflation can be as great a challenge as achieving low inflation.

EMDE policy makers need to recognize the increasing role of the global inflation cycle in driving domestic inflation. Options to help insulate economies from the impact of global shocks include strengthening institutions, including central bank independence, and establishing fiscal frameworks that can both ensure long-run debt sustainability and provide room for effective countercyclical policies.

monetary policy when inflation pressures subsided amid lower energy and food prices (IMF 2010a). The monetary easing during the crisis stands in sharp contrast to, for example, the 1997-98 Asian financial crisis when many of the affected countries had exchange rate targets, and raised policy rates in attempts to prevent large currency depreciations (figure 5.1).

EMDEs adopted a wide range of additional monetary instruments during this period. Central banks in EAP (China, Malaysia), LAC (Brazil, Colombia, Peru), and South Asia (SAR; India) reduced reserve requirements whereas others accepted a broader range of collateral as lender of last resort (Argentina, Chile, the Czech Republic).<sup>5</sup> Some central banks in the Middle East and North Africa (MNA) and SSA injected liquidity into domestic banking systems (Nigeria, Tunisia) or recapitalized domestic banks (Algeria, Kenya, Mali). Brazil, China, Colombia, and the Philippines also loosened financial conditions by increasing government-financed lending, channeled through their development banks. During 2007-09, the combined loan portfolio of development banks increased by 36 percent, well above the 10 percent increase in commercial bank credit (de Luna-Martínez and Vicente 2012).

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<sup>5</sup>In the run-up to and in the wake of the global financial crisis, several EMDEs such as Brazil, Colombia, Indonesia, and Thailand introduced capital controls and other measures to manage exchange rate pressures (Gallagher 2015; IMF 2012; World Bank 2009). Some EMDEs also implemented unconventional monetary policy (García-Cicco and Kawamura 2014).

**Foreign exchange market support.** In addition to injecting monetary policy stimulus, many EMDE central banks used a variety of tools to ease downward pressures on their exchange rates.<sup>6</sup> In 2009, about one-fifth of EMDEs intervened in foreign exchange markets to support their currencies and, on average, these countries used 15 percent of their international reserves (figure 5.1). Such operations included selling foreign currency in the spot market (Brazil, India, Mexico) and engaging in swap market auctions (Brazil, Hungary, Poland). Other measures included setting up repo facilities (Argentina, Brazil, the Philippines), providing guarantees on currency deposits (India, Malaysia, Turkey), and changing regulations to facilitate foreign borrowing (Chile, India). Some central banks established loan facilities.<sup>7</sup> In the fourth quarter of 2008, the U.S. Federal Reserve extended swap lines to Brazil, Korea, Mexico, and Singapore; while the ECB and the Swiss National Bank provided support to Hungary and Poland through swap and repurchase agreements.<sup>8</sup>

**Fiscal stimulus during the crisis.** Beginning in late 2008, concerns that monetary stimulus would not be sufficient to avert sharp output contractions led to an unprecedented use of countercyclical fiscal policy responses by major economies (figure 5.2). G20 countries concurrently introduced fiscal stimulus packages, equivalent to 1.4 percent of global GDP (IILS 2011).<sup>9</sup> Among advanced economies, the packages adopted in the United States, euro area, and Japan amounted to 5.6, 2.0, and 7.9 percent of annual GDP, respectively (Cottarelli, Gerson, and Senhadji 2014; ECB 2010; OECD 2009).<sup>10</sup> China adopted the largest stimulus package, equivalent to 12.7 percent of GDP. Other G20 EMDEs, such as India, the Russian Federation, Saudi Arabia, South Africa, and Turkey, also implemented large fiscal stimulus packages.

Outside the G20, several countries (the Arab Republic of Egypt, the Philippines, Singapore, Vietnam) also announced large fiscal stimulus packages (more than 4 percent of GDP; Nanto 2009). Several commodity exporters that had accumulated large sovereign wealth funds during the 2002-07 commodity price boom (Kuwait, Qatar, the United Arab Emirates) implemented countercyclical fiscal stimulus (IMF 2010b). Governments in several LICs, such as Kenya and Tanzania, also increased government spending, mostly on infrastructure and other public investments (Osakwe 2010).<sup>11</sup> In contrast, many Europe and Central Asia (ECA) countries could not adopt sizable fiscal stimulus programs because of severely constrained government finances. Several

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<sup>6</sup> China faced upward pressures instead; the central bank accumulated foreign reserves until mid-2014.

<sup>7</sup> Many EMDEs with less developed financial systems lack the administrative capacity or policy credibility to implement effective countercyclical measures (Allen and Giovannetti 2011). Monetary policy in these countries has therefore focused on boosting credit supply by using non-interest rate instruments (Binici and Yörükoğlu 2011).

<sup>8</sup> Colombia, Mexico, and Poland also obtained access to the International Monetary Fund's Flexible Credit Line for countries with sound fundamentals.

<sup>9</sup> At the November 2008 G20 Summit in Washington, DC, leaders of the G20 countries pledged rapid action to use fiscal measures to stimulate domestic demand.

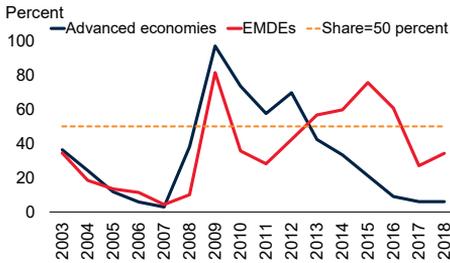
<sup>10</sup> Estimating the size of fiscal stimulus packages is complicated by an often unclear breakdown of old and new spending and an uncertain time frame for implementation. Hence, estimates from different sources may differ substantially (Cottarelli, Gerson, and Senhadji 2014).

<sup>11</sup> Kenya graduated to middle-income status in 2016.

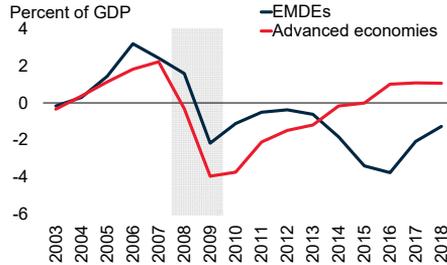
**FIGURE 5.2 Fiscal policy since the global recession**

*Fiscal stimulus in the largest advanced economies and EMDEs supported a swift recovery in global output. Advanced economies have gradually unwound their fiscal stimulus since the crisis, but fiscal stimulus has not been fully unwound in many EMDEs and policy buffers have deteriorated.*

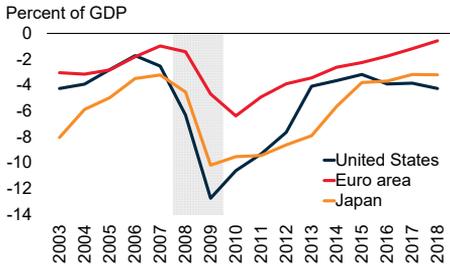
**A. Share of EMDEs with debt on rising trajectories**



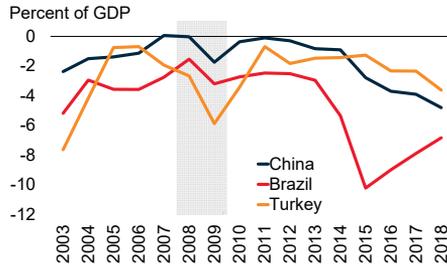
**B. Fiscal balance**



**C. Fiscal balance in selected major advanced economies**



**D. Fiscal balance in selected major EMDEs**



Sources: European Central Bank; Kose et al. (2017); World Bank.

A. Share of emerging market and developing economies (EMDEs) with sustainability gaps below -1 percent of GDP, that is, government debt on a clearly rising trajectory even at current low interest rates. Lines reflect GDP-weighted averages for corresponding country groups. The sustainability gap is the difference between the actual primary balance and the debt-stabilizing primary balance at current interest and growth rates.

B. Lines show simple averages for corresponding country groups.

economies in this region (Hungary, Kyrgyz Republic, Ukraine) sought emergency lending from the International Monetary Fund.

The composition of the fiscal stimulus packages varied widely. In the United States and the euro area, the measures consisted mainly of tax cuts and increases in transfers, which tend to have lower fiscal multipliers (Ramey 2019). In contrast, China’s fiscal stimulus package focused primarily on infrastructure investment, which tends to have large multipliers (Leduc and Wilson 2014). Given the high import content of investment spending, this package also benefitted regions with close trade links to China (SAR for manufacturing and LAC, MNA, and SSA for commodities). Other EMDEs, such as India, Mexico, and South Africa, also channeled their stimulus into infrastructure investment to close infrastructure gaps. Some countries introduced new social protection programs, such as conditional cash transfer schemes (CCTs) in

2008-09; others either expanded existing coverage of CCTs or increased benefits (Fiszbein, Ringold, and Srinivasan 2011).<sup>12</sup>

During the global recession, most EMDEs implemented discretionary fiscal stimulus on a larger scale than in earlier global contractions and allowed automatic fiscal stabilizers to operate unimpeded (World Bank 2015). Economies with relatively wide fiscal space (that is, with government debt below 40 percent of GDP) were able to implement greater fiscal stimulus than more indebted governments with narrower fiscal space (box 5.2; figure 5.2). Widening fiscal deficits, however, were reflected in rapidly rising debt.

### After the global recession: Partial policy tightening

Countries have by and large not fully reversed the postcrisis policy stimulus, in part because of protracted weakness in postcrisis growth. Since the global recession, monetary policy has remained highly accommodative in advanced economies and EMDEs. Although the postcrisis plunge in commodity prices forced a policy tightening in commodity exporters, EMDE fiscal and external positions have generally worsened.

**Gradual unwinding of fiscal stimulus in advanced economies.** Early this decade, large government fiscal deficits and rising debt in advanced economies, resulting partly from the fiscal stimulus and financial rescue packages, raised concerns about fiscal sustainability. Some euro area countries with large deficits at times faced acute market concerns about sovereign risk. Despite austerity measures in Greece, Ireland, Italy, Portugal, and Spain, these market concerns spilled into the banking sector, which had accumulated sizable government debt holdings. A series of bailout packages organized under new standing facilities backed by the European Union and the International Monetary Fund, as well as expanded bond purchases by the ECB, provided crucial support to these economies.

The euro area's fiscal balance has gradually improved since 2011, and the deficit-to-GDP ratio had almost returned to its 2007 level by 2018 (figure 5.2). The fiscal deficit of the United States fell from about 13 percent of GDP in 2009 to just over 3 percent in 2015, but has since risen to over 4 percent in 2018. Japan maintained an expansionary fiscal stance on reconstruction efforts following the 2011 earthquake, but fiscal deficits have gradually declined.

**Slow withdrawal of monetary accommodation in advanced economies.** Since the crisis, monetary policy in the major advanced economies has remained highly accommodative (Arteta et al. 2018; box 4.2). In part, it has reflected concerns about the possibility of secular stagnation, which posits that chronic demand weakness lowers potential growth

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<sup>12</sup>As shown in Fiszbein, Ringold, and Srinivasan (2011), examples of new CCT programs implemented between 2008 and 2009 include Indonesia's Bantuan Langsung Tunai (existed in 2005 and started again in 2008 as a one-off program) and Senegal's Social Cash Transfer and Nutritional Security (lasted for 6 months in 2009). Kenya's Orphan and Vulnerable Children program (launched in 2004 with the scaled-up program rolled out in 2010, still operating) and the Philippines' Pantawid Pamilyang Pilipino Program have been scaled up (carried out in 2008, still operating). In 2008, Brazil's Bolsa Familia (created in 2003, still running) and Mexico's Oportunidades (created in 1997, still running), have expanded their coverage and increased the amount of household transfers.

(Summers 2014). During the recovery, major central banks have kept policy rates at, or a little above, the historically low levels attained after the crisis. The U.S. Federal Reserve started to raise the federal funds rate from close to zero in December 2015, and its target range for the rate reached 2.25-2.50 percent in late 2018 before being reduced by 25 basis points one year later. But, a decade after the global recession, euro area and Japanese policy rates remain negative.

In addition, central banks continued their large-scale asset purchases well after the global financial crisis. To boost the sluggish recovery, the U.S. Federal Reserve undertook several rounds of such asset purchases between late 2008 and October 2014. The ECB announced several asset purchase facilities during 2011-16, including an expanded asset purchase program in March 2015. Although the program was due to be phased out after December 2018, the weakness of the euro area economy in the following year has prompted the ECB to announce preparations for an additional round of purchases. The Bank of Japan, over the same period, also introduced new asset purchase programs. Despite slowing its quantitative easing program in December 2018, it has maintained a highly accommodative policy stance.

**Delayed unwinding of stimulus in most EMDEs.** Several EMDEs that had introduced fiscal and monetary stimulus in 2009-10 gradually, but only partially, unwound this stimulus starting in 2010. By 2018, only one-quarter of EMDEs had returned their fiscal deficit-to-GDP ratios to 2007 levels, and about one-half had returned their real interest rates to 2007 levels (figure 5.3). Most of the EMDEs that fully unwound their crisis-related fiscal stimulus were commodity importers.

Several large EMDEs have not reversed their fiscal stimulus at all since 2011. In China, to deal with potential financial stability risks, the government reined in investment by local governments, discouraged financing through the nonbank system, tightened housing market regulations, and slowed the growth of bank lending (World Bank 2014).<sup>13</sup> The government subsequently embarked on additional rounds of stimulus spending in 2015-16 and 2018-19. Similarly, in India, fiscal and monetary stimulus by the central government was only partially unwound until 2016, when policy loosening resumed.<sup>14</sup> In Brazil, the unwinding of crisis-related fiscal stimulus was also delayed.<sup>15</sup> Turkey has struggled to unwind its spending increases and its policy interest rates remained negative in real terms despite double-digit inflation and rapid credit growth since 2017 (Gürkaynak et al. 2015). The persistence of large budget deficits has meant that EMDE debt sustainability indicators have steadily deteriorated since 2011. In more

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<sup>13</sup> The People's Bank of China raised its policy interest rate by 1.25 percentage points between October 2010 and May 2012, but subsequently pursued a more accommodative monetary policy, including a reduction of the required reserve ratio.

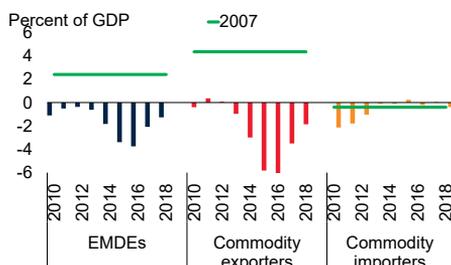
<sup>14</sup> The general government deficit declined from 9.5 percent of GDP in 2009 to 6.9 percent in 2019, despite a large stimulus package carried out in 2017 to support the ailing banking sector and to boost infrastructure investment. The Reserve Bank of India raised policy rates by 3.75 percentage points between February 2010 and October 2011 but has since lowered them.

<sup>15</sup> Brazil's fiscal deficit deteriorated from 3.2 percent of GDP in 2009 to 10.2 percent of GDP in 2015, before a slight improvement in 2016-18.

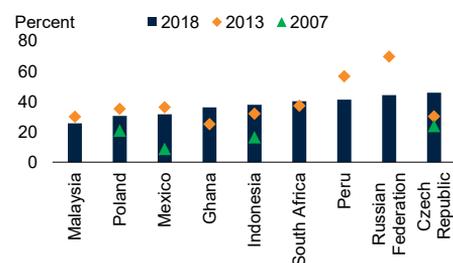
### FIGURE 5.3 Fiscal vulnerabilities in EMDEs since the global recession

Fiscal positions in many EMDEs have deteriorated compared to precrisis positions. In addition to rising government debt, the stocks of external, corporate, and household debt have also risen.

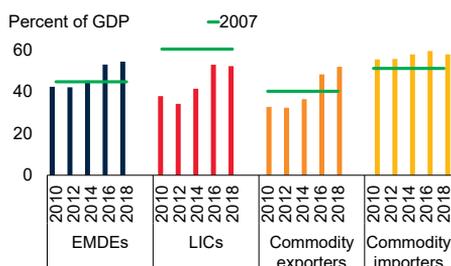
#### A. Fiscal balance



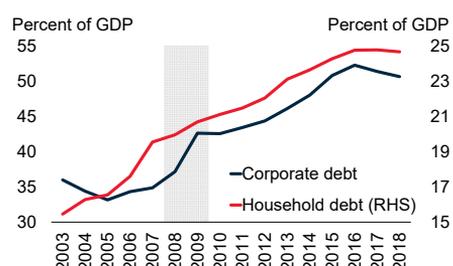
#### B. Nonresident share of local government bonds



#### C. Government debt



#### D. EMDE corporate and household debt



Sources: AsianBondsOnline; Haver Analytics; Institute of International Finance; World Bank.

Note: Unweighted averages. EMDEs = emerging market and developing economies; LICs = low-income countries.

than one-third of EMDEs, widening deficits are setting government debt on firmly rising trajectories, especially in LICs (Kose et al. 2017; World Bank 2017; figure 5.3).<sup>16</sup>

**Procyclical policy tightening in commodity-exporting EMDEs.** Many commodity-exporting EMDEs were required to enact procyclical policy tightening during the commodity price slide of 2011-16, despite being in the midst of recessions or sharp slowdowns (World Bank 2018a). Two-thirds of commodity exporters tightened fiscal policy in 2014-16, even in the face of slowing growth. One-half of commodity exporters with flexible exchange rates raised policy rates in 2014-16, in response to above-target inflation and strong depreciation pressures. Under exchange market pressure, several EMDEs allowed more exchange rate flexibility. Russia, which had been operating on a managed floating exchange rate regime since 1999, transitioned to a flexible rate in November 2014. Azerbaijan, Kazakhstan, and Nigeria also began to allow greater

<sup>16</sup> The average fiscal deficit of LICs peaked at 5.2 percent of GDP in 2015 compared to 1.8 percent of GDP in 2007. Government debt, although lower than before the crisis, increased by 17 percentage points of GDP between 2012 and 2018.

## BOX 5.2 Fiscal space and financial crisis

*The availability of fiscal policy as an effective instrument to support demand and activity in economic downturns depends on the amount of budget resources available to raise spending or lower taxes without jeopardizing fiscal sustainability. This resource availability is often called fiscal space. Since the 2009 global recession, fiscal space in emerging market and developing economies has narrowed, which makes them more vulnerable to economic downturns and sudden spikes in financing costs, and limits their ability to counteract adverse shocks.*

### Introduction

In many emerging market and developing economies (EMDEs), public debt levels have increased and market perceptions of sovereign credit quality have deteriorated. Such developments may limit the budgetary resources available for governments to stimulate demand and activity and boost employment in future economic downturns. They may similarly restrict the ability of government to use fiscal policy as a tool for macroeconomic management in the event of adverse shocks, such as natural disasters. The availability of budgetary resources for the conduct of effective fiscal policy is often called “fiscal space” (Kose et al. 2017; Kose, Ohnsorge, and Sugawara 2020).

Although fiscal space is difficult to measure, a critical component is debt service capacity. Kose et al. (2017) distinguish four broad components of this capacity: government debt sustainability, balance sheet composition, external and private sector debt, and market perception of sovereign risk. Government debt sustainability captures the longer-term capacity of the government to finance its obligations. The composition of the public sector balance sheet can provide a metric for the government’s exposures to sudden changes in financial market conditions. External and private sector debt may involve contingent liabilities of the government, including debt that is only implicitly government-guaranteed. Finally, market perception of sovereign risks reflects a government’s ability to tap markets and service its obligations.

Using a cross-country database prepared by Kose et al. (2017), this box addresses the following questions:

- How has fiscal space in EMDEs evolved over time?
- How does fiscal space typically behave during episodes of financial stress?
- How can fiscal space be increased?

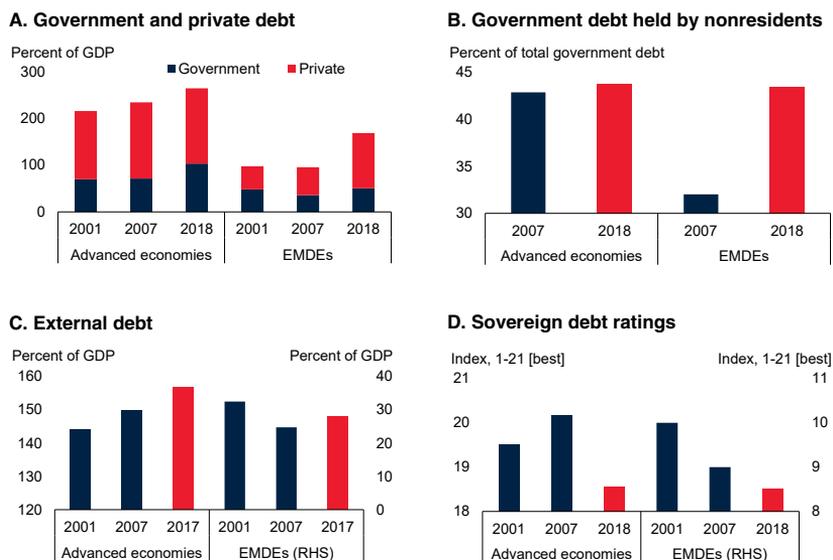
### Evolution of fiscal space over time

Fiscal space increased during 2000-07, but has shrunk around the world since the 2009 global recession. As illustrative examples, figure B5.2.1 shows the evolution of

## BOX 5.2 Fiscal space and financial crisis (*continued*)

### FIGURE B5.2.1 Fiscal space

*Different measures of fiscal space suggest that it has narrowed in both advanced economies and EMDEs since the global recession.*



Source: Kose et al. (2017).

A.C. Averages computed with current U.S. dollar GDP as a weight, based on 38 advanced economies and 154 emerging market and developing economies (EMDEs; panel A) and 35 advanced economies and 137 EMDEs (panel C).

B.D. Median of 29 advanced economies and 43 EMDEs (panel B) and median of 40 advanced economies and 108 EMDEs (panel D), though the sample size varies by year.

D. The sovereign debt ratings are converted to a numerical scale ranging from 1 to 21 (higher number, better rating). An index value of 12 is the border between investment grade and non-investment grade.

some measures of the four components of debt service capacity mentioned above. The measures used are for illustrative purposes but are fairly representative of the concepts. The improving trend before the crisis was widely shared, because virtually all indicators of fiscal space improved in more than half of EMDEs and most indicators improved in more than half of advanced economies. After the global recession, however, debt sustainability indicators, including government debt, have deteriorated in at least three-quarters of all countries. External and private debt stocks have increased in more than half of all countries and market perceptions of sovereign credit risks have also worsened.

Before the global recession, measures of government debt sustainability improved significantly in EMDEs, and to a considerably lesser extent in advanced economies,

### BOX 5.2 Fiscal space and financial crisis (*continued*)

because rapid growth reduced deficits and helped to reduce debt stocks in relation to gross domestic product (GDP; Kose, Ohnsorge, and Sugawara 2018). In low-income countries, debt relief initiatives such as the Heavily Indebted Poor Countries Initiative and Multilateral Debt Relief Initiative helped reduce debt burdens. These improvements contributed to a decline in EMDE general government gross debt by 13 percentage points of GDP over 2001-07, to 36 percent of GDP. By contrast, government debt in advanced economies stabilized at about 70 percent of GDP.

Other trends were less favorable. Although by 2007 external debt-to-GDP ratios were below the levels of the early 2000s in three-quarters of EMDEs, external debt had become increasingly short-term. Still well below that of advanced economies, on average, private debt in EMDEs rose over 2001-07.

Since the global recession, fiscal space has shrunk in EMDEs. Partly as a result of steep revenue losses in commodity-exporting EMDEs, sustainability gaps and fiscal deficits have widened in EMDEs. Government debt has risen to 54 percent of GDP, on average, in 2018. It now exceeds 2000 levels in more than one-third of EMDEs and is increasingly held by nonresidents.

Moreover, external and private sector debt has increased from 2007 levels in most EMDEs. A rapid increase in private sector debt, especially for corporations, since the global recession has been accompanied by weaker corporate solvency and profitability (Alfaro et al. 2017; World Bank 2018b).

#### Fiscal space during financial crises

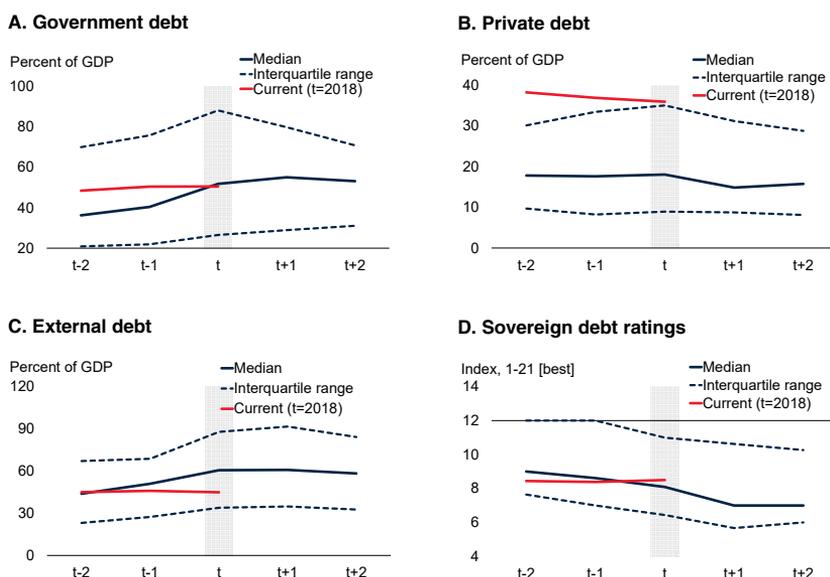
Figure B5.2.2 illustrates how fiscal space has changed during financial crises. It employs event study analysis to examine the behavior of selected indicators of fiscal space around financial crises since 1990—including banking, currency, and debt crises—and to compare these events against recent developments.

In the run-up to and during these crisis episodes, fiscal space typically deteriorated as government debt increased and fiscal balances weakened. This deterioration largely reflects the budgetary cost to support banking systems (Tagkalakis 2013) and the increased cost of government debt denominated in foreign currency following exchange rate depreciations. Increasing government debt coincided with worsening long-term sovereign debt ratings; however, within two years of financial crises, government debt and sovereign ratings returned to stable paths. This improvement may reflect debt restructuring and losses of access to financing that forced governments to rein in spending or raise revenues. During crises, deleveraging reduced private debt. Prior to crises, the median ratio of private sector debt to GDP tended to remain stable, but, in the year following crises, median private debt declined by more than 3 percentage points of GDP.

## BOX 5.2 Fiscal space and financial crisis (continued)

### FIGURE B5.2.2 Fiscal space around financial crises and in 2018

Fiscal space has deteriorated during financial crises in EMDEs. Within two years of such episodes, government debt and sovereign ratings typically return to stable paths.



Sources: Kose et al. (2017); Laeven and Valencia (2018).

Note: Year "t" refers to the year of onset of financial crises in emerging market and developing economies (EMDEs). Medians, as well as interquartile ranges, are based on balanced samples. Crises consider banking, currency, and debt crises, as defined in Laeven and Valencia (2018). When multiple crises are identified within five years, the one with the lowest real GDP growth is counted as an event. Sample includes 80 crisis episodes (panel A), 127 episodes (panel B), 122 episodes (panel C), and 56 episodes (panel D). The red line is based on all EMDEs, though it is not a crisis episode.

D. The sovereign debt ratings are converted to a numerical scale ranging from 1 to 21 (higher, better rating). The horizontal line at an index value of 12 is the border between investment grade (above the line) and non-investment grade (below the line).

Several indicators suggest that EMDE fiscal space is more limited than before previous crises. In particular, the government debt ratio in the median EMDE was as high at end-2018 as levels during previous financial crises, and private debt was higher, and outside the range of crisis episodes. In addition, sovereign ratings were as low as ratings during past crisis episodes.

### Policy frameworks to improve fiscal space

Fiscal space is critical for the use of fiscal policy to manage aggregate demand and to reduce vulnerabilities to adverse shocks, such as natural disasters. With fiscal space having narrowed since the global recession, policy measures to shore up fiscal sustainability have become a priority for EMDEs.

### **BOX 5.2 Fiscal space and financial crisis (*continued*)**

Fiscal sustainability could be improved by increasing the efficiency of revenue collection and spending. Measures to strengthen revenue collection could include broadening tax bases, removing loopholes for higher-income households or profitable corporations, and strengthening tax administration (Akitoby 2018). In countries with high levels of informality, increasing the revenue raised from the informal sector—for example, by promoting a change in payment methods to noncash transactions and facilitating collective bargaining and agreement with informal sector associations on taxation—could help increase revenues directly, as well as indirectly, by encouraging informal firms to join the formal sector, which would enhance their growth prospects (Awasthi and Engelschalk 2018; Joshi, Prichard, and Heady 2014).

On the spending side, governments should seek to change the composition of expenditures away from unproductive and inefficient outlays, such as broad-based subsidies, toward productive and growth-enhancing ones, such as public investment and well-targeted income support (Gemmell, Kneller, and Sanz 2016). More efficient public investment management could increase the returns and contain the cost of public investment. Well-designed pension reforms can also support fiscal sustainability.

In addition, credible and well-founded institutional mechanisms can help support fiscal discipline and strengthen fiscal space. Three such mechanisms have been widely introduced: fiscal rules, stabilization funds, and medium-term expenditure frameworks.

Fiscal rules impose numerical constraints on budgetary aggregates or balances—debt, overall balance, expenditures, or revenues. Rules often allow some flexibility in meeting targets to take into account cyclical deviations, estimated, for example, in terms of an output gap, or structural adjustments. Fiscal rules, and in particular cyclically adjusted or structural balance rules, have been increasingly employed in EMDEs, especially since the global financial crisis (Schaechter et al. 2012). Implementation of fiscal rules can be improved by the establishment of a simple enforcement structure and strict limits on off-budget government guarantees. Transparency and oversight arrangements, such as fiscal councils, can allow governments some flexibility to respond to events while maintaining the credibility of the framework (Debrun and Kinda 2017). Chile's use of a technical fiscal council and fiscal rule with a set target for the structural balance is a good example of a well-designed, credible, and successfully operated fiscal rule system.

Stabilization funds set aside receipts from natural resource revenues, or from other income that might not be long-lasting. Amounts saved during favorable times may be released to cushion revenue shortfalls and to mitigate negative shocks to government expenditures resulting from drops in revenues. Such funds were adopted widely in the 2000s when high oil prices, along with the discovery of oil

### **BOX 5.2 Fiscal space and financial crisis (continued)**

in a number of EMDEs, swelled government revenues. Many stabilization funds are integrated with the budget, with clear rules to guide the accumulation and withdrawal of fund resources. The effective use of stabilization funds requires a government commitment to fiscal discipline and macroeconomic management (Gill et al. 2014). Proper design and strong institutional environments that support their operations are crucial factors for their success, as in the cases of Chile and Norway (Schmidt-Hebbel 2012; Stone and Truman 2016).

Medium-term expenditure frameworks are intended to establish or improve credibility in the budgetary process. Such frameworks seek to ensure a transparent budgetary process, where government agencies allocate public resources based on strategic priorities. Robust implementation is closely related to linkages with broader economic and social policy objectives, to the reliability of the relevant data, and to the forecasting capability of the authorities (Allen et al. 2017). In South Africa, such a framework was introduced in the context of high government debt and a combination of underspending by the central government and overspending by provincial governments. Underspending and overspending were both reduced following the introduction of the medium-term framework (World Bank 2013).

#### **Conclusion**

Fiscal space has been shrinking in EMDEs since the global recession, narrowing to levels typically seen before past financial crises. Adequate space is critical for fiscal policy to be available to help manage aggregate demand and to reduce vulnerabilities to adverse shocks. Hence, policy measures to shore up fiscal sustainability are now a priority for EMDEs. Credible and well-designed policy frameworks, with clear objectives, help implement and sustain such measures.

exchange rate flexibility in 2015-16. Oil-exporting countries with fixed exchange rate regimes were less able to avoid procyclical fiscal policies, reducing government spending by 8 percentage points of GDP more than those with flexible exchange rate regimes.

**Legacy of the global recession: Higher vulnerabilities than before the recession.** Since the global recession, rising external, corporate, household, and government debt stocks, and deteriorations in fiscal and current account balances, have increased the vulnerabilities of EMDEs to external shocks.<sup>17</sup> As a result, EMDE policy makers have

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<sup>17</sup> There has been an intense debate about whether the rapid increase in debt is cause for concern, given historically low interest rates. Blanchard (2019) and Furman and Summers (2019) provide reasons for additional borrowing, but Auerbach, Gale, and Krupkin (2019) caution against adding to debt. A detailed discussion on the benefits and costs of debt accumulation is provided in Kose, Ohnsorge, and Sugawara (2020) and World Bank (2019a).

less room than they had in 2007 to support domestic demand and activity in the event of future financial or economic stress.

- *External positions.* On average, external debt in EMDEs has increased sharply, to 57 percent of GDP in 2018 from 43 percent of GDP in 2007. Although still above 1990s averages, international reserves have fallen relative to external debt in more than two-thirds of EMDEs, and in some EMDEs more than halved, since 2007.
- *Fiscal positions.* On average, EMDE fiscal surpluses of 2.4 percent of GDP in 2007 have turned into deficits of 2.7 percent in 2018 (figure 5.3). Because of the sharp decline in commodity prices, the deterioration has been particularly severe in commodity exporters, from a surplus of 3.5 percent of GDP in 2007 to a deficit of 3.3 percent of GDP in 2018. EMDE government debt has increased to 54 percent of GDP in 2018, from 45 percent of GDP in 2007; in more than one-third of EMDEs, government debt rose by more than 20 percentage points of GDP. Deteriorating public debt sustainability has also been reflected in sovereign credit rating downgrades.
- *Nonresident exposures.* In some EMDEs, the share of nonresident holdings in local currency bond markets has grown to more than 30 percent, exposing these countries to the risk of sharp market displacements in the event of swings of global risk sentiment (Agur et al. 2018; figure 5.3).
- *LIC government debt.* In LICs, average government debt relative to GDP is less than it was in 2007, but it has risen sharply, by 17 percentage points of GDP from a low in 2012 to 51 percent of GDP in 2018 (World Bank 2019b; figure 5.3).<sup>18</sup> As a result, interest payments have absorbed a growing share of government revenues. Debt has been increasingly owed to nonconcessional and private creditors, heightening the vulnerability of LICs to financial market disruptions.
- *Corporate debt.* In non-LIC EMDEs, rapid credit growth fueled an increase in corporate debt, on average by 16 percentage points of GDP since 2007 to 50 percent of GDP in 2018 (figure 5.3). Although the largest corporate debt increase (54 percentage points of GDP) occurred in China, several other EMDEs (Chile, the Philippines, Turkey, and the United Arab Emirates) experienced increases in excess of 30 percentage points of GDP (Borensztein and Ye 2018; Ohnsorge and Yu 2016).
- *Household debt.* EMDE household debt has increased on average by 5 percentage points of GDP since 2007 to 25 percent of GDP in 2018. In some EMDEs (Brazil, Chile, Colombia, Czech Republic, Malaysia, Poland), household debt has risen by more than 10 percentage points of GDP. The largest increases occurred in China and Thailand, where household debt swelled by 32 and 24 percentage points of GDP, respectively.

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<sup>18</sup> Debt relief under the Heavily Indebted Poor Countries initiative and the Multilateral Debt Relief Initiative helped to reduce average public debt in LICs from a debt-to-GDP ratio of 115 percent in the early 2000s to 35 percent in 2012.

## Financial sector policies

The crisis triggered a major shift in financial sector policies. Prudential regulation and supervision have evolved from a focus on the stability of individual financial institutions toward a focus on the stability of the financial system as a whole. Restrictions on capital flows, a controversial policy measure before the crisis, have come to be viewed more favorably from a macroprudential perspective.

### Prudential policies

**Before the global recession: stability of individual institutions.** Before the global financial crisis, the financial regulatory framework and supervision practices focused mainly on monitoring prudential risks at individual institutions. For example, in 2006, following this traditional microprudential approach, the U.S. Federal Deposit Insurance Corporation claimed that more than 99 percent of U.S. insured institutions met or exceeded the requirements of the highest regulatory capital standards, giving no indication of the large-scale vulnerabilities that were building up.

The crisis highlighted several shortcomings of this microprudential approach.

- The regulatory perimeter had mainly encompassed banks, with much less attention paid to the buildup of systemic risk in the nonbank sector. In the United States and other advanced economies, lightly regulated nondeposit institutions had steadily grown in size and complexity.
- The microprudential regulatory regime tended to have procyclical effects on bank behavior (Gordy and Howells 2006). In particular, the risk-weighted capital requirements of Basel II tended to decline in the expansionary phase of the business cycle as risk ratings improved, and they tended to rise during the contractionary phase. As a result, despite meeting the Basel II requirements, banks in advanced economies and some EMDEs—especially in Europe—had high leverage, which posed risks to financial stability (Bruno and Shin 2015).
- Fair-value accounting—using current market values as the basis for valuation—lent a further procyclical impulse because it encouraged balance sheet expansion as asset prices increased in economic upswings, and it encouraged deleveraging in downswings.

**After the global recession: stability of the financial system.** The crisis brought about a rethinking of prudential regulation, which led to a rising interest in complementing microprudential policies that regulate the risk of individual institutions with macroprudential policies aimed at minimizing system-wide risk and at ensuring that the financial system does not create or amplify shocks that could lead to economic downturns (Claessens 2014; World Bank 2019c; Zeev 2017).<sup>19</sup> An illustration of this new focus is the rapid increase in the use of the term “macroprudential” since 2008

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<sup>19</sup> Despite the rising interest in macroprudential policies, there are many challenges in designing and implementing them, especially in EMDEs. See details in Dijkman (2015) and Krishnamuti and Lee (2014).

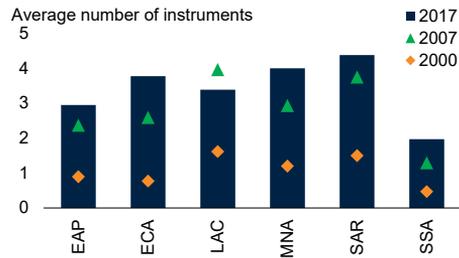
**FIGURE 5.4 Macroprudential policy since the global recession**

The global financial crisis and subsequent global recession led to an increased emphasis on macroprudential policy, which focuses on minimizing systemic risk. Most countries have strengthened the resilience of their financial systems. Advanced economies tend to use macroprudential tools aimed at borrowers, whereas EMDEs favor both borrower- and foreign exchange-related tools.

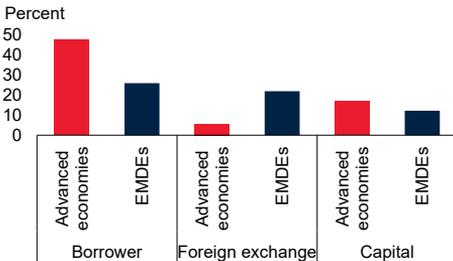
**A. Google search term “macroprudential”**



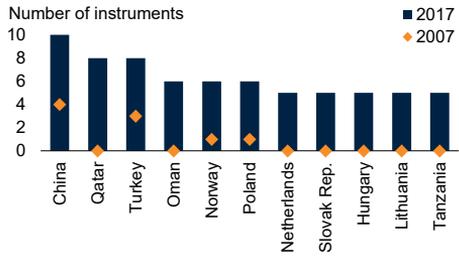
**B. Average number of macroprudential tools in EMDEs**



**C. Use of macroprudential tools**



**D. Countries that used at least five macroprudential tools between 2007 and 2017**



Sources: Cerutti, Claessens, and Laeven (2017); Google Trends; World Bank.

Note: EAP = East Asia and Pacific; ECA = Europe and Central Asia; EMDEs = emerging market and developing economies; LAC = Latin America and the Caribbean; MNA = Middle East and North Africa; SAR = South Asia; Slovak Rep. = Slovak Republic; SSA = Sub-Saharan Africa.

A. Google trends data based on worldwide interest relative peak popularity (100) in the observed period. Six-month moving average.

B. Bars show the average number of macroprudential tools per country in each EMDE region for 2017, with diamonds showing the number for 2000 and triangles for 2007.

C. Bars show the percent of countries in each country group that use certain macroprudential tools. Borrower-targeted tools include debt-to-income ratio and loan-to-value ratio; Foreign exchange-related tools include limits on foreign lending and foreign exchange reserve requirements; Capital-related tools include countercyclical capital requirements and dynamic loan loss provisioning.

D. Bars show the number of macroprudential tools in effect in 2017, whereas diamonds show the number of macroprudential tools in effect in 2007.

(Cukierman 2013; Ostry et al. 2010; figure 5.4). A key objective of macroprudential policy is to minimize systemic risk by limiting boom-bust credit cycles. Several new instruments have been developed under the Basel III framework specifically to promote this objective. These instruments include countercyclical capital requirements and dynamic provisioning to build up capital or liquidity buffers during good times, maximum leverage ratios to capture both on- and off-balance sheet exposures, and capital surcharges on systemically important financial institutions.

Macroprudential instruments have increasingly become an integral part of the toolkit of many central banks and other financial regulators since the crisis. Macroprudential indexes derived from a dataset for 36 advanced economies and 124 EMDEs suggest that all advanced economies, and about 70 percent of EMDEs, have used these instruments to strengthen the resilience of their financial systems (Cerutti, Claessens, and Laeven 2017). EMDEs have more actively used macroprudential instruments—often on an ad hoc or experimental basis—partly reflecting the fact that they are more exposed to volatile capital flows and have less liberalized financial systems (Claessens 2014). These instruments have been used to reduce the growth of credit to nonfinancial corporations and households, and to help restrain asset price inflation, especially in the housing sector (Budnik and Kleibl 2018; Kuttner and Shim 2013, Vandenbussche, Vogel, and Detragiache 2015; Zhang and Zoli 2016).

In ECA, more than four-fifths of EMDEs have increased the use of macroprudential tools, whereas in SSA the share is only about one-half (figure 5.4). The use of different tools has reflected different structural characteristics among countries. ECA has had relatively high financial integration internationally with a large presence of foreign banks that had experienced difficulties, and at the same time high public debt, which reduced the scope for countercyclical fiscal policies. Conversely, SSA, which has less open capital accounts and faced fewer banking sector challenges, has relied less on such tools.

**Use of macroprudential tools.** Since the global recession, macroprudential measures aimed at borrowers, such as caps on the loan-to-value ratio and the debt-to-income ratio, have been more extensively used in advanced economies. These instruments can be effective in reducing the amplitude of credit cycles, partly because they may be easier to enforce and calibrate than policies aimed at institutions (Epure et al. 2018; Fendoğlu 2017). Macroprudential increases in capital requirements have been associated with slower lending in U.K. banks, and dynamic provisioning has been associated with smoother credit cycles in Spain (Aiyar, Calomiris, and Wieladek 2016; Jiménez et al. 2017). In contrast, foreign exchange and liquidity policies, such as limits on foreign currency loans and foreign exchange countercyclical reserve requirements, have been more often used in EMDEs in efforts to reduce exposures to volatile capital inflows (figure 5.4). This effort is especially the case in ECA, which had been plagued by currency mismatches in the balance sheets of households and firms (Ben Naceur, Hosny, and Hadjian 2019; Fidrmuc, Hake, and Stix 2013; Ranciere, Tornell, and Vamvakidis 2010).

China has implemented a wide range of macroprudential policies since the crisis (figure 5.4). A priority goal has been to contain the growth of corporate debt, especially of state-owned enterprises, through limits on the exposures of banks. Other macroprudential measures have aimed at curbing real estate speculation through sector-specific lending limits and higher mortgage down payment requirements. In India, macroprudential policy has focused on preventing excessive credit growth by increasing the capital that banks are required to hold against riskier loans and increasing the rate at which banks are required to provision against loan losses for specific sectors. Macroprudential measures have also been used in economic downturns; for example, Brazil lowered reserve requirements in 2017 to help counter its protracted economic slowdown.

**Interaction between financial sector and macroeconomic policies.** The experience of the global financial crisis kindled interest in the impact of monetary and fiscal policy on financial stability and, conversely, the impact of prudential decisions on monetary conditions.<sup>20</sup>

- *Prudential policies and monetary conditions.* The impact of prudential policies on monetary conditions is explored in a small body of literature that is constrained by prudential data requirements. Among U.K. banks, higher capital requirements have been found to lower bank lending abroad and domestically (Aiyar et al. 2014; Meeks 2017). For large banks, their domestic lending response to capital requirements was stronger than their response to monetary policy (Aiyar, Calomiris, and Wieladek 2016).
- *Monetary policy and financial stability.* The main instrument of monetary policy—the short-term interest rate—is generally a weaker instrument for the promotion of financial stability than are regulatory instruments (Adrian, Laxton, and Obstfeld 2018; Lane 2016). The latter can be focused on specific issues in institutions or markets and on lenders or borrowers whereas monetary policy cannot. That said, sound monetary policy contributes to financial stability. In times of severe stress, such as 2008-09, central banks inject liquidity into the system on a large scale and stand ready to act as lender of last resort. In normal times, central banks provide support to financial stability, for example, through oversight of payment systems, monitoring of risks and vulnerabilities, and the maintenance of foreign reserves to defend their currencies against short-term speculative attacks (Cheung and Qian 2009; Jara, Moreno, and Tovar 2009).
- *Fiscal policy and financial stability.* Sound fiscal policy also contributes to financial stability. For example, by removing tax incentives to borrowing by the corporate sector, allowing a more balanced tax treatment of equity financing, and reducing tax exemptions of interest payments on mortgages, fiscal authorities can help curb credit growth and increases in housing prices.

**Overhauling the regulatory framework.** The increase in emphasis on systemic risk and macroprudential policy led to the establishment of the Financial Stability Board (FSB) in 2009, with the endorsement of the G20, to promote the reform of international financial regulation and supervision. Several countries have improved their system-wide regulatory architecture to meet goals set by the FSB. Improvements include enhancing the capacity to use macroprudential tools, strengthening international coordination among entities that share the financial stability mandate (especially in the cases of

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<sup>20</sup> Nevertheless, the consensus among central bankers and economists remains that monetary policy is best aimed at controlling inflation and that it cannot take primary responsibility for financial stability (Yellen 2014). There are, however, exceptions to this general proposition (IMF 2019, Lane 2016, Mishkin 2011, Yellen 2014). For example, a large-scale, credit-fueled, asset price boom may pose an obvious risk to financial and economic stability, and justify an increase in the policy rate beyond the normal requirements of the inflation objective (Gourio, Kashyap, and Sim 2018). An entirely alternative view is that monetary policy should systematically focus on financial stability as well as on macroeconomic goals (Borio 2014; Collard et al. 2017; Stems 2013; Svensson 2017).

potential cross-border spillovers), and improving governance, transparency, and accountability. In general, economies that were harder-hit by the crisis—such as the European Union, the United Kingdom, and the United States—have been somewhat more proactive in addressing regulatory weaknesses (Lombardi and Moschella 2017; Lombardi and Siklos 2016).

Since the crisis, several EMDEs with FSB memberships have established national financial stability councils or committees (Brazil, China, India, Mexico, Russia, Turkey), and incorporated new mandates for the central bank to exercise macroprudential supervision (Indonesia, Russia, South Africa; FSB 2018, 2019). Most of these EMDEs have made progress in implementing reforms, especially to meet Basel III capital and liquidity requirements and implement over-the-counter derivatives reforms (FSB 2018). EMDEs that are also members of the Basel Committee on Banking Supervision, including Brazil, China, Russia, and South Africa, have put in place risk-based capital rules, liquidity coverage ratio regulations, and capital conservation buffers (BCBS 2019).

The financial regulatory agenda set out by the G20 has several implications in EMDEs. Regulatory tightening in advanced economies has contributed to the withdrawal of major banks from EMDEs (chapter 4). The Basel III recommendations are, like their predecessors, calibrated primarily for advanced economies, making some EMDEs hesitant to adopt those regulations to avoid potential new challenges associated with these new standards (Beck and Rojas-Suarez 2019). A recent survey suggests that the financial sector agenda set out by the G20 may have unintended economic costs for individual EMDEs (Briault et al. 2018). For example, the introduction of creditor-funded recapitalization, known as “bail in,” wipes out senior claims on the bank during bank resolution; however, most of the depositors on the liability side of banks in many EMDEs are small depositors. Bailing in those depositors would only intensify a financial crisis by eroding the credibility of the financial system. Additionally, these EMDEs typically lack sufficiently developed financial markets for banks to issue debt securities that can be bailed in (Feyen and Zuccardi 2019).

**Challenges of macroprudential policy.** Although the importance of macroprudential policy is now widely accepted, it is still not clear which tools are best suited to different circumstances and how they should be adapted to country characteristics. There are also questions on the appropriate design of policy institutions, in particular whether such policies should be under the purview of the central bank, a new financial stability agency, an existing market supervisory agency, or a committee comprising various institutions.

## Capital flow management policies

### Before the global recession: Limited role for capital flow management

Capital flow management measures (CFMs) were widespread under the Bretton Woods regime of pegged exchange rates, when they provided countries with a degree of independence in monetary policy. After the collapse of the regime in the early 1970s, advanced economies began to shun restrictions on capital flows. They opened their

capital accounts and financial markets to the international economy. EMDEs started to open their capital accounts later, during the 1980s and 1990s. This move reflected the view that, by liberalizing international capital flows, EMDEs would potentially benefit from access to credit and investment from advanced economies, hence promoting growth and development. The experiences of several countries during the 1997-98 Asian financial crisis, however, highlighted the risk of too rapid an opening of the capital account and of the importance of coordinating capital account liberalization with stronger financial regulation and supervision.

### Capital flow management measures during the global recession

Many EMDEs deployed capital management measures during and following the global recession, mainly in response to capital flow volatility (Gallagher 2011; IMF 2012, 2018a; Rey 2015). Early in the crisis, EMDEs experienced heavy outflows, in a flight to safety (figure 5.5).<sup>21</sup> The recovery of capital inflows in 2009-11 reflected the widening of interest rate differentials in favor of EMDE assets and was induced by unprecedented monetary policy accommodation in advanced economies. Concerns that heavy inflows might result in currency appreciation, asset bubbles, inflationary pressures, and financial instability more broadly led to the use of capital flow management measures on inflows, whereas the risk of a resurgence of capital flight underlay increased controls on outflows.

Some EMDEs strengthened existing controls while others introduced new measures (Gallagher 2011; Ghosh, Ostry, and Qureshi 2017). These CFMs included a wide range of price-based and quantity-based controls, for example, reserve requirement taxes on foreign investment (Brazil, Ecuador, Indonesia, Peru, Uruguay), taxes on currency outflows (Argentina, Ecuador, República Bolivariana de Venezuela), taxes on interest earned and capital gains on nonresidents (Thailand), minimum term requirements for holding central bank securities (Indonesia), and limits on foreign currency positions (the Philippines). Some of these measures were subsequently eased when the inflow surge abated after 2012 (IMF 2016).

Not all countries responded to the pressures of capital inflows with CFMs—some could not impose CFMs because of bilateral or multilateral trade and investment treaties (Abdelal 2007; Gallagher 2011). For example, the European Union enforces open capital accounts across the union (Article 63 of the Lisbon Treaty; EU 2007), the North American Free Trade Agreement considers capital controls an actionable offense, and the Organisation for Economic Co-operation and Development (OECD) has a code (although not actionable) on liberalization of capital movements. Some countries bound

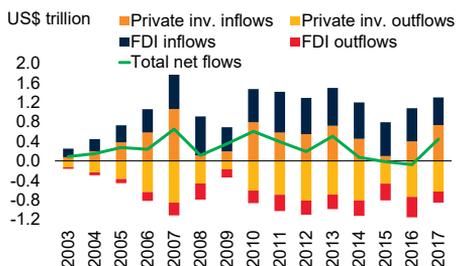
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<sup>21</sup> Brazil, for example, imposed a series of CFMs between October 2009 and August 2011. The measures included taxes on inward portfolio investment (2 percent in October 2009, 6 percent in October 2010), taxes on American Depositary Receipts (1.5 percent in November 2009), an increase in reserve requirements on capital inflows (January 2011), taxes on repatriated funds (6 percent in March 2011), and taxes on derivatives (1 percent in August 2011). In advanced economies, Iceland imposed CFMs in November 2008 amid a severe banking crisis. To prevent capital flight and a collapse of the exchange rate, the Central Bank of Iceland restricted foreign currency outflows and froze offshore holdings of krona-denominated assets. Restrictions on capital outflows were lifted in March 2017, but those on inflows have been tightened, primarily to prevent currency speculation.

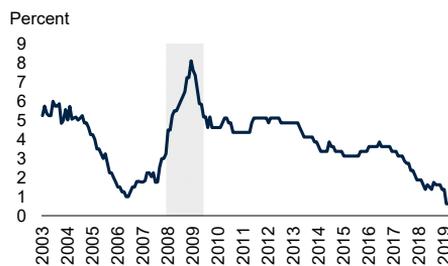
## FIGURE 5.5 Capital flow management policies since the global recession

Historically low interest rates in advanced economies in the wake of the crisis led to a resurgence of capital flows to EMDEs. Controls on both inflows and outflows were increasingly deployed to contain exchange rate volatility and to stem credit-fueled asset price inflation.

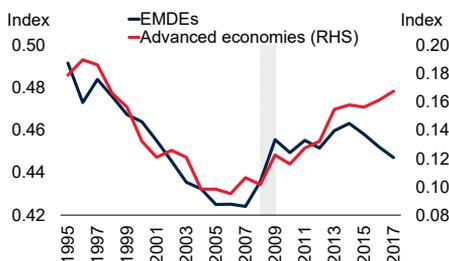
### A. Capital flows to EMDEs



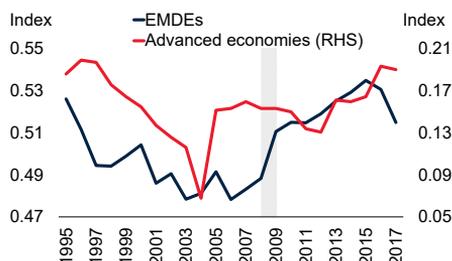
### B. Interest rate differential between EMDEs and the United States



### C. Capital controls on inflows



### D. Capital controls on outflows



Sources: Araujo et al. (2015); Bank for International Settlements; Fernández et al. (2016); International Monetary Fund; World Bank.

Note: Shaded area in B shows the period of the global financial crisis, but it captures the 2009 global recession in C and D. EMDEs = emerging market and developing economies; FDI = foreign direct investment.

A. Private investment flows include portfolio investment, other investment, and financial derivatives.

B. The line shows the differential between the central bank policy rates in EMDEs (group median) and in the United States.

C. Lines show the overall inflow restrictions index (all asset categories), with a higher value suggesting more controls.

D. Lines show the overall outflow restrictions index (all asset categories), with a higher value suggesting more controls.

by trade and investment agreements reframed capital controls as macroprudential policies or as quasi-controls (Indonesia, Korea, Peru, and Uruguay; Grabel 2015).

## After the global recession: Rising role for capital flow management

The crisis triggered a rethinking of the role, benefits, and costs of financial liberalization, especially in light of the role of cross-border capital flows during the financial crises (Reinhart and Rogoff 2008). There is now an emerging consensus that CFMs can play a legitimate role in a framework of rules to promote macroeconomic and financial stability. This consensus has been supported by successes in stabilizing financial markets by reining in large capital flows (Brazil), and by development models built on measured capital account opening (China, India). The institutional views of major international organizations have evolved to admit the possibility of a role for managing capital flows,

which can include CFMs as part of broad coordinated policy packages (for example, FSB, IMF, and BIS 2011; Ghosh, Ostry, and Qureshi 2017; IMF 2012, 2018a; Ostry et al. 2010, 2011).

Since 2013, however, global capital flows have been more subdued than in the precrisis period. Thus, in practice, despite the increased availability of capital flow management measures, countries that have experienced episodes of large-scale inflows have dealt with the associated concerns about currency appreciation mainly through monetary easing and foreign exchange intervention (Colombia, India, Indonesia, Thailand, Turkey). These responses indicate that CFMs may play a useful role during capital-inflow surges in certain situations (IMF 2018a).<sup>22</sup> During periods of financial stress, CFMs can provide effective support to other instruments (IMF 2016). For example, CFMs have been used complementarily with macroeconomic policies, as well as with structural and financial sector reforms, to moderate financial stress episodes in Belarus, Cyprus, Greece, Iceland, and Ukraine. Outside crisis episodes, CFMs have been employed to address country-specific financial sector vulnerabilities (China, North Macedonia, Peru, Russia). In some cases, macroprudential measures have been used to discourage borrowing in foreign currency (Korea, Peru).

### Challenges of capital flow management

Whether capital flows are to be welcomed or represent a problem to be tackled may be difficult to determine. Policy makers thus face challenges in understanding the underlying causes, and determining whether the flows will cause undue damage to competitiveness or threaten financial stability. A CFM intended to address a specific component of capital flows could merely shift the composition of flows toward unregulated segments of the financial system. Widespread CFMs could have cross-border spillover effects, for example, if they strongly affect exchange rate valuations and trade competitiveness.

## Conclusion

Following the global financial crisis and the 2009 global recession, the largest advanced economies and EMDEs enacted unprecedented and coordinated macroeconomic stimulus. This stimulus provided crucial support to the international financial system and staved off a deeper global recession. For the first time during a major crisis, EMDEs were also able to employ a wide range of countercyclical monetary and fiscal policies to stem contagion and boost the postcrisis recovery. Numerous EMDEs lowered policy interest rates, intervened heavily in foreign exchange markets, and implemented fiscal stimulus packages. Three-fifths of EMDEs with floating exchange rates had lowered policy rates by the first quarter of 2009 and made use of other stimulus measures, such

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<sup>22</sup> During capital inflow surges, CFMs may play a useful role particularly in any or all of the following situations: the room for adjusting macroeconomic policies is limited, appropriate policies require time to take effect, the inflow surge contributes to systemic financial risks; and there is heightened uncertainty about the underlying economic stance due to the capital inflow surge (Adrian 2018; IMF 2018a).

as reducing reserve requirements, injecting liquidity into and recapitalizing domestic banks, and channeling lending through development banks.

The crisis also ushered in a rethinking of financial sector policies. The emphasis of prudential regulation and supervision has shifted from a sole focus on the regulation and supervision of individual institutions (involving microprudential tools) toward a more balanced view on containing both individual risks and system-wide risks (involving macroprudential measures). At the same time, the appropriate use of capital controls as part of a package of policies to promote financial stability has gained greater acceptance.

Despite the successful manner in which EMDEs navigated the global financial crisis and its aftermath, as a group, they now appear more vulnerable to external financial or trade shocks than they were in 2007. This vulnerability could be compounded by other pressures if there is a broader retreat from global cooperation and multilateralism. The crisis-related fiscal stimulus in many EMDEs has still not been fully unwound; by 2018, fiscal balances have returned to 2007 levels in only one-quarter of EMDEs. Rising external, corporate, household, and government debt stocks, combined with wider fiscal and current account deficits, have increased the vulnerabilities of EMDEs to shocks compared with their vulnerabilities in 2007.

The crisis and its aftermath provide a reminder that countercyclical fiscal and monetary policies can be crucial during periods of severe financial and economic stress. The 2008-09 experience also demonstrates that international cooperation and coordination enhance the credibility, and hence the overall positive impact, of stimulative policies. At the same time, the postcrisis experience illustrates the difficulties of unwinding a large stimulus and the danger that this can leave countries with increased vulnerability to future shocks. EMDE policy makers therefore need to develop a coherent framework of policies that address these vulnerabilities and credibly target the objectives of price, output, and financial stability.

## References

- Abdelal, R. 2007. *Capital Rules: The Construction of Global Finance*. Cambridge, MA: Harvard University Press.
- Admati, A., and M. Hellwig. 2014. *The Bankers' New Clothes: What's Wrong with Banking and What to Do about It?* Princeton, NJ: Princeton University Press.
- Adrian, T. 2018. "Policy Responses to Capital Flows." Speech at LIII Meeting of Governors of Latin America, Spain and the Philippines at the IMF-World Bank Annual Meetings in Bali, Indonesia, October 11.
- Adrian, T., D. Laxton, and M. Obstfeld. 2018. *Advancing the Frontiers of Monetary Policy*. Washington, DC: International Monetary Fund.
- Agur, I., M. Chan, M. Goswami, and S. Sharma. 2018. "On International Integration of Emerging Sovereign Bond Markets." IMF Working Paper 18/18, International Monetary Fund, Washington, DC.

- Aiyar, S., C. W. Calomiris, J. Hooley, Y. Korniyenko, and T. Wieladek. 2014. "The International Transmission of Bank Capital Requirements: Evidence from the UK." *Journal of Financial Economics* 113 (3): 368-82.
- Aiyar, S., C. W. Calomiris, and T. Wieladek. 2016. "How Does Credit Supply Respond to Monetary Policy and Bank Minimum Capital Requirements?" *European Economic Review* 82 (December): 142-65.
- Akerlof, G., O. Blanchard, D. Romer, and J. Stiglitz. 2014. *What Have We Learned? Macroeconomic Policy after the Crisis*. Cambridge, MA: MIT Press.
- Akitoby, B. 2018. "Raising Revenue: Five Country Cases Illustrate How Best to Improve Tax Collection." *Finance & Development* 55 (1): 18-21.
- Alfaro, L., G. Asis, A. Chari, and U. Panizza. 2017. "Lessons Unlearned? Corporate Debt in Emerging Markets." NBER Working Paper 23407, National Bureau of Economic Research, Cambridge, MA.
- Allen, F., and G. Giovannetti. 2011. "The Effects of the Financial Crisis on Sub-Saharan Africa." *Review of Development Finance* 1 (1): 1-27.
- Allen, R., T. Chaponda, L. Fisher, and R. Ray. 2017. "Medium-Term Budget Frameworks in Selected Sub-Saharan African Countries." IMF Working Paper 17/203, International Monetary Fund, Washington, DC.
- Araujo, J., A. C. David, C. van Hombecq, and C. Papageorgiou. 2015. "Non-FDI Capital Flows in Low-Income Developing Countries: Catching the Wave?" IMF Working Paper 15/86, International Monetary Fund, Washington, DC.
- Arteta, C., M. A. Kose, F. Ohnsorge, and M. Stocker. 2015. "The Coming U.S. Interest Rate Tightening Cycle: Smooth Sailing or Stormy Waters?" Policy Research Note 2, World Bank, Washington, DC.
- Arteta, C., M. A. Kose, M. Stocker, and R. Taskin. 2018. "Implications of Negative Interest Rate Policies: An Early Assessment." *Pacific Economic Review* 23 (1): 8-26.
- Auerbach, A. W. Gale, and A. Krupkin. 2019. "If Not Now, When? New Estimates of the Federal Budget Outlook." Brookings Institution Working Paper, Washington, DC.
- Awasthi, R., and M. Engelschalk. 2018. "Taxation and the Shadow Economy: How the Tax System Can Stimulate and Enforce the Formalization of Business Activities." Policy Research Working Paper 8391, World Bank, Washington, DC.
- BCBS (Basel Committee on Banking Supervision). 2019. *Sixteenth Progress Report on Adoption of the Basel Regulatory Framework*. Basel: Basel Committee on Banking Supervision.
- Beck, T., and L. Rojas-Suarez. 2019. *Making Basel III Work for Emerging Markets and Developing Economies. A CDG Task Force Report*. Washington, DC: Center for Global Development.
- Bernanke, B. S. 2007. "Globalization and Monetary Policy," Speech at the Fourth Economic Summit, Stanford Institute for Economic Policy Research, Stanford, CA, March 2.
- Bernanke, B. S. 2009. "Financial Reform to Address Systemic Risk." Speech at the Council on Foreign Relations, Washington DC, March 10.
- Ben Naceur, S., A. Hosny, and G. Hadjian. 2019. "How to De-Dollarize Financial Systems in the Caucasus and Central Asia?" *Empirical Economics* 56 (6): 1979-99.
- Binici, M., and M. Yörükoğlu. 2011. "Capital Flows in the Post-Global Financial Crisis Era:

- Implications for Financial Stability and Monetary Policy.” BIS Paper 57, Bank for International Settlements, Basel.
- BIS (Bank for International Settlements). 2009. *79th Annual Report, 2008/09*. Basel: Bank for International Settlements.
- Blanchard, O. 2019. “Public Debt and Low Interest Rates.” *American Economic Review* 109 (4): 1197-229.
- Blanchard, O., H. Faruqee, and M. Das. 2010. “The Initial Impact of the Crisis on Emerging Market Countries.” *Brookings Papers on Economic Activity* 41 (1): 263-323.
- Blanchard, O., R. Rajan, K. Rogoff, and L. Summers. 2016. *Progress and Confusion: The State of Macroeconomic Policy*. Cambridge, MA: MIT Press.
- Borensztein, E., and L. S. Ye. 2018. “Corporate Debt Overhang and Investment: Firm-Level Evidence.” Policy Research Working Paper 8553, World Bank, Washington, DC.
- Borio, C. 2014. “Monetary Policy and Financial Stability: What Role in Prevention and Recovery?” BIS Working Papers 440, Bank for International Settlements, Basel.
- Briault, C., E. Feyen, I. Gonzalez Del Mazo, J. Rademacher, B. Yee, and I. Skamnelos. 2018. “Cross-Border Spillover Effects of the G20 Financial Regulatory Reforms: Results from a Pilot Survey.” Policy Research Working Paper 8300, World Bank, Washington, DC.
- Bruno, V., and H. S. Shin. 2015. “Capital Flows and the Risk-Taking Channel of Monetary Policy.” *Journal of Monetary Economics* 71 (April): 119-32.
- Budnik, K., and J. Kleibl. 2018. “Macroprudential Regulation in the European Union in 1995-2014: Introducing a New Data Set on Policy Actions of a Macroprudential Nature.” Working Paper 2123, European Central Bank, Frankfurt.
- Carney, M. 2015. “Inflation in a Globalised World.” Remarks at the Economic Policy Symposium, Federal Reserve Bank of Kansas City, Jackson Hole, August 29.
- Carstens, A. 2018. Interview with *Borsen-Zeitung* financial newspaper, May 22. <https://www.bis.org/speeches/sp180523.htm>.
- Carstens, A. 2019. Speech at the Basler Bankenforum, Basel, September 4.
- Cerutti, E, S. Claessens, and L. Laeven. 2017. “The Use and Effectiveness of Macroprudential Policies: New Evidence.” *Journal of Financial Stability* 28 (February): 203-24.
- Cheung, Y., and X. Qian. 2009. “Hoarding of International Reserves: Mrs. Machlup’s Wardrobe and the Joneses.” *Review of International Economics* 17 (4): 824-43.
- Ciccarelli, M., and B. Mojon. 2010. “Global Inflation.” *The Review of Economics and Statistics* 92 (3): 524-35.
- Claessens, S. 2014. “An Overview of Macroprudential Policy Tools.” IMF Working Paper 14/214, International Monetary Fund, Washington, DC.
- Claessens, S., and M. A. Kose. 2018. “Frontiers of Macrofinancial Linkages.” BIS Papers 95, Bank for International Settlements, Basel.
- Cline, W. R. 1981. *World Inflation and the Developing Countries*. Washington, DC: Brookings Institution.
- Collard, F., H. Dellas, B. Diba, and O. Loisel. 2017. “Optimal Monetary and Prudential Policies.” *American Economic Journal: Macroeconomics* 9 (1): 40-87.

- Cottarelli, C, P. Gerson, and A. Senhadji. 2014. *Post-crisis Fiscal Policy*. Cambridge, MA: MIT Press.
- Cukierman, A. 2013. "Monetary Policy and Institutions Before, During, and After the Global Financial Crisis." *Journal of Financial Stability* 9 (3): 373–84.
- Darvas, Z. 2012. "Real Effective Exchange Rates for 178 Countries: A New Database." Bruegel Working Paper 2012/06, Brussels.
- de Haan, J., C. Bodea, R. Hicks, and S. Eijffinger. 2018. "Central Bank Independence Before and After the Crisis." *Comparative Economic Studies* 60 (2): 183–202.
- de Luna-Martínez, J. and Vicente, C.L., 2012. *Global Survey of Development Banks*. Washington, DC: World Bank.
- Debrun, X., and T. Kinda. 2017. "Strengthening Post-Crisis Fiscal Credibility: Fiscal Councils on the Rise – A New Dataset." *Fiscal Studies* 38 (4): 667–700.
- Dijkman, M. 2015. "Monitoring Financial Stability in Developing and Emerging Economies: Practical Guidance for Conducting Macroprudential Analysis." Policy Research Working Paper 7248, World Bank, Washington, DC.
- Draghi, M. 2015. "Global and Domestic Inflation." Speech at the Economic Club of New York, December 4.
- ECB (European Central Bank). 2010. "Euro Area Fiscal Policies and Crisis." Occasional Paper Series 109, European Central Bank, Frankfurt.
- Epure, M., I. Mihai, C. Minoiu, and J. Peydró, 2018. "Household Credit, Global Financial Cycle, and Macroprudential Policies; Credit Register Evidence from an Emerging Country." IMF Working Paper 18/13, International Monetary Fund, Washington, DC.
- EU (European Union). 2007. *Treaty of Lisbon Amending the Treaty on European Union and the Treaty Establishing the European Community*. Lisbon.
- Fendoğlu, S. 2017. "Credit Cycles and Capital Flows: Effectiveness of the Macroprudential Policy Framework in Emerging Market Economies." *Journal of Banking and Finance* 79 (March): 110–28.
- Fernández, A., M. W. Klein, A. Rebucci, M. Schindler, and M. Uribe. 2016. "Capital Control Measures: A New Dataset." *IMF Economic Review* 64 (3): 548–74.
- Feyen, E., and I. Zuccardi. 2019. "The Sovereign-Bank Nexus in EMDEs: What Is It, Is It Rising and What Are the Policy Implications?" Policy Research Working Paper 8950, World Bank, Washington, DC.
- Fidrmuc, J., M. Hake, and H. Stix. 2013. "Households' Foreign Currency Borrowing in Central and Eastern Europe." *Journal of Banking & Finance* 37 (6): 1880–97.
- Fischer, S. 2015. "The Transmission of Exchange Rate Changes to Output and Inflation." Speech at Monetary Policy Implementation and Transmission in the Post-Crisis Period, a research conference sponsored by the Board of Governors of the Federal Reserve System, Washington, DC, November 12.
- Fiszbein, A., D. Ringold, and S. Srinivasan. 2011. "Cash Transfers, Children, and the Crisis: Protecting Current and Future Investments." Social Protection Discussion Paper 1112, World Bank, Washington, DC.

- FSB (Financial Stability Board). 2018. "Implementation and Effects of the G20 Financial Regulatory Reforms: Fourth Annual Report." Financial Stability Board, Basel.
- FSB (Financial Stability Board). 2019. "Implementation of G20/FSB Financial Reforms in Other Areas: Summary of Key Findings Based on the 2018 FSB Implementation Monitoring Network (IMN) Survey." Financial Stability Board, Basel.
- FSB, IMF, and BIS (Financial Stability Board, International Monetary Fund, and Bank for International Settlements). 2011. "Macroprudential Tools and Frameworks." Update to G20 Finance Ministers and Central Bank Governors.
- Furman, J., and L. Summers. 2019. "Who's Afraid of Budget Deficits: How Washington Should End Its Debt Obsession." *Foreign Affairs* 2019 (March/ April).
- Gallagher, K. 2011. "Losing Control: Policy Space for Capital Controls in Trade and Investment Agreements." *Development Policy Review* 29 (4): 387-413.
- Gallagher, K. 2015. *Ruling Capital: Emerging Markets and the Reregulation of Cross-Border Finance*. New York: Cornell University Press.
- García-Cicco, J., and E. Kawamura. 2014. "Central Bank Liquidity Management and 'Unconventional' Monetary Policies." *Economía* 15 (1): 39-87.
- Gemmell, N., R. Kneller, and I. Sanz. 2016. "Does the Composition of Government Expenditure Matter for Long-Run GDP Levels?" *Oxford Bulletin of Economics and Statistics* 78 (4): 522-47.
- Ghosh, A., J. Ostry, and M. Qureshi. 2017. *Taming the Tide of Capital Flows*. Cambridge, MA: MIT Press.
- Gill, I. S., I. Izvorski, W. van Eeghen, and D. De Rosa. 2014. *Diversified Development: Making the Most of Natural Resources in Eurasia*. Washington, DC: World Bank.
- Goldstein, M., and D. Xie. 2009. "The Impact of the Financial Crisis on Emerging Asia." In *Asia and the Global Financial Crisis*, edited by R. Glick and M. Spiegel, 27-80. Federal Reserve Bank of San Francisco.
- Gordy, M., and B. Howells. 2006. "Procyclicality in Basel II: Can We Treat the Disease without Killing the Patient?" *Journal of Financial Intermediation* 15 (3): 395-417.
- Gourio, F., A. Kashyap, and J. Sim. 2018. "The Trade Offs in Leaning Against the Wind." *IMF Economic Review* 66 (1): 70-115.
- Grabel, I. 2015. "The Rebranding of Capital Controls in an Era of Productive Incoherence." *Review of International Political Economy* 22 (1): 7-43.
- Gürkaynak, R. S., Z. Kantur, M. A. Taş, and S. Yildirim. 2015. "Monetary Policy in Turkey After Central Bank Independence." CESifo Working Paper 5582, Center for Economic Studies and Ifo Institute, Munich.
- Ha, J., A. Ivanova, F. Ohnsorge, and F. Unsal. 2019. "Inflation: Concepts, Evolution and Correlates." In *Inflation in Emerging and Developing Economies: Evolution, Drivers and Policies*, edited by J. Ha, M. A. Kose, and F. Ohnsorge. Washington, DC: World Bank.
- Ha, J., M. A. Kose, and F. Ohnsorge, eds. 2019. *Inflation in Emerging and Developing Countries: Evolution, Drivers, and Policies*. Washington, DC: World Bank.
- Ha, J., M. Stocker, and H. Yilmazkuday. 2019. "Inflation and Exchange Rate Pass-Through." In *Inflation in Emerging and Developing Economies: Evolution, Drivers and Policies*, edited by J. Ha, M. A. Kose, and F. Ohnsorge. Washington, DC: World Bank.

- IILS (International Institute for Labour Studies). 2011. "A Review of Global Fiscal Stimulus." EC-IILS Joint Discussion Paper Series 5, International Institute for Labour Studies, Geneva.
- IMF (International Monetary Fund). 2010a. *Coping with the Global Financial Crisis: Challenges Facing Low-Income Countries*. Washington, DC: International Monetary Fund.
- IMF (International Monetary Fund). 2010b. *Impact of the Global Financial Crisis on the Gulf Cooperation Council Countries and Challenges Ahead*. Washington, DC: International Monetary Fund.
- IMF (International Monetary Fund). 2012. *The Liberalization and Management of Capital Flows: An Institutional View*. Washington, DC: International Monetary Fund.
- IMF (International Monetary Fund). 2016. "Capital Flows—Review of Experience with the Institutional View." Policy Paper, International Monetary Fund, Washington, DC.
- IMF (International Monetary Fund). 2018a. *The IMF's Institutional View on Capital Flows in Practice*. Washington, DC: International Monetary Fund.
- IMF (International Monetary Fund). 2018b. "Challenges for Monetary Policy in Emerging Markets as Global Financial Conditions Normalize." Chapter 3 in *World Economic Outlook*, October. Washington, DC: International Monetary Fund.
- IMF (International Monetary Fund). 2019. "Frontier Issues in Central Banking—An Assessment of IMF Contributions." Independent Evaluation Office Background Paper 19-01/07, International Monetary Fund, Washington, DC.
- Jara, A., R. Moreno, and C. E. Tovar. 2009. "The Global Crisis and Latin America: Financial Impact and Policy Responses." *BIS Quarterly Review*, Bank of International Settlement, Basel.
- Jiménez, G., S. Ongena, J. L. Peydró, and J. Saurina. 2017. "Macroprudential Policy, Countercyclical Bank Capital Buffers, and Credit Supply: Evidence from the Spanish Dynamic Provisioning Experiments." *Journal of Political Economy* 125 (6): 2126-77.
- Joshi, A., W. Prichard, and C. Heady. 2014. "Taxing the Informal Economy: The Current State of Knowledge and Agendas for Future Research." *Journal of Development Studies* 50 (10): 1325-47.
- Kganyago, L. 2018. "Statement of the Monetary Policy Committee." South African Reserve Bank, Pretoria, January.
- Kose, M. A., S. Kurlat, F. Ohnsorge, and N. Sugawara. 2017. "A Cross-Country Database of Fiscal Space." Policy Research Working Paper 8157, World Bank, Washington, DC.
- Kose, M. A., H. Matsuoka, U. Panizza, and D. Vorisek. 2019. "Inflation Expectations: Review and Evidence." In *Inflation in Emerging and Developing Economies: Evolution, Drivers and Policies*, edited by J. Ha, M. A. Kose, and F. Ohnsorge. Washington, DC: World Bank.
- Kose, M. A., F. Ohnsorge, and N. Sugawara. 2018. "Fiscal Space: Concept, Measurement, and Policy Implications," Research and Policy Brief 132195, World Bank, Washington, DC.
- Kose, M. A., F. Ohnsorge, and N. Sugawara. 2020. "Benefits and Costs of Debt: The Dose Makes the Poison." Policy Research Working Paper 9166, World Bank, Washington, DC.
- Kose, M. A., E. Prasad, K. Rogoff, and S.-J. Wei. 2010. "Financial Globalization and Economic Policies." In *Handbook of Development Economics 5*, edited by D. Rodrik and M. Rosenzweig. Amsterdam: North-Holland.

- Kose, M. A., and M. E. Terrones. 2015. *Collapse and Revival. Understanding Global Recessions and Recoveries*. Washington, DC: International Monetary Fund.
- Krishnamurti, D., and Y. Lee. 2014. *Macroprudential Policy Framework: A Practice Guide*. Washington, DC: World Bank.
- Kuttner, K., and I. Shim. 2013. "Can Non-Interest Rate Policies Stabilize Housing Markets? Evidence from a Panel of 57 Economies." BIS Working Paper 433, Bank for International Settlements, Basel.
- Laeven, L., and F. Valencia. 2018. "Systematic Banking Crises Revisited." IMF Working Paper 18/206, International Monetary Fund, Washington, DC.
- Lane, T. 2016. "Monetary Policy and Financial Stability—Looking for the Right Tools." Speech by the Deputy Governor of the Bank of Canada, Montreal.
- Leduc, S., and D. Wilson. 2014. "Infrastructure Spending as Fiscal Stimulus: Assessing the Evidence." *Review of Economics and Institutions* 5 (1): 1-24.
- Lombardi, D., and M. Moschella. 2017. "The Symbolic Politics of Delegation: Macroprudential and Independent Regulatory Authorities." *New Political Economy* 22 (1): 92-108.
- Lombardi, D., and P. L. Siklos. 2016. "Benchmarking Macroprudential Policies: An Initial Assessment." *Journal of Financial Stability* 27 (December): 35-49.
- Meeks, R. 2017. "Capital Regulation and the Macroeconomy: Empirical Evidence and Macroprudential Policy." *European Economic Review* 95 (June): 125-41.
- Mishkin, F. S. 2011. "Monetary Policy Strategy: Lessons from the Crisis." In *Monetary Policy Revisited: Lessons from the Crisis*, edited by M. Jorocinski, F. Smets, and C. Thimann, 67-118. Frankfurt: European Central Bank.
- Nanto, D. K. 2009. *The Global Financial Crisis: Analysis and Policy Implications*. Washington, DC: Congressional Research Service.
- Ocampo, J. A. 2009. "Latin America and the Global Financial Crisis." *Cambridge Journal of Economics* 33 (4): 703-24.
- OECD (Organisation for Economic Co-operation and Development). 2009. *OECD Economic Outlook Interim Report*. Paris: OECD.
- Ohnsorge, F., and S. Yu. 2016. "Recent Credit Surge in Historical Context." Policy Research Working Paper 7704, World Bank, Washington, DC.
- Osakwe, P. N. 2010. "Africa and the Global Financial and Economic Crisis: Impacts, Responses and Opportunities." In *The Financial and Economic Crisis of 2008-2009 and Developing Countries*, edited by S. Dullien, D. J. Korte, A. Márquez, and J. Priewe, 203-22. Geneva: United Nations.
- Ostry, J., A. Ghosh, K. Habermeier, M. Chamon, M. Qureshi, L. Laeven, and A. Kokenyne. 2011. "Managing Capital Inflows: What Tools to Use?" IMF Staff Discussion Note 11/06, International Monetary Fund, Washington, DC.
- Ostry, J., A. Ghosh, K. Habermeier, M. Chamon, M. Qureshi, and D. Reinhardt. 2010. "Capital Inflows: The Role of Controls." IMF Staff Position Note 10/04, International Monetary Fund, Washington, DC.
- Portes, R. 2009. "Global Imbalances." In *Macroeconomic Stability and Financial Regulation: Key Issues for the G20*, edited by M. Dewatripont, X. Freixas, and R. Portes. London: Centre for Economic Policy Research.

Ramey, V. 2019. "Ten Years After the Crisis: What Have We Learned from the Renaissance in Fiscal Research?" *Journal of Economic Perspectives* 33 (2): 89-114.

Ranciere, R., A. Tornell, and A. Vamvakidis. 2010. "A New Index of Currency Mismatch and Systemic Risk." IMF Working Paper 10/263, International Monetary Fund, Washington, DC.

Reinhart, C. M., and K. S. Rogoff. 2008. "Is the 2007 US Sub-Prime Financial Crisis So Different? An International Historical Comparison." *American Economic Review: Papers & Proceedings* 98 (2): 339-44.

Rey, H. 2015. "Dilemma Not Trilemma: The Global Financial Cycle and Monetary Policy Independence." NBER Working Paper 21162, National Bureau of Economic Research, Cambridge, MA.

Rogoff, K. 2003. "Globalization and Global Disinflation." *Federal Reserve Bank of Kansas City Economic Review* 88 (4): 45-78.

Rogoff, K. 2014. "The Exaggerated Death of Inflation." *Project Syndicate*, Prague, Czech Republic. September 2.

Schaechter, A., T. Kinda, N. Budina, and A. Weber. 2012. "Fiscal Rules in Response to the Crisis—Toward the "Next-Generation" Rules. A New Dataset." IMF Working Paper 12/187, International Monetary Fund, Washington, DC.

Schmidt-Hebbel, K. 2012. "Fiscal Institutions in Resource-Rich Economies: Lessons from Chile and Norway." Institute of Economics Working Paper 416, Pontifical Catholic University of Chile, Santiago.

Stems, F. 2013. "Financial Stability and Monetary Policy: How Closely Interlinked?" *Sveriges Riksbank Economic Review* 3: 121-60.

Stone, S. E., and E. M. Truman. 2016. "Uneven Progress on Sovereign Wealth Fund Transparency and Accountability." PIIIE Policy Brief 16-18, Peterson Institute for International Economics, Washington, DC.

Summers, L. 2014. "Reflections on the 'New Secular Stagnation Hypothesis.'" In *Secular Stagnation: Facts, Causes and Cures*, edited by C. Teulings and R. Baldwin. London: CEPR Press.

Svensson, L. 2017. "Cost-Benefit Analysis of Leaning against the Wind." *Journal of Monetary Economics* 90 (October): 193-213.

Tagkalakis, A. 2013. "The Effects of Financial Crisis on Fiscal Positions." *European Journal of Political Economy* 29 (March): 197-213.

Taylor, J. 2014. "The Role of Policy in the Great Recession and the Weak Recovery." *American Economic Review* 104 (5): 61-66.

U.S. Department of Treasury. 2013. "The Financial Crisis: Five Years Later—Response, Reform and Progress." Washington DC: U.S. Department of Treasury.

Vandenbussche, J., U. Vogel, and E. Detragiache. 2015. "Macroprudential Policies and Housing Prices: A New Database and Empirical Evidence for Central, Eastern, and Southeastern Europe." *Journal of Money, Credit and Banking* 47 (S1): 343-77.

World Bank. 2009. *Global Monitoring Report: A Development Emergency*. Washington, DC: World Bank.

- World Bank. 2013. *Beyond the Annual Budget: Global Experience with Medium-Term Expenditure Frameworks*. Washington, DC: World Bank.
- World Bank. 2014. *China Economic Update*. October. Washington, DC: World Bank.
- World Bank. 2015. *Global Economic Prospects: Having Fiscal Space and Using it*. January. Washington, DC: World Bank.
- World Bank. 2017. *Global Economic Prospects: A Fragile Recovery*. January. Washington, DC: World Bank.
- World Bank. 2018a. *Commodity Markets Outlook: Oil Exporters: Policies and Challenges*. April. Washington, DC: World Bank.
- World Bank. 2018b. *Global Economic Prospects: The Turning of the Tide?* June. Washington, DC: World Bank.
- World Bank. 2019a. *Global Economic Prospects: Heightened Tensions, Subdued Investment*. June. Washington, DC: World Bank.
- World Bank. 2019b. *Global Economic Prospects: Darkening Skies*. January. Washington, DC: World Bank.
- World Bank. 2019c. *Global Financial Development Report 2019/2020: Bank Regulation and Supervision A Decade After the Global Financial Crisis*. Washington, DC: World Bank.
- Wyplosz, C. 2013. "Fiscal Rules: Theoretical Issues and Historical Experiences." In *Fiscal Policy After the Financial Crisis*, edited by A. Alesina and F. Giavazzi. University of Chicago Press: Chicago, IL.
- Yellen, J. L. 2014. "Monetary Policy and Financial Stability." Speech by Chair of the Federal Reserve Board of Governors, Michel Camdessus Central Banking Lecture, International Monetary Fund, Washington, DC.
- Zeev, N. 2017. "Capital Controls as Shock Absorbers." *Journal of International Economics* 109 (November): 43–67.
- Zhang, L., and E. Zoli. 2016. "Leaning Against the Wind: Macroprudential Policy in Asia." *Journal of Asian Economics* 42 (February): 33–52.