CHAPTER 5

Debt and Financial Crises: From Euphoria to Distress

Emerging market and developing economies have experienced recurrent episodes of rapid debt accumulation over the past 50 years. Half of such episodes were associated with financial crises. Rapid debt buildup, whether public or private, increased the likelihood of a financial crisis, as did a higher share of short-term debt or larger external debt. Countries that experienced financial crises had often employed combinations of unsustainable fiscal, monetary, and financial sector policies and had often suffered from structural and institutional weaknesses.

Introduction

Over the past half-century, emerging market and developing economies (EMDEs) have experienced recurrent episodes of rapid debt accumulation. When they have taken place in many economies, such national episodes together have formed global waves of debt. Whereas the two preceding chapters examined the waves, this chapter turns to the implications of rapid debt accumulation at the country level. Rising or elevated debt increases a country's vulnerability to economic and financial shocks—including increases in the costs of refinancing—which can culminate in financial crises, with large and lasting adverse effects on economic activity.[1]

This chapter provides a more granular perspective on the causes and consequences of debt accumulation by addressing the following questions:

- What were the main features of national episodes of rapid debt accumulation?
- What are the empirical links between debt accumulation and financial crises?
- What major institutional and structural weaknesses were associated with financial crises?

Contributions to the literature. The chapter makes several novel contributions to the already extensive literature on the links between debt and financial crises as reviewed in chapter 2.

[1] For a large sample of advanced economies and EMDEs, it has been estimated that output was, on average, 10 percent lower eight years after a debt crisis, and that the fiscal cost of resolving banking crises averaged 13 percent of gross domestic product (Furceri and Zdzienicka 2012; Laeven and Valencia 2018). Recessions associated with financial crises have tended to be worse than other recessions, and recoveries following financial crises have tended to be weaker and slower than other cyclical recoveries (Claessens, Kose, and Terrones 2012).

- *National debt accumulation episodes.* The chapter undertakes the first comprehensive empirical study of the many episodes of government or private debt accumulation since 1970 in a large number of EMDEs. It not only considers what happened during the financial crises associated with rapid debt accumulation but also examines macroeconomic and financial developments during the episodes of debt accumulation. Earlier work has often examined developments in government or private debt markets separately, analyzed these developments over short time intervals around financial crises, or focused on a narrow group of (mostly advanced) economies or regions.[2]

- *Debt and financial crises.* The chapter expands on earlier empirical studies of the correlates of crises by analyzing the links between debt accumulation and financial crises in a single empirical framework and by extending the horizon of analysis to cover the four global waves of debt accumulation since 1970.[3] Whereas some earlier studies examined the roles of different types of debt and a host of potential correlates of crises, most typically examined the links between a composite indicator of vulnerabilities and crises. In contrast, the empirical approach here zooms in on the links between debt and financial crises.

- *Country case studies.* The chapter presents a comprehensive review of country case studies of rapid debt accumulation episodes associated with financial crises. Based on a literature review that extracts common themes from a large set of country case studies, this complementary qualitative approach helps identify the major structural and institutional weaknesses associated with financial crises.

Main findings. The chapter presents the following findings.

- *National debt accumulation episodes.* Since 1970, there have been 519 national episodes of rapid debt accumulation in 100 EMDEs. Such episodes have therefore been common: in the average year, three-quarters of EMDEs were in either a government or a private debt accumulation episode or in both. The duration of a typical debt accumulation episode

[2] Government debt crises have been discussed in Abbas, Pienkowski, and Rogoff (2019); Kindleberger and Aliber (2011); Reinhart, Reinhart, and Rogoff (2012); Reinhart and Rogoff (2011); and World Bank (2019). Credit booms have been examined in Dell'Arricia et al. (2014, 2016); Elekdag and Wu (2013); IMF (2004); Jordà, Schularick, and Taylor (2011); Mendoza and Terrones (2008, 2012); Ohnsorge and Yu (2016); Schularick and Taylor 2012; and Tornell and Westermann (2005).

[3] Earlier studies have included either government debt (Manasse, Roubini, and Schimmelpfenning 2003) or private debt (Borio and Lowe 2002; Demirgüç-Kunt and Detragiache 1998; Kaminsky and Reinhart 1999) or both (Dawood, Horsewood, and Strobel 2017; Frankel and Rose 1996; Rose and Spiegel 2012) among a host of potential correlates of crises.

was seven years for government debt episodes and eight years for private debt episodes. The median debt buildup during a government debt accumulation episode (30 percentage points of gross domestic product [GDP]) was double that during a private debt accumulation episode (15 percentage points of GDP).

- *Debt accumulation and financial crises.* About half of the national debt accumulation episodes were accompanied by financial crises. Crises were particularly common in the first and second global waves: of all the national episodes that formed part of these two waves, almost two-thirds were associated with crises. National debt accumulation episodes that coincided with crises were typically associated with larger debt buildups (for government debt), weaker economic outcomes, and larger macroeconomic and financial vulnerabilities than were noncrisis episodes. Crises in rapid *government* debt buildups featured significantly larger output losses than crises in rapid *private* debt buildups: in the case of government (private) debt, after eight years, real GDP in episodes with crises was about 10 (6) percent lower than in episodes without crisis and investment was more than 20 (15) percent lower. Outcomes were particularly weak when crises coincided with combined government and private debt accumulation episodes.

- *Likelihood of financial crises.* An increase in debt, either government or private, was associated with a significantly higher probability of crisis in the following year. In addition, a combined accumulation of both government and private debt resulted in a higher likelihood of a currency crisis than did solely government or solely private debt increases.

- *Debt accumulation as a shock amplifier.* Although financial crises associated with national debt accumulation episodes were typically triggered by external shocks such as sudden increases in global interest rates, domestic vulnerabilities often amplified the adverse impact of these shocks. Crises were more likely, or the economic distress they caused was more severe, in countries with higher external debt—especially short-term—and lower international reserves.

- *Crises associated with inadequate policy frameworks.* Most EMDEs that experienced financial crises during debt accumulation episodes employed various combinations of unsustainable macroeconomic policies, and suffered structural and institutional weaknesses. Many of them had severe fiscal and monetary policy weaknesses, including poor revenue collection, widespread tax evasion, public wage and pension indexing, monetary financing of fiscal deficits, and substantial use of energy and food subsidies. Crisis countries also often borrowed in foreign currency, and employed managed exchange rate regimes, while regulation and supervision of banks and other financial institutions were frequently weak. Debt buildup had often funded import substitution strategies, undiversified economies, or inefficient sectors that did not raise export earnings or had poor corporate governance. Several EMDEs that experienced crises also suffered from protracted political uncertainty.

The rest of the chapter is organized as follows. First, the chapter examines the features of national episodes of rapid private and government debt accumulation. Next, it outlines an empirical framework to analyze how debt accumulation affects the likelihood of financial crises, controlling for other factors. This analysis is followed by a review of selected country case studies to identify the major macroeconomic, structural, and institutional weaknesses in national debt accumulation episodes that were associated with financial crises. The chapter concludes with a summary of findings.

National debt accumulation episodes

Debt accumulation by EMDEs brings benefits, as documented in chapter 2. Some debt accumulation episodes have been particularly rapid, and these episodes are the focus of this section. This section reviews the main features of these national debt accumulation episodes and their links with financial crises in an event study. About half of the national episodes of rapid debt accumulation have begun and ended within the same global wave of debt, among the four discussed in the previous chapters.

Identification of episodes. A national episode of rapid debt accumulation is defined as a period during which the government debt-to-GDP ratio or the private sector debt-to-GDP ratio rises from trough to peak by more than one (country-specific) 10-year rolling standard deviation. This identification approach for rapid debt accumulation episodes closely follows methods used to date the turning points of business cycles.[4] Application of this approach results in 256 episodes of rapid *government debt* accumulation and 263

[4] Appendix A describes the methodology used here. For details of similar approaches, see Claessens, Kose, and Terrones (2012); Harding and Pagan (2002); and Mendoza and Terrones (2012). The headline results are robust to using a definition more closely aligned with the literature on credit booms. Episodes are required to have a minimum duration of five years from one peak to the next and two years from trough to peak and peak to trough. Episodes at the beginning and end of the data series are similarly classified, but the beginning and end of episodes are set at the points where the availability for government and private debt data begins and ends.

episodes of rapid *private debt* accumulation in a sample of 100 EMDEs with available data for 1970-2018.[5]

In scaling debt by GDP, this approach implicitly focuses on the concept of the debt burden, which captures the ability of borrowers economy-wide to service their debt. In principle, a sharp increase in the debt burden, as measured by the debt-to-GDP ratio, could mechanically reflect an output collapse, deflation, an exchange rate depreciation that raises the domestic currency value of debt, or a large increase in borrowing. Regardless of the underlying cause, a rise in the debt burden makes it more challenging for the economy to service debt and makes the debt burden more likely to become a source of financial stress.

In practice, output contractions were a source of increased debt-to-GDP ratios in a minority of rapid debt accumulation episodes identified here (one-third of government debt episodes and two-fifths of private debt episodes). Sharp currency depreciations (in currency crises) have been associated with larger debt buildups during debt accumulation episodes, but such depreciations have typically happened before (usually two years before) debt peaks and the increase in debt during the year of the currency crisis has accounted for only between one-tenth (private debt episodes) and one-quarter (government debt episodes) of the total debt buildup during episodes involving currency crises.

Episodes associated with financial crises. Financial crises (banking, sovereign debt, or currency crises) are defined as in Laeven and Valencia (2018).[6] A rapid debt accumulation episode is identified as having been associated with a financial crisis (of any type) if such a crisis occurred at any point between the start of the episode and the year of the episode's peak debt-to-GDP ratio or within two years of the peak debt-to-GDP ratio.[7]

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[5] Small states, as defined by the World Bank, are excluded. Forty-five government debt and 37 private debt accumulation episodes are still ongoing. Tables A.1 and A.2 in appendix A list completed government and private debt accumulation episodes.

[6] Data for currency crises are extended to 2018 using the same methodology as Laeven and Valencia (2018). Other studies dating crises include, for example, Baldacci et al. (2011), Reinhart and Rogoff (2009), and Romer and Romer (2017).

[7] Table A.3 in appendix A lists financial crises associated with completed rapid debt accumulation episodes. Multiple financial crises occurred in some national debt accumulation episodes. For example, Mexico's government debt accumulation episode of 1980-87 spanned a banking crisis in 1981 and currency and debt crises in 1982. Turkey's government debt accumulation episode of 1998-2001 spanned a banking crisis in 2000 and a currency crisis in 2001. In contrast, El Salvador's government debt accumulation episode of 1977-85 was followed by a currency crisis in 1986.

This identification approach describes an association between rapid debt accumulation and financial crises without necessarily implying any causal link between the two. This approach yields 137 rapid *government* debt accumulation episodes associated with crises and 127 rapid *private* debt accumulation episodes associated with crises between 1970 and 2018 in 100 EMDEs.

Main features

Frequency of episodes. Debt accumulation episodes have been common (figure 5.1). In the average year between 1970 and 2018, three-quarters of EMDEs were in either a government or a private debt accumulation episode or in both. The region with the most episodes was Sub-Saharan Africa (SSA)—where 34 percent of all government and 33 percent of all private debt accumulation episodes occurred—in part reflecting the large number of countries in the region but also its history of debt dependence. The average EMDE in SSA, South Asia, and Latin America and the Caribbean (LAC)—the regions with the most episodes per country—went through three government and three private debt accumulation episodes between 1970 and 2018. Central African Republic, Niger, and Togo had the most (five) *government* debt accumulation episodes, including ongoing ones. Argentina, Burkina Faso, Myanmar, Oman, Pakistan, United Arab Emirates, and Zambia had the most (also five) *private* debt accumulation episodes. Several countries had only one debt accumulation episode (either private or government) in the period (for example, Albania, Côte d'Ivoire, and Serbia).

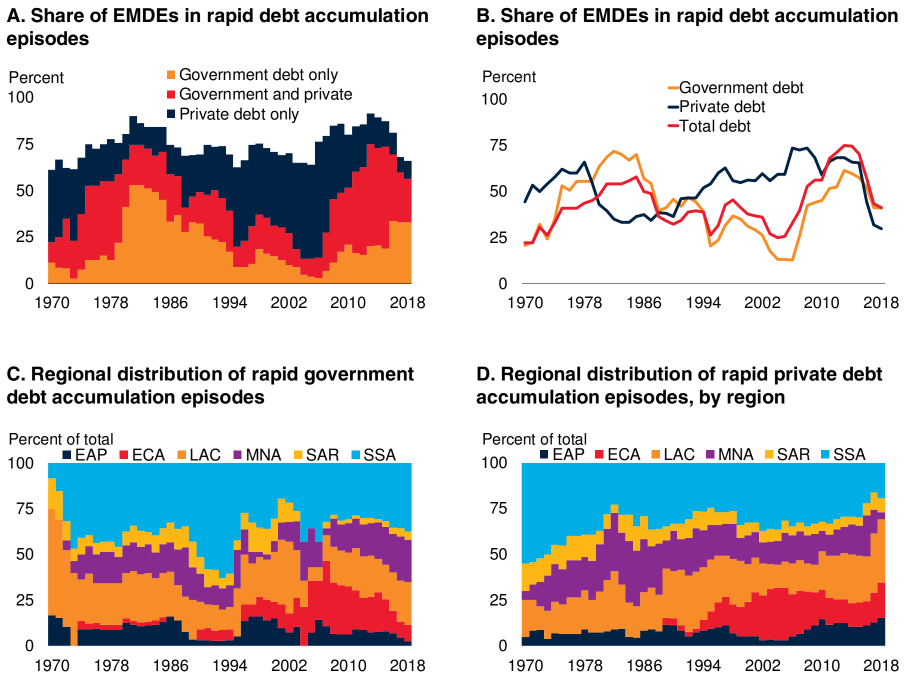
Duration. The duration of episodes—the number of years from trough to peak debt-to-GDP ratios—varied widely but amounted to about seven and eight years in the median government and private debt accumulation episode, respectively (figure 5.2; tables A.4 and A.5 in appendix A).[8] Most episodes had run their course in less than a decade; however, 21 percent of government debt episodes and 29 percent of private debt episodes lasted for more than a decade. The long duration of some of these episodes suggests that the debt buildup in part reflected healthy financial deepening, which may be especially the case in those countries with exceptionally long accumulation episodes.

Amplitude. Although again with wide heterogeneity among the episodes, the debt buildup in the median episode amounted to 21 percentage points of

[8] Most accumulation episodes were short-lived. The shortest episode lasted two years in, for example, Benin (1992-94; government debt), the Lao People's Democratic Republic (1996-98; government debt), and Papua New Guinea (1996-98; private debt).

FIGURE 5.1 Episodes of rapid debt accumulation

Episodes of rapid debt accumulation have been common among EMDEs, in both the government and private sectors. In the average year between 1970 and 2018, three-quarters of EMDEs were in either a government or a private debt accumulation episode or in both. Since the early 2000s, the number of combined government and private debt accumulation episodes has increased.



Sources: International Monetary Fund; World Bank.

Note: For definition of episodes and country samples, see appendix A. 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.

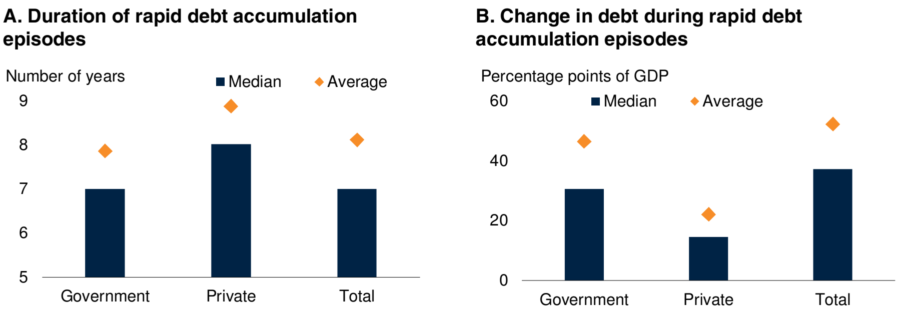
A.B. Share of EMDEs in the sample that are in rapid debt accumulation episodes.

GDP. The government debt buildup in the median government debt accumulation episode (30 percentage points of GDP from trough to peak) was double the private debt buildup in the median private debt accumulation episode (15 percentage points of GDP from trough to peak). The largest increases in *government* debt-to-GDP ratios took place in lower-income countries in SSA and LAC over several decades; the largest increases in *private* debt-to-GDP ratios occurred in Europe and Central Asia (ECA), and the smallest in SSA.

Variation in the amplitude of debt accumulation episodes across countries was particularly wide for government debt accumulation episodes. In one-

FIGURE 5.2 Features of rapid debt accumulation episodes in EMDEs

During 1970-2018, the median government debt accumulation episode lasted seven years, and the median private debt accumulation episode lasted eight years. During rapid debt accumulation episodes, government debt typically rose (trough to peak) by 30 percentage points of GDP, and private debt by 15 percentage points of GDP.



Sources: International Monetary Fund; World Bank.
Note: For definition of episodes and sample, see appendix A. EMDEs = emerging market and developing economies.
A. Median duration of rapid debt accumulation episodes.
B. Median change in debt-to-GDP ratios (trough-to-peak) during a rapid debt accumulation episode.

quarter of such episodes, the government debt buildup amounted to more than 50 percentage points of GDP.[9] Debt accumulation of such a scale was rare for the private sector: in three-quarters of private debt accumulation episodes, private debt rose by less than 30 percentage points of GDP.[10]

Combined episodes. About 70 percent of government and private debt accumulation episodes overlapped. These overlapping, combined government and private episodes were statistically significantly shorter and often more pronounced in amplitude than were solely private or solely government debt accumulation episodes (table A.5 in appendix A).

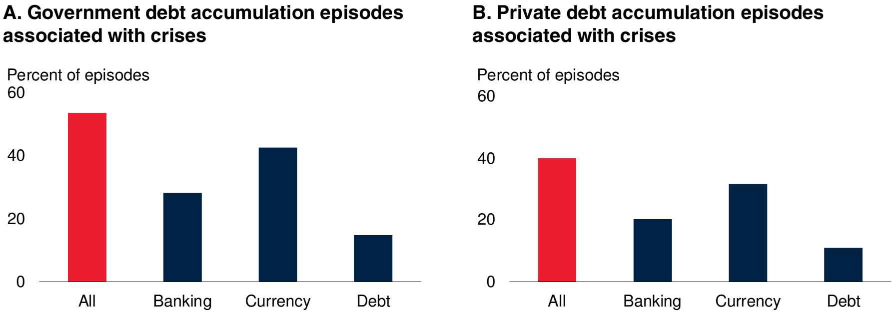
Episodes with financial crises. Of all the episodes that have concluded in the period 1970-2018, just over half of government debt accumulation episodes and two-fifths of private debt accumulation episodes were associated with financial crises (figure 5.3). Crises were particularly common during the first and second global waves: of all episodes that concluded in either of these two

[9] For example, during government debt accumulation episodes, government debt rose by 127 percentage points of GDP in Argentina (1992-2002) and 86 percentage points of GDP in Mozambique (2007-16).

[10] There were some exceptions: private debt rose by 89 percentage points of GDP in China (2008-18), 86 percentage points of GDP in Hungary (1995-2009), and 76 percentage points of GDP in Turkey (2003-18).

FIGURE 5.3 Crises during rapid debt accumulation episodes in EMDEs

About half of all episodes of government and private debt accumulation during 1970-2018 were associated with financial crises. Different types of crises often occurred at the same time.



Sources: International Monetary Fund; Laeven and Valencia (2018); World Bank.

Note: Episodes associated with crises are those that experienced financial crises (banking, currency, and debt crises, as in Laeven and Valencia 2018) during or within two years after the end of episodes. For definition of episodes and sample, see appendix A. EMDEs = emerging market and developing economies.

waves, almost two-thirds were associated with crises. Most crises occurred well before the end of the debt accumulation episode (appendix A). Crises were equally common in longer episodes (those lasting a decade or more) and shorter ones (lasting less than a decade). The most common form of crisis in debt accumulation episodes was a currency crisis, often combined with other types of crises.[11] More than three-quarters of debt accumulation episodes associated with crises (either government or private) had currency crises.

Macroeconomic outcomes

The one-half of debt accumulation episodes that were associated with financial crises had considerably weaker macroeconomic outcomes than did those that subsided without crises.

[11] Some studies have derived estimates of the incidence of crises around private lending booms. Mendoza and Terrones (2012) find that the peaks of 20-25 percent of credit booms were followed by banking crises or currency crises and that 14 percent were followed by sudden stops in capital flows. Schularick and Taylor (2012) identify credit growth as a significant predictor of financial crises. World Bank (2016c) estimates that about half of credit booms are followed by at least mild deleveraging. See Borio and Lowe (2002); Claessens and Kose (2018); Dell'Ariccia et al. (2016); Enoch and Ötker-Robe (2007); and Gourinchas, Valdes, and Landerretche (2001) for discussions of how lending booms increase vulnerability to financial crisis.

Government debt accumulation episodes. Government debt accumulation episodes that involved crises were typically associated with greater debt buildups, weaker economic outcomes, and higher vulnerabilities than were noncrisis episodes (figure 5.4; tables A.5 and A.6 in appendix A). In the episodes associated with financial crises, the government debt buildup was about 14 percentage points of GDP larger after eight years than in noncrisis episodes. After eight years, GDP and GDP per capita in episodes with crises were about 10 percent lower than in episodes without a crisis, investment was 22 percent lower, and consumption was 6 percent lower. Some external indicators—especially international reserves—deteriorated more in episodes associated with crises than in noncrisis episodes, as governments drew down reserves in an effort to stem currency depreciation. Nevertheless, currencies depreciated, and short-term debt could not be rolled over (see table A.5 in appendix A).

Private debt accumulation episodes. Over an eight-year period, private debt accumulation episodes associated with crises featured weaker output and per capita income (by about 6 percent), consumption (by 8 percent), and investment (by 15 percent; figure 5.5; tables A.5 and A.7). Private debt episodes with crises also saw significantly more pronounced deteriorations in external positions, especially international reserves and external debt, than did noncrisis episodes. Episodes associated with crises featured broadly stable real exchange rates, in contrast to noncrisis episodes, which were accompanied by strong real exchange rate appreciation; this relationship would be consistent with a more productive use of borrowed funds in noncrisis episodes.

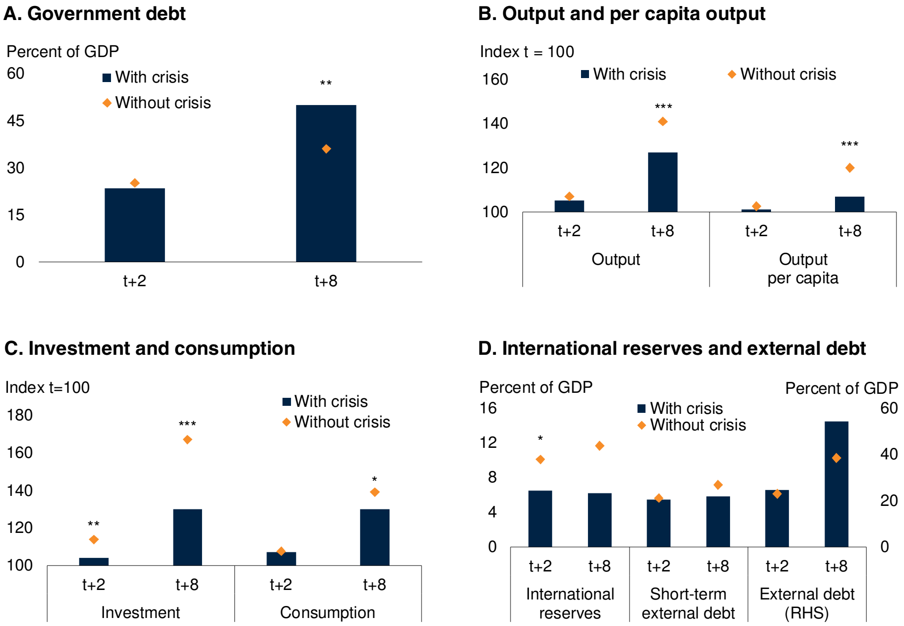
Similarities. Regardless of the borrowing sector, rapid debt accumulation episodes with crises featured considerably worse macroeconomic outcomes and vulnerabilities than did those not associated with crises. Both types of episodes associated with crises saw sharp rises in inflation relative to noncrisis episodes, as well as larger falls in international reserves. Fiscal and current account deficits widened in both types of episodes with crises but more in government debt accumulation episodes than in private debt episodes.

Combined government and private debt accumulation episodes with crises were accompanied by significantly weaker investment and consumption growth than were solely private episodes. For episodes in which crises were avoided, combined episodes also featured slower overall growth than did solely private debt accumulation episodes (table A.5).

Differences. Government debt accumulation episodes associated with crises tended to be more costly than private debt episodes associated with crises,

FIGURE 5.4 Macroeconomic developments during government debt accumulation episodes in EMDEs

Eight years after the start of rapid government debt accumulation episodes, those episodes associated with financial crises had lower output, investment, and consumption than episodes without any crisis events. Episodes associated with financial crises featured significantly larger government debt increases, as well as lower international reserves and larger external debt, although with wide heterogeneity.



Sources: International Monetary Fund; Laeven and Valencia (2018); World Bank.

Note: Median for episodes with data available for at least eight years from the beginning of the episode. Year "t" refers to the beginning of rapid government debt accumulation episodes. Episodes associated with crises are those that experienced financial crises (banking, currency, and debt crises, as in Laeven and Valencia 2018) during or within two years after the end of episodes. EMDEs = emerging market and developing economies. "*", "**", and "***" denote that medians between episodes associated with crises and those with no crises are statistically different at 10 percent, 5 percent, and 1 percent levels, respectively, based on Wilcoxon rank-sum tests.

A. Government debt in percent of GDP two and eight years after the beginning of the government debt accumulation episode (t).

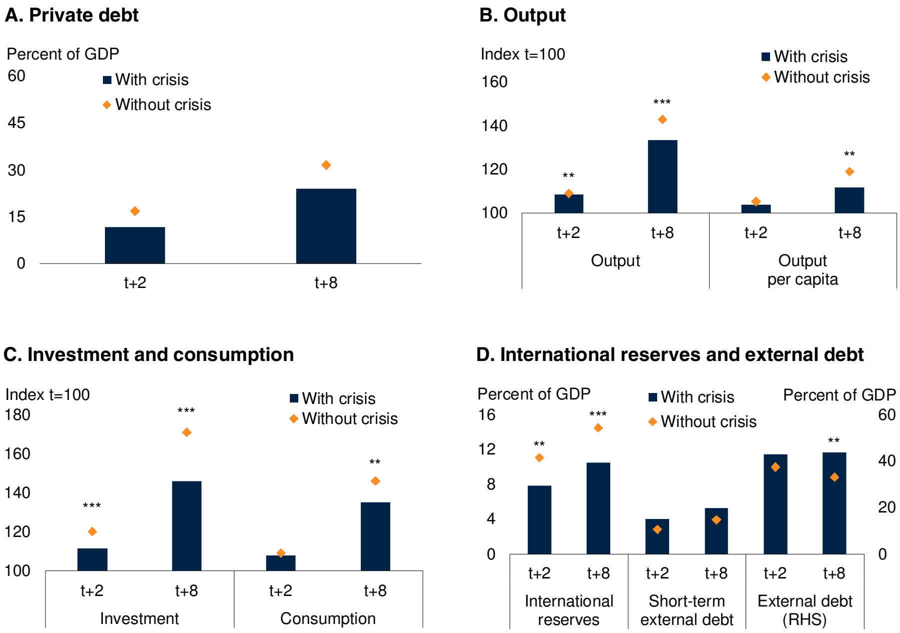
B.C. Cumulative percent increase from t, based on real growth rates for output (GDP), output (GDP) per capita, investment, and consumption.

D. Series shown as percent of GDP.

with much larger shortfalls in output and investment growth, especially in the early years after a crisis. Government debt accumulation episodes were accompanied by real exchange rate depreciation whereas private debt accumulation episodes were accompanied by an appreciation, in part reflecting domestic demand booms that supported asset prices and real appreciation. The difference may also reflect the fact that most of the government debt accumulation episodes occurred in the first half of the

FIGURE 5.5 Macroeconomic developments during private debt accumulation episodes in EMDEs

Eight years after the start of rapid private debt accumulation episodes, those episodes associated with financial crises had significantly lower output, investment, and consumption than did episodes without any crisis events. Episodes associated with financial crises featured lower international reserves and larger external debt.



Sources: International Monetary Fund; Laeven and Valencia (2018); World Bank.

Note: Median for episodes with data available for at least eight years from the beginning of the episode. Year "t" refers to the beginning of rapid private debt accumulation episodes. Episodes associated with crises are those that experienced financial crises (banking, currency, and debt crises, as in Laeven and Valencia 2018) during or within two years after the end of episodes. EMDEs = emerging market and developing economies. "*", "**", and "***" denote that medians between episodes associated with crises and those with no crises are statistically different at 10 percent, 5 percent, and 1 percent levels, respectively, based on Wilcoxon rank-sum tests.

A. Cumulative change in private debt in percent of GDP two and eight years after the beginning of the private debt accumulation episode (t).

B.C. Based on real growth rates for output (GDP), output (GDP) per capita, investment and consumption.

D. Series shown as percent of GDP.

sample, when more countries maintained pegged exchange rates, which tended to be abandoned when crises hit.

Debt and financial crises

The preceding section described countries' susceptibility to financial crises during episodes of rapid debt accumulation, with about half of the episodes associated with such crises. This section uses an econometric model to quantify the effect of debt accumulation on the likelihood of financial crises.

Empirical literature. The econometric exercise here builds on an extensive literature on early warning models, as discussed in chapter 2.[12] The first generation of early warning models, in the 1980s and 1990s, aimed at predicting currency crises and largely focused on macroeconomic and financial imbalances. Measures of balance sheet health became more prominent in such models after the Asian financial crisis, especially in predicting banking crises. A combination of government solvency and liquidity indicators has also been used in studies of sovereign debt crises.

Econometric model. In the baseline regression specification, the probability of a financial crisis is estimated as a function of the pace of debt accumulation and several control variables in a panel logit model with random effects (see appendix B for a description of the model). The regression is estimated separately for sovereign debt, banking, and currency crises because these are likely to be associated with different sectoral vulnerabilities. All explanatory variables are lagged because the focus is on preconditions that make crises more likely. In addition, the use of lagged variables attenuates potential endogeneity bias caused by contemporaneous interactions between economic fundamentals and crises. An unbalanced annual panel dataset of 139 EMDEs over the period 1970-2018 is employed.

The correlates of crises are drawn from a rich empirical literature on the determinants of financial crises, or of the vulnerabilities that worsen the impact of crises. This literature has identified the following correlates of higher crisis probabilities:

- *Factors that increase rollover risk.* These factors are particularly relevant during periods of elevated financial stress; they include high short-term external debt and high or rapidly growing total, government, or private debt.

- *Factors that restrict policy room to respond.* These factors include low international reserves, large fiscal or current account deficits, and weak institutions.

[12] See Berg, Borensztein, and Patillo (2005); Chamon and Crowe (2012); Frankel and Saravelos (2012); and Kaminsky, Lizondo, and Reinhart (1998) for extensive reviews of the literature on early warning models. For models involving currency crises, see Eichengreen, Rose, and Wyplosz (1995); Frankel and Rose (1996); and Kaminsky and Reinhart (2000). For models involving banking crises, see Borio and Lowe (2002); Demirgüç-Kunt and Detragiache (1998); and Rose and Spiegel (2012). For models involving debt crises, see Dawood, Horsewood, and Strobel (2017) and Manasse, Roubini, and Schimmelpfenning (2003).

- *Factors that suggest overvaluation of assets.* These factors indicate potential for large asset price corrections; they include exchange rate misalignments and credit and asset price booms.

The role of debt

Of these potential correlates, the regression model identifies several that are statistically significant and robust correlates of the probability of financial crises (table A.2).[13] These correlates include higher external vulnerabilities (higher short-term debt, higher debt service, and lower international reserves), adverse shocks (higher U.S. interest rates and lower domestic output growth), and faster debt accumulation—especially if true of both government and private debt. These findings are broadly consistent with the literature on leading indicators of financial crises, particularly with regard to the important roles of the composition of debt and pace of debt accumulation.[14] In addition, the regressions here suggest that *combined* private and government debt buildups significantly increase the probability of a currency crisis.

Debt accumulation. An increase in debt, either government or private, was associated with significantly higher probabilities of crisis in the following year. For example, an increase of 30 percentage points of GDP in *government* debt over the previous year (equivalent to the median buildup during a government debt accumulation episode) increased the probability of entering a sovereign debt crisis to 2.0 percent (from 1.4 percent) and that of entering a currency crisis to 6.6 percent (from 4.1 percent). For *private* debt, an increase of 15 percentage points of GDP in debt (equivalent to the median increase during a private debt accumulation episode) doubled the probability of entering a banking crisis to about 4.8 percent, and the probability of a currency crisis to 7.5 percent, in the following year—probabilities considerably larger than those for a similarly sized buildup in government debt.

Combined government and private debt accumulation. Simultaneous increases in both government and private debt increased the probability of a currency crisis. Thus, an increase of 15 percentage points of GDP in private

[13] Appendix A lists the variables used in the baseline model and presents a number of robustness tests, for example, for alternative model specifications (random effects probit model) and twin crises. Twin crises are defined as the simultaneous occurrence of any two types of financial crises (sovereign debt, banking, or currency). Such episodes are usually associated with much larger changes in typical leading indicators. The correlates in the baseline model indeed have higher statistical significance in predicting twin crises than in predicting individual crises.

[14] Relevant empirical regularities are reported in, for example, Manasse, Roubini, and Schimmelpfenning (2003) on sovereign debt crises; Kaminsky, Lizondo, and Reinhart (1998) on currency crises; and Kauko (2014) on banking crises.

debt together with an increase of 30 percentage points of GDP in government debt resulted in a 24 percent probability of entering a currency crisis the next year—more than six times the probability had debt remained stable (3.9 percent) and about one-third more than similarly sized government or private debt buildups separately.

The role of shocks and vulnerabilities

Adverse shocks. Compared to average output growth outside crises (4 percent), growth in EMDE crisis episodes averaged -1 percent. Contractions of this magnitude increased the probability of entering a sovereign debt crisis in the subsequent year to 1.9 percent from 1.2 percent outside crisis episodes (figure 5.6). A 2-percentage-point increase in U.S. real interest rates—half of the cumulative increase during a typical tightening phase of U.S. monetary policy—increased the probability of entering a currency crisis by almost one-half to 6.0 percent from 4.1 percent.

External vulnerabilities. A larger share of short-term debt in external debt, greater debt service cost, and lower reserve cover were associated with significantly higher probabilities of financial crises.

- *Short-term debt.* Compared to the probability of a sovereign debt crisis of 1.2 percent associated with a share of short-term debt of 10 percent of external debt (the average during noncrisis episodes), a 30 percent share of short-term debt in external debt (Mexico's share before it plunged into a twin currency and debt crisis in 1982) raised the probability of entering a sovereign debt crisis in the following year to 2.0 percent.

- *Debt service.* A 50 percent ratio of debt service to exports—Mexico's average debt service burden in the early 1980s—was associated with probabilities of entering a sovereign debt crisis of 2.8 percent and a banking crisis of 5.5 percent. This was more than double the probabilities associated with a 15 percent debt service-to-export ratio in the average noncrisis episode.

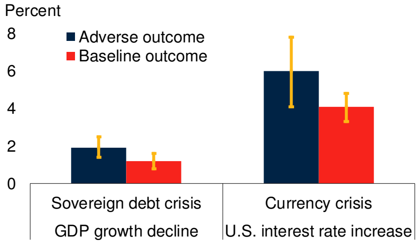
- *Reserve cover.* The probability of a debt or banking crisis exceeded 3 percent, and that of a currency crisis 5 percent, for a reserve cover of one month of imports (which was the case in Mexico in the early 1980s) compared to probabilities of 0.6-2.0 percent for banking and debt crises, and 3.8 percent for currency crises, when reserve cover amounted to four months of imports (the average for noncrisis episodes).

Other shocks and vulnerabilities. Other vulnerabilities identified tended to be more specific to certain types of crises or borrowing sectors.

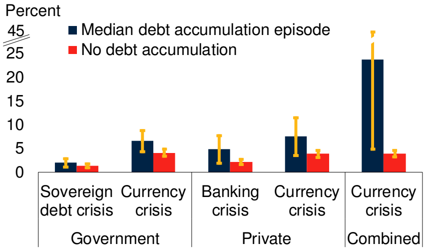
FIGURE 5.6 Predicted crisis probabilities

Higher U.S. real interest rates, lower GDP growth, and faster debt buildups raise the probability of crises.

A. Probability of financial crisis after adverse shock



B. Probability of financial crisis after debt buildup



Sources: Laeven and Valencia (2018); World Bank.

Note: Predicted probability of currency, banking, and debt crises (as defined in Laeven and Valencia 2018) based on regression in table B.2 in appendix B. Variable definitions are in table B.1. Whiskers indicate 95 percent confidence intervals. EMDE = emerging market and developing economy.

A. "Adverse outcome" is GDP growth of -1 percent (average EMDE growth during crisis episodes) or U.S. policy interest rate increase of 2 percentage points (cumulative U.S. federal funds rate increase from end-2015 to mid-2018). "Baseline outcome" is GDP growth of 4 percent (average EMDE growth outside crisis episodes) and no U.S. policy interest rate increase.

B. Predicted probabilities assuming government debt buildup of 30 percentage points of GDP or private debt buildup of 15 percentage points of GDP or both in the median debt accumulation episode.

- *Wholesale funding.* Higher wholesale funding by banks, proxied by the ratio of credit to deposits, was associated with a greater probability of a banking crisis but appears to have been largely unrelated to the probabilities of sovereign debt and currency crises.

- *Real exchange rate overvaluation.* Real exchange rate overvaluation was associated with a higher probability of a currency crisis but tended to be largely unrelated to banking and sovereign debt crises (Dornbusch et al. 1995).

- *Concessional debt and foreign direct investment flows.* A higher share of concessional debt, which consists of loans extended on more generous than commercial terms, was associated with a lower probability of a sovereign debt crisis but tended to be largely unrelated to banking and currency crises. Larger foreign direct investment inflows, a more stable form of finance than portfolio inflows, were associated with a lower probability of a currency crisis.

Crisis probabilities: Small or large? In isolation, some of these probabilities may appear small, as is expected because they are associated with individual indicators. These probabilities could cumulate rapidly, however, when multiple indicators deteriorate at the same time as has frequently happened before financial crises. Indeed, as documented in the previous chapters, in a typical financial crisis, an adverse shock is often compounded by elevated debt and multiple other vulnerabilities.

Selected country case studies

The preceding section quantified how shocks and vulnerabilities have affected the likelihood of crises. In addition, beyond measures that can be easily quantified, countries with financial crises during or after a debt accumulation episode shared some structural and institutional weaknesses that made their economies more prone to crises once an adverse shock hit. These structural and institutional weaknesses are explored in this section in a set of selected country case studies of financial crises.

Approach. The case studies focus on 43 crisis episodes in 34 EMDEs that have witnessed rapid government or private debt accumulation since 1970 (for a description of the methodology and sources used in these case studies, see appendix C). Most of these cases (65 percent) involved overlapping private and government debt accumulation episodes. Almost all cases (90 percent) involved two crises, and 40 percent involved three crises. Although nonexhaustive, the case studies were selected by the following criteria. First, they are representative of debt accumulation episodes over the past 50 years. Second, they include a broad range of EMDEs, including both large EMDEs in major regional debt crises episodes and low-income countries. Third, they have been sufficiently examined in earlier studies for a general assessment about their causes and consequences to be reached with confidence.

For each of the cases examined, earlier work—International Monetary Fund (IMF) Article IV consultation reports, academic studies, and policy papers—provides a wealth of information on the structural features and institutional background. This section focuses on macroeconomic policies and structural and institutional features that relate to shortcomings in financial sector supervision and corporate governance, as well as to political uncertainty, balance sheet mismatches, heavily managed exchange rates, state-led growth models, heavy presence of state-owned enterprises, less diversified economies, and implicit sovereign guarantees. Individual aspects of these have been widely discussed in the literature.[15]

[15] The main references for the country case studies described in this section are listed in table C.1 in appendix C. For a discussion of some of these macroeconomic, structural, and institutional shortcomings see Balassa (1982), Kaufmann (1989), and Sachs (1985, 1989), on growth strategies and uses of debt; Roubini and Wachtel (1999) on current account sustainability; Daumont, Le Gall, and Leroux (2004) and Kawai, Newfarmer, and Schmukler (2005) on inadequate banking regulation; Brownbridge and Kirkpatrick (2000) on balance sheet mismatch; and Capulong et. al. (2000) for poor corporate governance.

Macroeconomic policies

Inefficient use of debt. In addition to financing import substitution policies, public debt was used in some countries in the first wave to finance current government spending and populist policies that led to overly expansionary macroeconomic policies (Argentina, Brazil, Chile, and Peru). In other countries, rapid private borrowing resulted in debt-fueled domestic demand booms, including property booms (Thailand and Ukraine) or inefficient manufacturing investment (the Republic of Korea).

Inadequate fiscal management. Many countries had severe fiscal weaknesses. These weaknesses included weak revenue collection (Argentina, Brazil, Indonesia, and the Russian Federation), widespread tax evasion (Argentina and Russia), public wage and pension indexing (Argentina, Brazil, Mexico, and Uruguay), monetary financing of fiscal deficits (Argentina and Brazil), and substantial use of energy and food subsidies (the Arab Republic of Egypt and República Bolivariana de Venezuela).

Risky composition of debt. Many of the crisis countries borrowed in foreign currency. They struggled to meet debt service obligations and faced steep jumps in debt ratios following currency depreciations (Indonesia, Mexico, and Thailand). In Uruguay, for example, almost all public debt was denominated in U.S. dollars in the mid-1990s. Several countries relied on short-term borrowing and faced rollover difficulties when investor sentiment deteriorated (Indonesia, Korea, the Philippines, and Russia in the late 1990s). In ECA in the 2000s, countries borrowed cross-border from nonresident lenders and faced a credit crunch once liquidity conditions tightened for global banks that were the source of this lending (Croatia, Hungary, and Kazakhstan in the late 2000s).

Balance sheet mismatches. A substantial number of currency and banking crises and most concurrent currency and banking crises were associated with balance sheet mismatches (Indonesia, Malaysia, Mexico, and Russia in the late 1990s). Sovereign debt crises less frequently involved balance sheet mismatches, except when banking supervision was weak (Indonesia and Turkey in the 1990s).

Managed exchange rates. Many, but far from all, crises were associated with managed exchange rates, which tended to lead to overvaluation of currencies during years of rapid growth, debt buildup, and capital inflows but eventually succumbed to speculative attacks (Brazil, Mexico, and the Slovak Republic).

Structural and institutional features

Poorly designed growth strategies. Many of the case studies of crises in the 1970s and early 1980s showed heavy state intervention through state-led industrialization, state-owned companies, and state-owned banks (Balassa 1982). Industrial policy in countries such as Argentina, Brazil, and República Bolivariana de Venezuela focused on import substitution industrialization, typically financed by external borrowing.

Lack of economic diversification. A number of the crisis countries had undiversified economies, which increased their vulnerability to terms of trade shocks. Several countries in LAC and SSA, in particular, were heavily dependent on both oil and nonoil commodity exports (Bolivia, Niger, Nigeria, Paraguay, and Uruguay in the 1970s and 1980s). When commodity prices fell in the 1980s, the profitability of (often state-owned) corporates in the resource sector, fiscal revenues, and export proceeds collapsed, which triggered financial crises.

Inadequate banking regulation. Poor banking regulation was a common feature in many case studies. Several SSA countries experienced banking crises in the 1980s primarily because of the failure of banks that were typically state-owned and subject to little oversight (Cameroon, Kenya, Niger, and Tanzania). In the East Asia and Pacific (EAP) region, financial deregulation contributed to insufficient regulation and oversight of the financial sector in the second wave (Indonesia, Korea, Malaysia, the Philippines, and Thailand), which resulted in growing weaknesses, including balance sheet mismatches, and excessive risk taking by corporates. In several countries in ECA during the 2000s, cross-border lending was inadequately regulated by domestic regulators (Croatia, Hungary, and Kazakhstan).

Poor corporate governance. Among case studies of the 1980s and 1990s, poor corporate governance was a common shortcoming, notably in some EAP countries (Indonesia, Korea, and Thailand). Along with poor bank regulation, this shortcoming led to inefficient corporate investment, because banks lent to firms without rigorously evaluating their creditworthiness.

Political uncertainty. Many sovereign debt crises were associated with severe political uncertainty (Indonesia, Philippines, Turkey, and República Bolivariana de Venezuela).

Triggers of crises

Case studies suggest that crises were usually triggered by external shocks, although in a small number of countries domestic factors also played a role.

External shocks. The most common triggers of crises were external shocks to the real economy, which included a sudden rise in global interest rates (LAC in the 1980s), a slowdown in global growth (ECA in the 2000s), a fall in commodity prices for commodity exporting economies (LAC and SSA in the 1980s and Russia in the 1990s), and contagion from both global crises (2007-09 global financial crisis) and regional crises (Asian financial and Russian crises in the 1990s), which generated sudden withdrawals of capital inflows.

Natural disasters. Natural disasters such as droughts were a major contributing factor to crises in some countries, typically smaller, less diversified economies (Bangladesh in the 1970s, Nepal in the 1980s, and Zimbabwe in the 2000s).

Other domestic shocks. In a small number of countries, crises were triggered, or exacerbated, by other domestic shocks. Typically, these were episodes of political turmoil (Turkey and Zimbabwe).

Resolution of crises

Many, though not all, crises were resolved by policy programs of adjustment and structural reform supported by financing from the IMF, World Bank, and other multilateral bodies and partner countries.

IMF support. Most countries in these case studies adopted IMF-supported policy programs to overcome their crises. The countries that did not use IMF support typically had stronger fundamentals, including lower public debt and larger international reserves (Colombia, Kazakhstan, and Malaysia).

Debt restructuring. Among the case studies of sovereign debt crises, many ended with default and restructuring of debt (Argentina, Cameroon, Mexico, and Nigeria). These cases were more common in the 1980s, 1990s, and early 2000s. Debt restructuring was often prolonged and occurred well after the initial sovereign debt crisis.

Reforms. IMF support was conditional on the implementation of macroeconomic and structural reforms. For many EMDEs in LAC in the 1980s and in EAP in the 1990s, crises were the trigger for policy changes to allow greater exchange rate flexibility and strengthen monetary policy regimes.

Shifting policy debate

In several cases, crises revealed shortcomings that were mainly recognized ex post but had rarely been flagged before the crises. Following these crises, research (described in academic studies and policy reports) shifted its focus to these issues. For example, the Asian financial crisis propelled the challenges of balance sheet mismatches and weak corporate governance as well as the need for robust bank supervision to the forefront of policy discussions (Brownbridge and Kirkpatrick 2000; IMF 1999). The launch of the Financial Sector Assessment Program in 1999 started systematic assessments of financial sectors (IMF 2000).

The 2007-09 global financial crisis shifted attention to the two-way links between the real economy and financial markets and triggered an intensive research program on macrofinancial links. It also led to a wide range of policy measures to better monitor different segments of financial markets, including credit and housing markets. In addition, the global financial crisis shifted an earlier consensus on the use of capital controls. Before 2008, capital controls were largely considered ineffective and detrimental (Forbes 2004, 2007). After the global financial crisis, the literature shifted to a guarded endorsement of capital controls if appropriately designed and implemented in the "right" circumstances (Forbes, Fratzscher, and Straub 2015; IMF 2012, 2015).

Selected case studies of financial crises

To examine how different macroeconomic policies and institutional features could lead to or prevent financial crises, annex 5A singles out a country pair for each of the first two global waves of debt. For each country pair—Indonesia and Mexico for the first wave and Chile and Thailand for the second—only one country experienced a financial crisis despite debt buildups during each wave. After a period of rapid debt accumulation in the 1970s and 1980s, both Mexico and Indonesia faced rising interest rates and currency pressures as the U.S. Federal Reserve began tightening monetary policy in the late 1970s. Indonesia responded with fiscal and monetary policy tightening, trade liberalization, and privatization. Mexico, in contrast, slid into currency and debt crises amid a timid government response.

During the 1990s, both Chile and Thailand saw rapid private debt buildups. In Chile, the buildup was accompanied by mounting fiscal surpluses, plunging government debt, and the introduction of a floating exchange rate regime that discouraged foreign currency borrowing. In contrast, Thailand's private debt buildup was not fully offset by declining government debt, as had been the case in Chile, and the country maintained a fixed exchange rate that encouraged foreign currency borrowing; both factors made it vulnerable to capital outflows culminating in a crisis.

Conclusion

National episodes of rapid debt accumulation have been common in EMDEs, and about half of these episodes were associated with financial crises. When they occurred, financial crises were typically triggered by external shocks, but in some instances also by domestic political turmoil. When such adverse shocks occurred, larger or more rapidly growing debt constituted a vulnerability that increased the likelihood of a country sliding into crisis. Larger buildups of either government or private debt on the order of that in the median episode were associated with a 50 percent higher likelihood of financial crises. In addition, external vulnerabilities, such as a larger share of short-term debt, higher debt service cost, and lower reserve cover, increased the probability of crisis. Most countries that slid into crises also suffered from inadequate fiscal, monetary, and financial sector policies.

The analysis in this chapter emphasizes the critical role of strong institutional frameworks that can reduce the likelihood and the impact of crises. These include robust financial regulation and supervision, fiscal frameworks that credibly maintain sustainability, and monetary policy frameworks and exchange rate regimes geared toward macroeconomic stability. In addition, the chapter shows that the likelihood of crises can be reduced by ensuring a resilient composition of debt. Debt denominated in local currency and at long maturities is less prone to market disruptions than is foreign currency or short-term debt.

The previous three chapters presented detailed analyses of global and national episodes of debt accumulation. In light of the insights from these chapters, the next chapter examines the likely direction of the current global wave of debt accumulation and summarizes the main lessons and policy messages for EMDEs.

ANNEX 5A Selected case studies of debt accumulation

Four country cases illustrate the difference between countries that suffered financial crises and those that did not during the first and second waves of global debt accumulation. Countries that suffered crises had more accommodative policies and greater vulnerabilities to external shocks.

To sharpen the role of different structural and institutional features in driving macroeconomic outcomes during national rapid debt accumulation episodes, this annex focuses on a select set of country case studies in the first two global waves of debt. Two country pairs are singled out—one for each of the first two global waves of debt—of which one country had a financial crisis and the other did not during their national episodes of rapid debt accumulation.

During the first wave of debt accumulation, both Mexico and Indonesia had rapid government debt accumulation episodes but only Mexico suffered a triple crisis in 1982. During the second wave of debt accumulation, both Chile and Thailand witnessed rapid private debt buildups but only Thailand suffered a crisis in 1997.

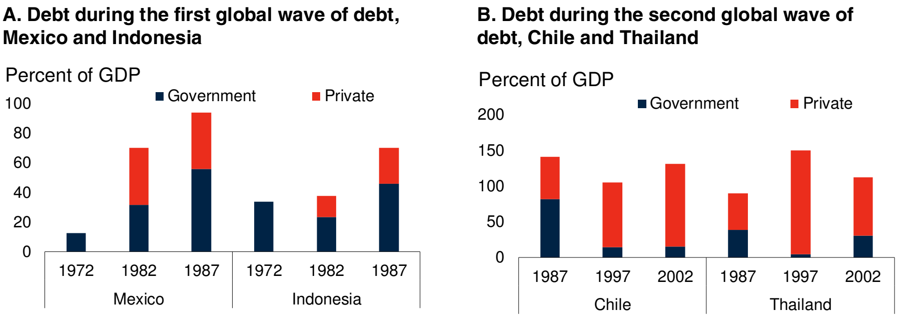
Two differences feature in both country pairs: first, those with financial crises maintained considerably more accommodative fiscal and monetary policy than those without crises; second, those with financial crises had greater existing vulnerabilities (for example, higher short-term debt or higher total debt).

Mexico in the first global wave

Debt accumulation. Mexico borrowed heavily in foreign currency (mostly U.S. dollars) against future oil revenues in the 1970s. Central government debt rose by almost 20 percentage points of GDP between 1972 and 1982, to 32 percent of GDP in 1982 (figure 5A.1). External debt grew from 19 percent of GDP in 1972 to 30 percent of GDP in 1981. Inflation averaged 24 percent a year during 1979-81, despite a peg to the U.S. dollar, and the current account deficit widened to 5.1 percent of GDP. Mexico pursued an import substitution industrialization policy in the 1970s, which generated economic inefficiencies that would have necessitated fundamental change at some point. It also pursued expansionary fiscal and monetary policies, with widening fiscal and current account deficits. Although a balance of payment crisis briefly struck in 1976, oil discoveries and the oil price shock in the late 1970s delayed necessary structural reforms and allowed another fiscal expansion.

FIGURE 5A.1 Debt in selected countries

In the run-up to the sharp increase in global interest rates in the early 1980s, the government debt buildup in Mexico (where it coincided with crises) was larger than in Indonesia (where it did not). In the run-up to a reversal in investor sentiment in the late 1990s, the private debt buildup in Thailand (where it coincided with crises) was larger—and the government debt decline over the same period smaller—than in Chile (where it did not).



Sources: Mbaye, Moreno-Badia, and Chae (2018); World Bank.
Note: Government and private debt are proxied by central government debt and credit to the private sector, respectively. Private debt data not available for 1972 for Mexico and Indonesia.

Adverse shocks. In October 1979, the U.S. Federal Reserve began to tighten monetary policy, and short-term interest rates rose sharply. This rise coincided with a global economic slowdown and a sharp decline in commodity prices, particularly oil prices. As a result of the twin shocks, compounded by three-quarters of interest payments being tied to variable interest rates, Mexico's debt service payments surged in 1982. In addition, the overvalued exchange rate generated fears of devaluation and a balance of payments crisis, triggering capital flight. The peso was allowed to float freely in early 1982 and depreciated sharply. Mexico's external debt reached 47 percent of GDP (of which one-third was short-term), debt service costs increased to 53 percent of exports, and reserves plunged to less than 1 percent of total debt.

Financial crisis. In August 1982, Mexico defaulted on its sovereign debt. Although Mexico's debt was not the largest, it sparked a series of defaults and systematic collapse in Latin America (Boughton 2001). GDP growth plunged from an average of 9.0 percent in 1980-81 to -0.1 percent during 1982-87. The peso collapsed: between 1981 and 1982 it depreciated by more than half, and by 1987 it had lost 98 percent of its value. Inflation soared and averaged 84 percent a year during 1982-87. The debt crisis also led to a banking crisis, and the government nationalized the entire banking system.

Indonesia in the first global wave

Debt accumulation. During 1972-80, the period during which Mexico's central government debt rose rapidly, Indonesia's central government debt initially declined by almost 20 percentage points of GDP as oil revenues improved fiscal positions. Starting in 1980, however, central government debt climbed rapidly from 14 percent of GDP in 1980 to 46 percent of GDP in 1987. The global recession of the early 1980s widened the current account deficit to 6 percent of GDP in 1983. The authorities responded with fiscal consolidation.

Macroeconomic policies. As with Mexico, U.S. monetary policy tightening and global economic weakness triggered intermittent currency pressures in 1983 and 1986. The rupiah was allowed to depreciate amid tightly enforced capital controls, high reserves (15 percent of total debt), and a small share of short-term debt (15 percent of external debt; Arndt and Hill 1988). Monetary policy was tightened with modest short-term interest rate increases and direction to state-owned enterprises to move funds from state banks into central bank notes. Inflation declined, and capital flight was limited. The government also implemented various reforms from 1983, including deregulation of the banking system, the introduction of a value added tax, trade liberalization, and privatization of the large state enterprise sector. During 1980-87, growth averaged 5.6 percent.

Thailand in the second global wave

Debt accumulation. Private debt grew rapidly to a peak of 146 percent of GDP in 1997 from 51 percent of GDP a decade earlier, whereas central government debt declined by more than 30 percentage points of GDP to 5 percent of GDP in 1997. Following rapid financial sector liberalization in the early 1990s, sizeable interest rate differentials, combined with an exchange rate peg, encouraged large capital inflows. Real estate investment grew rapidly, largely funded with short-term external debt, which exposed corporations and banks to significant exchange rate and rollover risks. Poorly governed privatizations to politically connected entities and government-directed credit toward political allies created moral hazard in the form of expectations of government guarantees to politically connected lending. Although bank deposits were not explicitly insured by the government, political considerations and past practice suggested that the Thai government would bail out failing banks (Burnside, Eichenbaum, and Rebelo 2004).

Financial crisis. By 1996, unsold properties began to accumulate, and investors concerned about defaults started withdrawing capital, putting downward pressure on the baht. The government initially raised interest rates, introduced capital controls, and drew down foreign exchange reserves but eventually allowed the baht to float in July 1997. By the end of 1997, the currency had depreciated by about 40 percent and the stock market had lost 40 percent of its value. Bankruptcies soared, growth plunged from 5.7 percent in 1996 to -2.8 percent in 1997 and -7.6 percent in 1998, and many banks became insolvent. Following widespread nationalizations and bank closures, Thailand's government debt reached 30 percent of GDP in 2002, from 4 percent in 1996. The crisis spread across much of East Asia.

Chile in the second global wave

Debt accumulation. Private debt rose rapidly from 59 percent of GDP in 1987 to 91 percent of GDP in 1997—only one-third as much as the private debt increase in Thailand over the same period—and further to 116 percent of GDP in 2002. The buildup in private debt was more than offset by a marked decline in government debt, from 82 percent of GDP to 15 percent of GDP over 1987-2002. During 1987-97 in the run-up to the Asian financial crisis, Chile's decline in central government debt was twice as steep as that in Thailand.

Macroeconomic policies. During the 1990s, disciplined fiscal, monetary, and financial policy stances were maintained. Since the mid-1980s, fiscal balances had been in surplus, and in 2000 an explicit structural budget surplus rule was introduced. This fiscal rule helped to institutionalize fiscal discipline and to lock in the credibility that had been built up in the past decades. Exchange rate policy had shifted from a semi-fixed regime to a floating regime with an inflation-targeting framework in 1999. Monetary credibility had also been enhanced through an independent central bank, decreed in 1989. Inflation had fallen from almost 30 percent in the early 1990s to less than 3 percent in 2002.

After the collapse of Chilean banks during the Latin American debt crisis in the 1980s, the government made sweeping changes to the banking law and adopted a better regulatory framework to reduce exposure to external shocks (Cowan and de Gregorio 2007). As a result, Chilean banks had an average capital adequacy ratio of 13 percent and nonperforming loans were below 2 percent during 1988-2002.

Conclusion

These cases illustrate two main differences between those countries where rapid debt accumulation coincided with crises and those where it did not.

First, countries without crises had relatively more modest debt buildups. Whereas government debt rose rapidly in Mexico, it declined in Chile in the run-up to the sharp rise in global interest rates in the early 1980s. Government debt in Indonesia and in Chile had declined for a decade before global interest rates began rising sharply in the early 1980s (Indonesia) or risk sentiment turned against EMDEs in the late 1990s (Chile). As a result, both governments were better placed than their counterparts in Mexico and Thailand, respectively, to withstand external shocks. Private debt rose two-thirds less in Chile than in Thailand in the run-up to the Asian financial crisis, adding to Chile's greater financial resilience.

Second, countries without crises had less accommodative policies. Whereas Indonesia's fiscal policy tightened during its government debt run-up in the mid-1980s, Mexico's fiscal policy remained expansionary during its government debt run-up in the 1970s despite double digit inflation and weakening current account balances. In part because of a fiscal rule and flexible exchange rates, Chile maintained fiscal surpluses and discouraged currency mismatches during the 1980s and 1990s whereas Thailand's accommodative monetary policy after financial liberalization and its pegged exchange rate regimes fueled a property boom and encouraged currency mismatches.

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