CHAPTER 2

Benefits and Costs of Debt: The Dose Makes the Poison

Considering currently subdued investment and low interest rates, additional government borrowing might appear to be an attractive option for financing growth-enhancing initiatives such as investment in human and physical capital. The literature on debt, however, calls for caution: the cost of rolling over debt can increase sharply during periods of financial stress and result in costly crises; high debt can limit the ability of governments to provide fiscal stimulus during downturns; and high debt can weigh on investment and long-term growth.

Introduction

Amid record-high global debt, low interest rates and subpar growth have led to an intense debate on whether the recent rapid increase in debt is reason for concern. Some argue that countries, especially those that issue reserve currencies, should take advantage of low interest rates to borrow more to finance priority expenditures.[1] Others caution that high debt weighs on long-term growth by increasing the risk of crises, limiting the scope for countercyclical fiscal stimulus, and dampening private investment.[2]

Although the focus of this debate has been mainly on advanced economies, similar issues are also faced by emerging market and developing economies (EMDEs). Many of these have also borrowed heavily, and in many cases hard-won reductions in public debt ratios before the global financial crisis have largely been reversed over the past decade. The trade-offs EMDEs face are actually even starker, in light of their histories of severe debt crises, even at lower levels of debt than in advanced economies, and their more pressing spending needs to achieve development goals and improve living standards.

This chapter briefly reviews the literature on debt to provide a basis for assessing the merits of additional debt accumulation in EMDEs. Specifically, it addresses three questions:

- What are the benefits of debt accumulation?

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[1] Blanchard (2019); Blanchard and Summers (2019); Blanchard and Tashiro (2019); Blanchard and Ubide (2019); Eichengreen et al. (2019); Furman and Summers (2019); Krugman (2019); and Rachel and Summers (2019) discuss reasons for additional borrowing in advanced economies, and the United States in particular.

[2] Alcidi and Gros (2019); Auerbach, Gale, and Krupkin (2019); CRFB (2019); Eichengreen (2019); Mazza (2019); Riedl (2019); Rogoff (2019a, 2019b); and Wyplosz (2019) caution against adding to debt.

- What are the costs associated with debt accumulation?
- What is the optimal level of debt?

The chapter brings together the main themes of theoretical and empirical studies on both government and private debt to provide answers to the three questions. Although it cannot do justice to the rich literature on debt, the chapter sets the stage for the discussion in subsequent chapters that describe the evolution of global waves of debt, puts the current debt wave into historical context, and examines the relationship between debt buildups and financial crises.

Main findings. The chapter's findings, in summary, are as follows:

- *Benefits and costs of debt.* Debt accumulation offers both benefits and costs. The benefits depend heavily on how productively the debt is used, the cyclical position of the economy, and the extent of financial market development. The costs of debt include interest payments, the possibility of debt distress, constraints that debt may impose on policy space and effectiveness, and the possible crowding out of private sector investment.
- *Optimal level of debt.* There is no generally applicable optimal level of debt, either for advanced economies or for EMDEs. Optimal levels of debt depend on country characteristics, financial market conditions, the behavior of governments and private agents, and the multiple functions of debt.

The following two sections review the literature on the benefits and costs of debt. The literature attempts to weigh some of these benefits and costs to isolate the factors that determine the optimal level of debt, as summarized in the subsequent section. The final section concludes with a summary.

Benefits of debt

Additional debt accumulation by EMDEs could be justified because of their need to invest in growth-enhancing projects, such as infrastructure, health, and education, and to protect vulnerable groups. During periods of weak growth, it may also be appropriate to borrow in order to employ expansionary fiscal policy to stimulate activity.

Promoting long-term growth. Government investment in physical and human capital can provide an important foundation for stronger growth over the long term. Such investments have taken on greater urgency in light of the

expected further slowdown in potential gross domestic product (GDP) growth—the rate of growth an economy can sustain at full employment and capacity—over the next decade (World Bank 2018). In EMDEs, in particular, annual potential GDP growth is expected to slow by 0.5 percentage point to 4.3 percent during 2018-27, well below the average annual rate of 6.7 percent during 2002-07. To the extent that debt-financed investment spending stems the slowdown in potential growth, it also helps preserve the revenues required to service this debt (Fatás et al. 2019).

Despite substantial progress over the past two decades in many areas, several Sustainable Development Goals (SDGs) remain well out of reach (Vorisek and Yu 2020).[3] To meet the SDGs, EMDEs have large investment needs: low- and middle-income countries face aggregate investment needs of $1.5 trillion-$2.7 trillion per year—equivalent to 4.5-8.2 percent of annual GDP—between 2015 and 2030 to meet infrastructure-related SDGs, depending on the effectiveness of this investment, accompanying policy reforms, and the degree of ambition in meeting the SDGs (Rozenberg and Fay 2019; figure 2.1).[4] Infrastructure investment can have particularly large growth benefits if it connects isolated communities with markets, allows companies to realize economies of scale by increasing market size, or increases competitive pressures (Calderón and Servén 2010; Égert, Kozluk, and Sutherland 2009).

These estimates of global investment needs build on a significant body of work on investment needs at the regional level. In some regions and countries, the investment needed to meet infrastructure-related goals exceeds the 4.5-8.2 percent of GDP estimated at the global level.[5] For example, Africa's infrastructure needs have been estimated at about $93 billion per

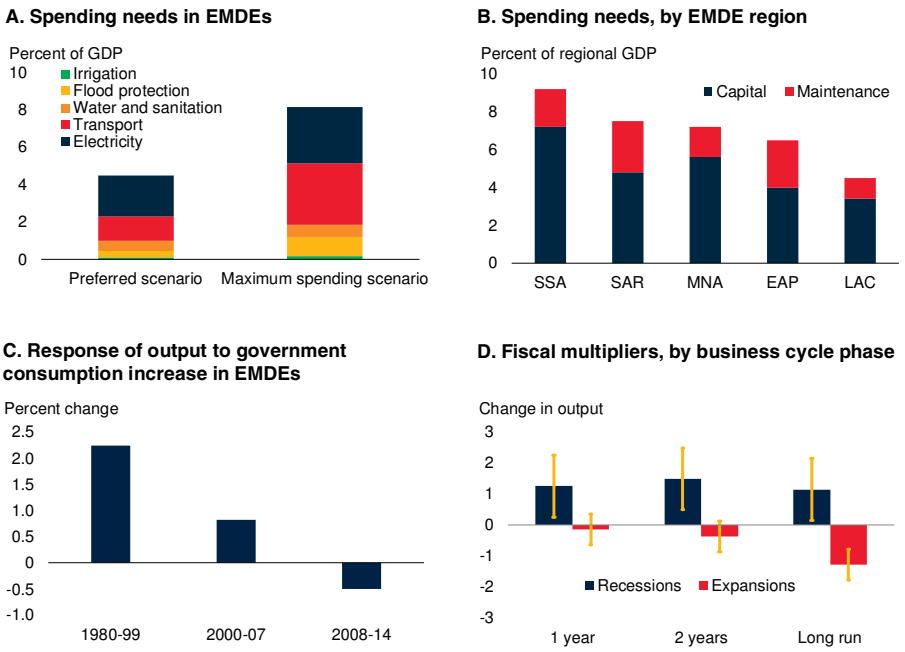
[3] Eleven percent of the global population still lives in extreme poverty, defined as $1.90 per day or less. Out of every 1,000 of the world's infants, 29 still perish before they reach their first birthday. Twelve percent of the global population still have either restricted or no access to safe water, according to the World Bank's SDG Atlas. More than 500 million people still live in fragile security situations.

[4] Similarly, UNCTAD (2014) discusses the need for additional spending of $1.6 trillion to $2.5 trillion per year between 2015 and 2030 to achieve the goals related to economic infrastructure (that is, power, transport, telecommunications, and water and sanitation). The additional annual investment needed to meet the SDG on health in low- and middle-income countries is found to be about $370 billion (Stenberg et al. 2017).

[5] These estimates are based on a variety of costing exercises that are often not directly comparable (Vorisek and Yu 2020). They use different country samples and time periods; differ in their definitions of the targets to be achieved with investment (for example, SDGs or other policy goals) and inclusion of maintenance costs; and do not always attempt to estimate optimal plans for meeting future investment needs in light of the historical, and possibly constrained, relationship between infrastructure, income level, population, and urbanization (Fay et al. 2017).

FIGURE 2.1 Potential benefits of debt

EMDEs have large investment needs to meet development goals, which could be financed by debt. Fiscal policy in many EMDEs has become less procyclical since the mid-2000s. Debt-financed countercyclical fiscal support is particularly effective when an economy is in a recession.



Sources: Huidrom et al. (2019); Rozenberg and Fay (2019); World Bank.

Note: EAP = East Asia and Pacific; 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. Bars show average annual aggregate spending needs during 2015-30. "Preferred scenario" assumes ambitious goals and high spending efficiency, and "maximum spending scenario" assuming ambitious goals and low spending efficiency. Country sample includes low- and middle-income countries.

B. Bars show average annual spending needs during 2015-30. Estimates are generated using policy assumptions that cap investment needs at 4.5 percent of lower-middle-income countries' GDP per year (that is, the "preferred scenario" in panel A).

C. Bars show impulse response of the cyclical component of real GDP to a 1 percent positive shock to cyclical component of real government spending (in percent) using a panel structural vector autoregressive model for 15 EMDEs during 1980-2014.

D. Chart shows the conditional fiscal multipliers during recessions at select horizons (Huidrom et al. 2019). These are based on estimates from an interacted panel vector autoregression model, where model coefficients are conditioned only on the phase of the business cycle. Recessions are determined by the Harding-Pagan (2002) business cycle dating algorithm. Bars represent the median responses, and error bands are the 16-84 percent confidence bands.

year, or about 15 percent of annual regional GDP.[6] Even if major potential efficiency gains are captured, the region will still face an infrastructure funding gap of $31 billion per year, mainly for power. In Latin America and

[6] For estimates in the context of Africa, see African Development Bank (2010); Blimpo and Cosgrove-Davies (2019); Calderon, Cantú, and Chuhan-Pole (2018); and Foster and Briceño-Garmendia (2010).

the Caribbean between 2008 and 2013, investment in infrastructure averaged 2.7 percent of GDP a year, lower than the 4-5 percent of GDP average estimate of infrastructure investment needs (Fay et al. 2017).

Stabilizing short-term macroeconomic fluctuations. Temporary debt accumulation can also play an important role in helping to minimize and reverse short-term economic downturns. During recessions, borrowing-financed government spending or tax cuts can provide stimulus to support demand and activity (World Bank 2015; Yared 2019; figure 2.1).

A large literature provides estimates of the output effects (fiscal multipliers) of additional government spending or tax cuts (Huidrom et al. 2016, 2019; Ramey 2019). The estimates vary widely—from a 1.1-dollar output decline to a 3.8-dollar output increase for every dollar of additional government spending or reduced revenues—depending on the cyclical position of the economy; structural country characteristics, including the coherence of fiscal frameworks; and the fiscal instrument employed. Broadly speaking, output effects tend to be larger during recessions than during expansions; larger for advanced economies than for EMDEs; larger for expenditure increases than for tax cuts; and larger when accompanied by more accommodative monetary policy.[7]

In EMDEs, lack of fiscal space has often constrained fiscal policy during recessions, although there is some evidence that fiscal policy may have become less procyclical during the 2000s.[8] The correlation between cyclical swings in output and government consumption, for example, has turned from positive (procyclical) before the global financial crisis to negative (countercyclical) after the crisis. In advanced economies, proactive fiscal policy has gained in importance in the past decade, at least potentially, as monetary policy interest rates have approached or breached the zero lower bound (Battistini, Callegari, and Zavalloni 2019).

Providing safe assets. Sovereign debt constitutes a relatively safe asset for investors, as an alternative to private debt whose issuers are more likely to default (Azzimonti and Yared 2019). When risk aversion rises, demand for safe assets increases while borrowing constraints on private borrowers tighten. In these circumstances, government borrowing to finance income

[7] For details, see Alichi, Shibata, and Tanyeri (2019); Auerbach and Gorodnichenko (2013); Bachmann and Sims (2012); Candelon and Lieb (2013); Kraay (2012, 2014); and Leeper, Traum, and Walker (2017).

[8] For a discussion of these developments, see Frankel, Vegh, and Vuletin (2013); Huidrom, Kose, and Ohnsorge (2018); and Vegh, Lederman, and Bennett (2017).

support for private households or corporations can ease financing constraints (Yared 2019). Because the safe asset benchmarks private borrowing and can be used for collateral, government debt can play an important role in financial deepening (Hauner 2009; World Bank and IMF 2001). The availability of government debt instruments is also the prerequisite for monetary policy operations that rely on repurchase agreements of safe assets or open-market operations (Kumhof and Tanner 2005).

Costs of debt

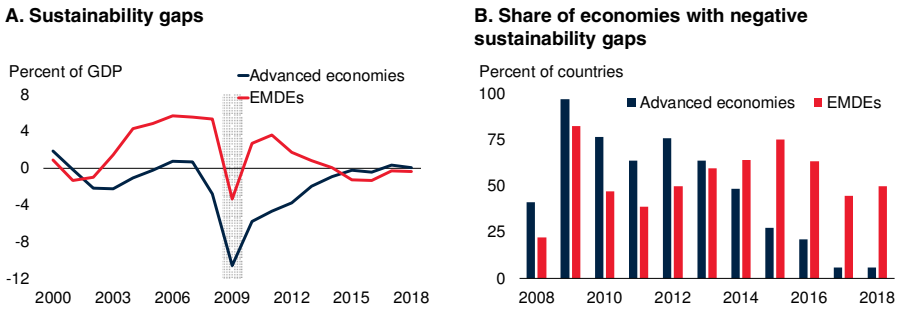
The most basic cost of public debt is the servicing cost—the interest to be paid to creditors—which may be compared with the rate of return on the spending financed by debt to provide the simplest guide to whether public borrowing is worthwhile. An important argument against heavy borrowing, which may outweigh the benefits of borrowing in some cases, is the risk that rollover costs—the costs of refinancing when debt matures—can increase sharply during periods of financial stress and perhaps even trigger a financial crisis. High debt can also limit the feasible size and effectiveness of fiscal stimulus during downturns. Finally, high debt can constrain growth over the long term by crowding out productivity-enhancing private investment.

Deteriorating debt sustainability. During the postcrisis period, the cost of government borrowing has been historically low, for both advanced economies and EMDEs. As discussed in chapter 6, demographic shifts and slowing productivity growth are expected to contribute to a further secular decline in real interest rates in advanced economies, continuing a multiyear trend (Holston, Laubach, and Williams 2017). Nevertheless, a sudden increase in global borrowing costs could occur and test the sustainability of high debt in some countries (Henderson 2019; Rogoff 2019a, 2019b).

The recent discussion of debt has focused on the differential between nominal interest rates and nominal GDP growth, which has generally become markedly negative in advanced economies. If nominal interest rates (the cost of capital) are below nominal output growth (the presumed rate of return on capital), then the real burden of a given debt will decline over time because the rate of return on debt-financed spending will outweigh debt service. However, the interest rate-growth rate differential has to be weighed against the accumulation of new debt—the primary fiscal deficit. If, every year, the primary deficit adds more to the debt than is repaid on past debt (even if high rates of return are more than sufficient to service the debt), the debt stock will be on a rising trajectory. This rise is captured in the sustainability gap as a summary indicator of the debt trajectory (Buckle and Cruickshank 2013; Escolano 2010; Kose et al. 2017; figure 2.2). Such

FIGURE 2.2 Debt sustainability

Whereas debt levels in advanced economies are on a sustainable path, debt levels in almost half of EMDEs are on a rising path.



Sources: Huidrom et al. (2019); Kose et al. (2017); World Bank.
Note: A sustainability gap is defined as the difference between the actual primary balance and the debt-stabilizing balance. Averages computed with current U.S. dollar GDP as weights, based on at most 34 advanced economies and 83 emerging market and developing economies (EMDEs).
B. Share of economies in which sustainability gaps are negative (for example, debt is on a rising trajectory, or fiscal positions are debt-increasing).

calculations have to take into account the tendency for borrowing costs to rise as debt rises, in some cases abruptly (Gruber and Kamin 2012; Mauro and Zhou 2019).[9]

Debt sustainability has deteriorated since the global financial crisis both in advanced economies and in EMDEs (Aizenman et al. 2019). In advanced economies, debt-reducing fiscal positions (that is, positive sustainability gaps) in 2007 turned into debt-increasing fiscal positions (that is, negative sustainability gaps) from 2008. Subsequently, sustainability gaps narrowed and, in 2017, returned to debt-reducing positions.

In EMDEs, debt-reducing positions in 2007 turned into debt-increasing positions in 2015. In commodity-exporting EMDEs, this deterioration partly reflected the sharp growth slowdown that came in the wake of the steep slide in commodity prices. Subsequent recoveries in commodity prices and economic activity helped improve debt sustainability in these economies and, by 2018, fiscal positions in commodity exporters had become debt-reducing. In commodity-importing EMDEs, fiscal positions have remained

[9] The sustainability gap is defined as the difference between the primary balance and the debt stabilizing primary balance under specific assumptions about the target stock of debt, the interest rate, and the growth rates (Kose et al. 2017). For the purposes here, the target debt ratio, d*, is defined as the historical median in advanced economies or EMDEs. The target (and median) debt ratios for advanced economies and EMDEs are, respectively, 54 percent of GDP and 46 percent of GDP.

weak as a result of fiscal stimulus implemented during the global financial crisis, chronic primary deficits, and, in some cases, anemic postcrisis growth, leading to debt-increasing fiscal positions in 2018.

Increasing vulnerability to financial crises. A growing debt-to-GDP ratio could erode investor confidence, requiring the government to pay a rising risk premium on its debt. These pressures could culminate in a debt crisis if investors fear that the accumulation of government debt is no longer sustainable (Blanchard 2019; Henderson 2019; Rogoff 2019a, 2019b). Rapid debt accumulation can also lead to a currency crisis if investor concerns about the ability to repay foreign-currency-denominated debt induce a speculative attack on a fixed or pegged currency (Krugman 1979; Obstfeld and Rogoff 1986), or a banking crisis if private sector balance sheet vulnerabilities trigger banking panics (Chang and Velasco 2000; Krugman 1999).[10]

For reserve currency-issuing advanced economies, like the United States, it has been argued that such a spike in risk premiums is unlikely because these countries are often viewed as safe havens during periods of market turbulence (Furman and Summers 2019; Krugman 2014). Indeed, government debt in some advanced economies has reached very high levels with interest rates remaining low. The extreme case is Japan, where the 10-year government bond yield has been below 0.1 percent for most of the time since mid-2015 even while gross government debt has exceeded 230 percent of GDP.

For EMDEs, however, this risk is more acute. As documented in the next three chapters, EMDE borrowing costs have tended to rise sharply during episodes of financial stress, and higher debt servicing costs can cause debt dynamics to deteriorate and rollover risk to rise (Arellano and Ramanarayanan 2012).[11] A recent example is Argentina, where five-year U.S.

[10] Models of currency crises have evolved with their history (Burnside, Eichenbaum, and Rebelo 2008). In the 1970s and 80s, the focus of theoretical models was on understanding how pegs were abandoned as a consequence of the collapse of gold prices and the Bretton Woods system of exchange rates, and later pegs to the U.S. dollar. This began with the seminal work of Krugman (1979) and Flood and Garber (1984) in which excessive debt accumulation can be the trigger of a currency crisis. Following these "first generation models" were models that highlighted the existence of multiple equilibria (Obstfeld 1986). When the nature of currency crises changed in the 1998 Asian financial crisis, models evolved to include other theoretical links, including balance sheet mismatches (Chang and Velasco 2000; Krugman 1999).

[11] The incentive to avoid excessive depreciation is especially strong if there are large foreign currency debt exposures in one or more sectors of the economy (the concept of "original sin" described by Eichengreen, Hausmann, and Panizza 2006; and Jeanne 2003). Once a government starts using large amounts of reserves to defend an exchange rate peg, market participants (such as speculators or wage setters) start anticipating a depreciation. This triggers a self-reinforcing cycle of further reserve losses and depreciation expectations (see Flood and Garber 1984; Flood and Marion 2000; Krugman 1979; and Obstfeld 1986).

dollar-denominated sovereign bond yields more than doubled during 2018, to over 11 percent by early September. Indeed, as discussed in the next three chapters, every decade since the 1970s has witnessed debt crises in EMDEs, often combined with banking or currency crises (figure 2.3).[12]

Financial crises tend to result in large economic costs. In many cases, recessions associated with financial crises have tended to be more severe than others. For example, the average duration of recessions associated with financial crises is some six quarters, two quarters longer than other recessions. There has also typically been a larger output decline in recessions associated with financial crises than in other recessions (Claessens and Kose 2014).[13]

Constraining government action during downturns. High debt constrains governments' ability to respond to downturns with countercyclical fiscal policy (Obstfeld 2013; Reinhart and Rogoff 2010; Romer and Romer 2018). This was the case during the global financial crisis: fiscal stimulus during 2008-09 was considerably smaller in countries with high government debt than in those with low debt (Huidrom, Kose, and Ohnsorge 2018; figure 2.4). This is one of the reasons why weak fiscal positions tend to be associated with deeper and longer recessions, a situation that worsens if the private sector also falls into distress and its debt migrates to government balance sheets as the government attempts to rescue private enterprises.

Reducing the effectiveness of fiscal policy. High government debt tends to render expansionary fiscal policy less effective (Adam and Bevan 2005; Debrun and Kinda 2016). Specifically, high government debt can reduce the size of fiscal multipliers through two channels.

- *Ricardian channel.* When a government with high debt implements fiscal stimulus, consumers will be more likely to expect that tax increases will soon follow than when debt is low. This expectation will lead consumers to cut consumption and save more (the "Ricardian" reaction to government dis-saving). The Ricardian channel is consistent with empirical studies showing that the effect of government spending shocks on private consumption has often depended on government debt.[14]

[12] For a discussion of these episodes see Kose and Terrones (2015) and Laeven and Valencia (2018).

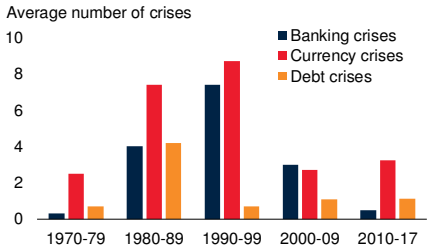
[13] For example, the cumulative cost of banking crises has been estimated, on average, at about 23 percent of GDP during the first four years (Claessens and Kose 2014). Eight years after a debt crisis, output is, on average, 10 percent lower (Furceri and Zdzienicka 2012).

[14] For theoretical studies discussing the Ricardian channel see Blanchard (1990a, 1990b) and Sutherland (1997). For empirical studies, see Giavazzi and Pagano (1990, 1995) and Perotti (1999). Distortionary taxation and frictions at the financial markets may, however, result in departures from Ricardian equivalence (Heathcote 2005).

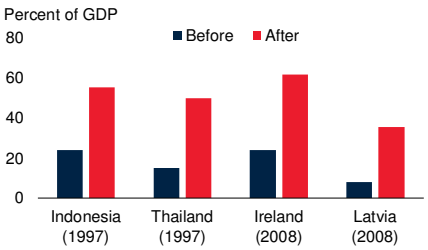
FIGURE 2.3 Potential cost of debt: Financial crises

Financial crises have become less frequent over the 2000s. Banking crises have tended to impose high fiscal cost as governments have supported economic activity and assumed private debt. During financial crises, government debt has often risen whereas private debt has tended to remain stable, ratings have fallen, and negative sustainability gaps widened.

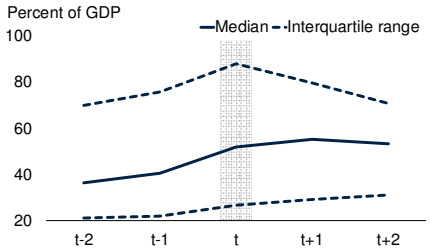
A. Financial crisis frequency



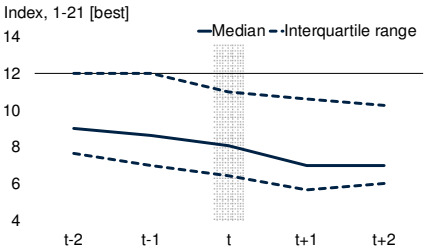
B. Government debt around banking crises



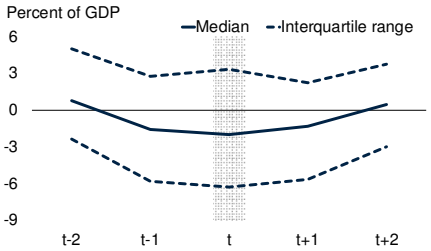
C. Government debt around financial crises



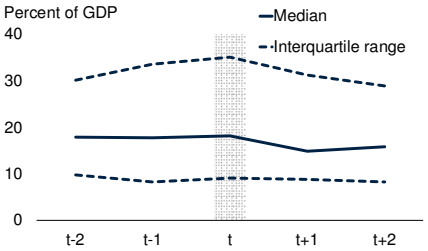
D. Sovereign ratings around financial crises



E. Sustainability gaps around financial crises



F. Private debt around financial crises



Sources: International Monetary Fund; Kose et al. (2017); Laeven and Valencia (2018); World Bank.

A. The figure shows the average number of financial crises in each decade.

B. "Before" and "after" denote, respectively, one year before and after the onset of each banking crisis, dated as shown. Government debt refers to general government debt in all cases except for Indonesia, where data are for central government only.

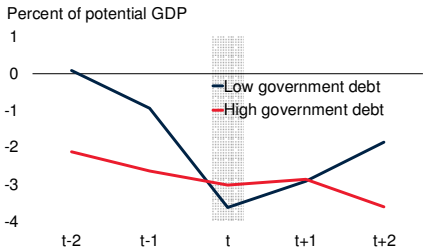
C.-F. Year "t" refers to the year of onset of financial crises in emerging market and developing economies. Medians, as well as interquartile ranges, based on balanced samples. Crises considers banking, currency, and debt crises, as defined in Laeven and Valencia (2018). When there are multiple crises identified within five years, the one with the lowest real GDP growth is counted as an event.

Sample comprises 80 crisis episodes (panel C), 56 episodes (panel D), 35 episodes (panel E), and 127 episodes (panel F).

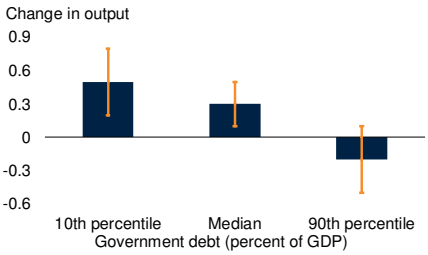
FIGURE 2.4 Cost of debt: Less effective fiscal policy

High debt limits the ability of governments to support economic activity during recessions and blunts the effectiveness of fiscal stimulus. Higher debt is associated with higher interest payments but not with higher public investment.

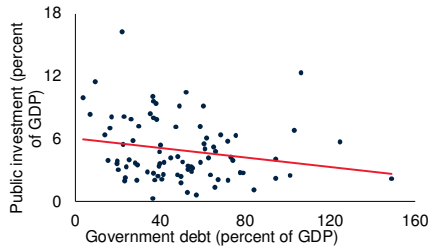
A. Cyclically adjusted fiscal balance in EMDEs around the global financial crisis



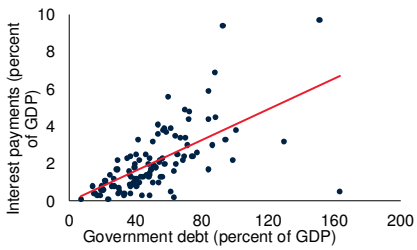
B. Fiscal multipliers after two years



C. Public investment and debt in EMDEs, 2017



D. Government debt and interest payments in EMDEs, 2018



Sources: International Monetary Fund; World Bank.
Note: EMDEs = emerging market and developing economies.
A. Year "t" is the year of trough of business cycle in 2008 or 2009. Median of balanced samples over t-2 to t+2, based on 23 EMDEs where troughs are identified. Small states, as defined by the World Bank, are excluded. Troughs are defined as the years of negative GDP growth that is one standard deviation below average growth over 1960-2018 per economy. When there are multiple troughs identified within six years, the one with deeper contraction is counted as an event. "Low government debt" indicates economies with below-median debt-to-GDP ratio (33 percent of GDP) in 2007 in the sample economies; "high government debt" indicates economies with above-median ratio in 2007.
B. Bars show the conditional fiscal multipliers for different levels of government debt after two years. Fiscal multipliers are defined as cumulative change in output relative to cumulative change in government consumption in response to a 1-unit government consumption shock. They are based on estimates from the interacted panel vector autoregression model, where model coefficients are conditioned only on government debt. X-axis values correspond to the 10th to 90th percentiles in the sample. Bars represent the median, and vertical lines are the 16-84 percent confidence bands.
C. Public investment refers to a sum of net investment in nonfinancial assets and consumption of fixed capital, in general or central government (depending upon data availability). Sample includes 85 EMDEs.
D. Total (external and domestic) government debt versus total (external and domestic) government interest payments (both in percent of GDP).

- *Investor sentiment channel.* Countries with high sovereign debt are more likely to have to pay a risk premium to borrow (Alcidi and Gros 2019). When debt is higher, fiscal stimulus can increase creditors' concerns about sovereign credit risk, raising sovereign bond yields and, hence, borrowing costs across the whole economy. Higher risk premiums, especially during times of sovereign financial stress, have been shown to

feed into lower corporate borrowing (Bocola 2016). This, in turn, will crowd out private investment and consumption, reducing the fiscal multiplier.

Empirical evidence suggests that, regardless of the time horizon considered, fiscal multipliers are smaller when government debt is higher. Similarly, evidence points to less effective monetary policy in the presence of high government debt because of poorly anchored inflation expectations.[15]

Slowing investment and growth. With higher debt typically comes higher debt service. Spending on higher debt service needs to be financed through some combination of increased borrowing, increased taxes, and reduced government spending. Spending cuts may even include spending on critical government functions such as social safety nets or growth-enhancing public investment (Debrun and Kinda 2016; Obstfeld 2013; Reinhart and Rogoff 2010). Separately, high and rising government debt may raise long-term interest rates and yield spreads.[16] High debt could also create uncertainty about macroeconomic and policy prospects, including risks that the government may need to resort to distortionary taxation to rein in debt and deficits (IMF 2018; Kumar and Woo 2010). Higher interest rates and uncertainty would tend to crowd out productivity-enhancing private investment and weigh on output growth.[17] While there is empirical evidence for a negative association between debt and growth, evidence on the direction of causality is mixed (Panizza and Presbitero 2014).

Debt: How much is too much?

Weighing these benefits and costs of debt, the literature has attempted to identify how much debt is "too much"—a threshold level of debt below which it is sustainable and not harmful to economic growth. A rich theoretical literature has focused on the interactions between governments, monetary authorities, and private agents in response to numerous shocks. The empirical literature has estimated a wide range of threshold values that appear to be tipping points for adverse effects of debt.

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[15] For details, see Auerbach and Gorodnichenko (2012, 2013); Huidrom et al. (2016, 2019); Ilzetzki, Mendoza, and Vegh (2013); and Nickel and Tudyka (2014).

[16] See, for example, Ardagna, Caselli, and Lane (2007); Codogno, Favero, and Missale (2003); Laubach (2009); and Rubin, Orszag, and Sinai (2004).

[17] For in-depth discussions of these issues, see Auerbach, Gale, and Krupkin (2019); Croce et al. (2018); Gale and Orszag (2003); Huang, Pagano, and Panizza (2017); and Panizza, Huang, and Varghese (2018). Earlier literature on the impact of debt overhang on investment includes Krugman (1988) and Cohen (1993).

Theoretical considerations

Government debt. Government debt differs from private debt in the more limited ability of creditors to enforce debt service (Weidemaier and Gelpern 2014). Theoretical frameworks often model government debt as the outcome of the government's maximizing the social welfare of domestic agents, including the beneficiaries of government spending, taxpayers, and debtholders, subject to an intertemporal budget constraint that captures debt sustainability. The literature has taken two paths, one which takes the government's willingness to honor its debt as given, and the other modeling the government's willingness to service debt as a strategic decision.

- *Honoring debt obligations.* Assuming a government's willingness to service debt, the optimal level of debt depends on the nature of adverse shocks and the responses of economic agents to "unsustainable debt dynamics" (Guimaraes 2011). Early models, still widely used by policy makers, assess debt sustainability using the accounting identity of the intertemporal budget constraint, as defined in Blanchard (1990b), for scenario analysis. Debt sustainability can deteriorate rapidly in the presence of adverse shocks. Models that incorporate stochastic shocks to growth, revenues, expenditures, or borrowing cost offer a range of possible debt paths (Bohn 1998; Ghosh et al. 2013; Mendoza and Oviedo 2006, 2009). Debt sustainability also depends on the response of governments, monetary authorities, and private agents, captured in general equilibrium models (D'Erasmo, Mendoza, and Zhang 2016).

  Several models allow government debt to serve additional functions by introducing incomplete markets, spillovers from public investment, or interactions with monetary policy. In models with incomplete markets, government debt is a financial instrument that provides liquidity to the private sector and helps households smooth consumption.[18] If public investment offers spillovers that raise private productivity, the optimal level of debt is higher (Chatterjee, Gibson, and Rioja 2017). Finally, the optimal stock of government debt can also depend on interactions between fiscal and monetary policy (Leeper and Leith 2016), between lenders' and borrowers' financial health (Kashyap and Lorenzoni 2019), and income inequality.[19]

[18] For these models, see Aiyagari and McGrattan (1998); Canzoneri, Cumby, and Diba (2016); Flodén (2001); Harding and Klein (2019); Peterman and Sager (2018); and Röhrs and Winter (2017).

[19] For these interactions in different model environments, see Andreasen, Sandleris, and Van der Ghote (2019); Dovis, Golosov, and Shourideh (2016); and Jeon and Kabukcuoglu (2018).

- *Making a strategic decision to honor debt obligations.* Several studies model a government's strategic decision to default on external debt (D'Erasmo and Mendoza 2019). In contrast with corporate debt, creditors to sovereigns typically have few mechanisms to enforce debt obligations, although over time some mechanisms have evolved to strengthen enforcement (Panizza, Sturzenegger, and Zettelmeyer 2009). Creditors can, however, retaliate against defaulting governments by excluding them from financial markets for future access to credit (Eaton and Gersovitz 1981), imposing sanctions (Bulow and Rogoff 1989), or demanding default on other creditors.[20] Default risk also introduces monetary frictions that can discourage debt accumulation (Arellano, Bai and Mihalache 2019). Thus, a government's decision to default is modeled as a trade-off between short-term savings on debt service and longer-term costs, including output losses and loss of market access as a result of default, as discussed in chapter 5.

Private debt. A large literature has examined the optimal capital structure of corporate borrowers, starting with Modigliani and Miller (1958) who showed that in the absence of frictions the choice between debt and equity finance is irrelevant to firm value (see Claessens and Kose 2018 for a survey). Subsequent studies introduced frictions that helped identify an optimal composition for capital structure including the share of debt finance.[21]

- *Tax advantages versus debt distress cost.* More advantageous tax treatment of debt than equity can tilt decisions about optimal capital structure toward debt (DeAngelo and Masulis 1980). However, any tax advantage of debt has to be weighed against the cost of potential debt distress, including the cost of renegotiating debt contracts and suffering production disruptions, the cost of bankruptcy, and the economy-wide cost of weaker competition from risk-averse highly leveraged firms.[22]

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[20] For these models, see Aguiar et al. (2016); Catão, Fostel, and Kapur (2009); Catão and Kapur (2006); Cole and Kehoe (1998); and Sandleris (2008). Some of these models also consider multiple equilibria because of self-reinforcing cycles: in one equilibrium, insolvency or illiquidity results in default, whereas in another, the government manages to roll over its debt (Calvo 1988; Cole and Kehoe 2000; Mendoza and Yue 2012). The decision to default also depends on the availability of financial assistance (Corsetti, Erce, and Uy 2019).

[21] For reviews of these, see Myers (2001, 2003). Some studies also look at the composition of debt, for example, share of foreign-currency denominated debt at the firm level (Eren and Malamud 2019; Kalemli-Ozcan, Liu, and Shim 2019; Salomao and Varela 2019).

[22] See Jensen and Meckling (1976); Leland and Toft (1996); and Myers (1977) for discussions of tax advantage; see Bradley, Jarrell, and Kim (1984); Kim (1982); Leland (1994); and Titman (1984) for discussions of the costs associated with bankruptcy. See Chevalier (1995) for discussion of the cost of less vigorous competition from risk-averse highly leveraged firms.

- *Pecking order.* When equity investors do not have complete information, they cannot distinguish between issuance of overvalued equity and equity issuance to finance growth and profit opportunities. To offset the cost of this information asymmetry, firm management that maximizes existing shareholder value can develop a pecking order of financing options, starting with internal finance, followed by debt and eventually equity (Myers 1984; Myers and Majluf 1984).
- *Agency considerations.* Views on what constitutes an optimal capital structure may differ between firm management and shareholders, especially in an environment of incomplete outside information. The chosen capital structure will then depend on the design of compensation for firm management (Dybvig and Zender 1991; Ross 1977). Debt can serve as a disciplining device to reduce how much a management with the objective of expanding operations may wish to invest in projects with negative net present value (Stulz 1990).

Empirical evidence

The empirical literature has looked for tipping points at which debt triggers financial crises or becomes otherwise economically costly. One strand of the literature has estimated sustainable levels of debt in advanced economies if fiscal deficits remain consistent with past performance or if movements in sovereign bond yields are consistent with the past. Other studies have identified debt thresholds above which the likelihood of a financial crisis increases. A third strand of the literature has explored the debt levels above which debt burdens become detrimental to long-term growth.

Sustainable debt. One strand of the literature has estimated the sustainable levels of government and private debt that do not culminate in debt distress.[23] Using data for 23 advanced economies, studies have estimated debt limits for governments borrowing at the risk-free rate to be 150-250 percent of GDP depending on country characteristics (Ghosh et al. 2013).[24] Advanced economies with government debt above 80 percent of GDP and persistent current account deficits have been shown to be vulnerable to sudden fiscal deteriorations (Greenlaw et al. 2013). Prudent debt management can help ensure a sustainable fiscal position that provides insurance against macroeconomic shocks (Missale 2012). For private sector debt, studies have focused on the link between financial system credit to the

[23] See Debrun et al. (2019) for a survey on the practical aspects of debt sustainability assessments.

[24] One commonly used "golden rule" is that borrowing should match growth-enhancing investment (Ostry, Ghosh, and Espinoza 2015).

private sector, as a proxy for private debt, and on nonperforming loans. A typical credit boom has been estimated to more than double nonperforming loans (Mendoza and Terrones 2008).

Early warning indicators. Another strand of the literature has identified government or private debt, especially external debt, among several early warning indicators of financial crises, as discussed in chapter 5. Government debt thresholds have been defined relative to government revenues (Manasse and Roubini 2009) or exports (Kraay and Nehru 2006) and as depending on the magnitude of other early warning indicators. "Safe" levels of external debt in EMDEs have been shown to be low and to depend heavily on a country's record of macroeconomic management (Reinhart, Rogoff, and Savastano 2003).[25] Correlates of private debt or private debt accumulation—credit-to-GDP ratios or their change over time—have also been identified as early warning indicators.[26]

Long-term growth effects. A third strand of the literature has estimated the debt levels above which debt burdens became detrimental to investment and long-term output growth. One study found that growth has tended to be lower in both advanced economies and EMDEs with government debt above 90 percent of GDP (Reinhart and Rogoff 2010), whereas another found, for 18 OECD countries, a threshold of 85 percent of GDP (Cecchetti, Mohanty, and Zampolli 2011). The thresholds for adverse short-term output effects may be lower, at 67 percent of GDP for advanced economies (Baum, Checherita-Westphal, and Rother 2013). Some studies, however, find no such threshold effects between debt and growth outcomes (Chudik et al. 2017; Panizza and Presbitero 2014; Pescatori, Sandri, and Simon 2014).

In EMDEs, the impact of external debt on per capita growth has been estimated to be negative at debt levels above 35-40 percent of GDP (Patillo, Poirson, and Ricci 2002). In low-income countries, the threshold has been shown to be even lower, at 20-25 percent of GDP (Clements, Bhattacharya, and Nguyen 2003).

For the private sector, high corporate leverage has been associated with weaker investment, because the benefits of productive investment for owners

[25] A separate literature examines the incentives of borrowers to accept or reject debt restructuring ("hold-out problem"; Fang, Schumacher, and Trebesch 2019).

[26] For discussions of these topics, see Claessens, Kose, and Terrones (2009, 2012), Dell'Ariccia et al. (2016); Eichengreen and Arteta (2002); Gourinchas and Obstfeld (2012); Rodrik and Velasco (2000); and Schularick and Taylor (2012).

are diluted by obligations to creditors.[27] Although some of these studies find a more negative association between leverage and investment for higher levels of debt, however, none provides estimates of specific thresholds of corporate leverage beyond which it detracts from investment. Higher household debt has been associated with lower output growth (Kim and Zhang 2019).

The elusive optimal level of debt. In a nutshell, the empirical evidence suggests that the optimal level of debt depends on a wide range of trade-offs and borrower characteristics (Ostry, Ghosh, and Espinoza 2015), which in part reflects a broader theoretical challenge in the literature. A basic insight from theory is that an increase in government debt tends to increase output in the short run, but to reduce it in the long run (Elmendorf and Mankiw 1999). Debt-financed fiscal expansion can be beneficial in the short run to limit economic downturns and smooth macroeconomic fluctuations; and borrowing can be beneficial also in the long run, when used to finance investments that yield a higher rate of return than the cost of debt. Elevated debt levels, however, can lead to sustainability challenges, increase vulnerability to crises, erode the size and effectiveness of fiscal expansion, and weigh on investment and growth.

Political economy considerations

When weighing benefits against costs of debt, "political-economy" forces may tilt the scale toward underestimating the cost of borrowing while overestimating its benefits. There are two strands of literature in analyzing the interactions between political-economy forces and debt accumulation.

- *Lack of consensus, short tenures.* Disagreements over spending priorities or short-lived government tenures may cause incentives to expand government spending envelopes, financed by debt (Aguiar and Amador 2011, 2013; Alesina and Tabellini 1990; Drazen 2001).
- *Incomplete information.* Voters do not have complete information about election candidates, which may create incentives to generate short-lived, debt-fueled growth spurts before elections (Dubois 2016; Nordhaus 1975). Especially ahead of elections, the absence of full information may create incentives that encourage political incumbents to employ debt-financed fiscal stimulus to improve short-term growth prospects (Aidt, Veiga, and Veiga 2011; Rogoff and Sibert 1988; Shi and Svensson 2006).

[27] For details of these arguments, see Borensztein and Ye (2018); Chen and Lu (2016); Das and Tulin (2017); IMF (2018); Kalemli-Ozcan, Laeven, and Moreno (2018); and Magud and Sosa (2015).

As a result, government expenditures, public debt, and deficits have tended to increase statistically significantly, albeit modestly, around elections (Brender and Drazen 2005; Klomp and De Haan 2011; Philips 2016). Such political cycles in budget pressures tend to be stronger in countries with weaker fiscal transparency, without balanced-budget requirements, and with compromised governance.[28]

Conclusion

The literature on debt has extensively documented the potential benefits and costs of debt accumulation. It has also concluded that no generally applicable level of debt exists but depends on a wide range of factors. The basic implication of this brief literature review is that striking the right balance between taking advantage of the present low interest rate environment and avoiding the risks posed by excessive debt accumulation remains a major challenge for EMDEs.

In light of the insights from the literature review here, the next four chapters explore the global and national debt accumulation episodes in EMDEs.

References

Adam, C. S., and D. L. Bevan. 2005. "Fiscal Deficits and Growth in Developing Countries." *Journal of Public Economics* 4 (April): 571-97.

African Development Bank. 2010. *African Development Report 2010: Ports, Logistics, and Trade in Africa.* Oxford, U.K.: Oxford University Press.

Aguiar, M., and M. Amador. 2011. "Growth in the Shadow of Expropriation." *Quarterly Journal of Economics* 126 (2): 651-97.

Aguiar, M., and M. Amador. 2013. "Sovereign Debt: A Review." NBER Working Paper 19388, National Bureau of Economic Research, Cambridge, MA.

Aguiar, M., S. Chatterjee, H. Cole, and Z. Stangebye. 2016. "Quantitative Models of Sovereign Debt Crises." In *Handbook of Macroeconomics* Vol. 2: 1697-755. Amsterdam: Elsevier.

Aidt, T. S., F. J. Veiga, and L. G. Veiga. 2011. "Election Results and Opportunistic Policies: A New Test of the Rational Political Business Cycle Model." *Public Choice* 148 (1-2): 21-44.

[28] For discussions of political budget cycles, see Alt and Lassen (2006a, 2006b); Alt and Rose (2009); Cioffi, Messina, and Tommasino (2012); Klomp and De Haan (2011); Shi and Svensson (2006); and Streb, Lema, and Torrens (2009).

Aiyagari, S. R., and E. R. McGrattan. 1998. "The Optimum Quantity of Debt." *Journal of Monetary Economics* 42 (3): 447-69.

Aizenman, J., Y. Jinjarak, H. T. K. Nguyen, and D. Park. 2019. "Fiscal Space and Government-Spending and Tax-Rate Cyclicality Patterns: A Cross-Country Comparison, 1960-2016." *Journal of Macroeconomics* 60 (June): 229-52.

Alcidi, C., and D. Gros. 2019. "Public Debt and the Risk Premium: A Dangerous Doom Loop." VoxEU.org, May 22, 2019. https://voxeu.org/article/public-debt-and-risk-premium.

Alesina, A., and G. Tabellini. 1990. "A Positive Theory of Fiscal Deficits and Government Debt." *Review of Economic Studies* 57 (3): 403-14.

Alichi, A., I. Shibata, and K. Tanyeri. 2019. "Fiscal Policy Multipliers in Small States." IMF Working Paper 19/72, International Monetary Fund, Washington, DC.

Alt, J. E., and D. Lassen. 2006a. "Transparency, Political Polarization, and Political Budget Cycles in OECD Countries." *American Journal of Political Science* 50 (3): 530-50.

Alt, J. E., and D. Lassen. 2006b. "Fiscal Transparency, Political Parties, and Debt in OECD Countries." *European Economic Review* 50 (6): 1403-39.

Alt, J. E., and S. Rose. 2009. "Context-Conditional Political Budget Cycles." In *The Oxford Handbook of Comparative Politics*, edited by C. Boix and S. C. Stokes. Oxford: Oxford University Press.

Andreasen, E., G. Sandleris, and A. Van der Ghote. 2019. "The Political Economy of Sovereign Defaults." *Journal of Monetary Economics* 104 (June): 23-36.

Ardagna, S., F. Caselli, and T. Lane. 2007. "Fiscal Discipline and the Cost of Public Debt Service: Some Estimates for OECD Countries." *The B.E. Journal of Macroeconomics* 7 (1): 1-35.

Arellano, C., Y. Bai, and G. Mihalache. 2019. Monetary Policy and Sovereign Risk in Emerging Economies." Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC, November 7-8.

Arellano, C., and A. Ramanarayanan. 2012. "Default and the Maturity Structure in Sovereign Bonds." *Journal of Political Economy* 120 (2): 187-232.

Auerbach, A. J., W. G. Gale, and A. Krupkin. 2019. "If Not Now, When? New Estimates of the Federal Budget Outlook." Brookings Report, February 11, Brookings Institution, Washington, DC.

Auerbach, A. J., and Y. Gorodnichenko. 2012. "Measuring the Output Responses to Fiscal Policy." *American Economic Journal: Economic Policy* 4 (2): 1-27.

Auerbach, A. J., and Y. Gorodnichenko. 2013. "Fiscal Multipliers in Recession and Expansion." In *Fiscal Policy after the Financial Crisis*, edited by A. Alesina and F. Giavazzi, 63-98. Chicago: University of Chicago Press.

Azzimonti, M., and P. Yared. 2019. "The Optimal Public and Private Provision of Safe Assets." *Journal of Monetary Economics* 102 (April): 126-44.

Bachmann, R., and E. R. Sims. 2012. "Confidence and the Transmission of Government Spending Shocks." *Journal of Monetary Economics* 59 (3): 235-49.

Battistini, N., G. Callegari, and L. Zavalloni. 2019. "Dynamic Fiscal Limits and Monetary-Fiscal Policy Interactions." ECB Working Paper 2268, European Central Bank, Frankfurt.

Baum, A., C. Checherita-Westphal, and P. Rother. 2013. "Debt and Growth: New Evidence for the Euro Area." *Journal of International Money and Finance* 32 (1): 809-21.

Blanchard, O. J. 1990a. "Comment: Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries." In *NBER Macroeconomics Annual 1990*, Volume 5, edited by O. J. Blanchard and S. Fischer, 111-16. Cambridge: MIT Press.

Blanchard, O. J. 1990b. "Suggestions for a New Set of Fiscal Indicators." OECD Economics Department Working Paper 79, Organisation for Economic Co-operation and Development, Paris.

Blanchard, O. J. 2019. "Public Debt and Low Interest Rates." *American Economic Review* 109 (4): 1197-229.

Blanchard, O. J., and L. H. Summers. 2019. *Evolution or Revolution? Rethinking Macroeconomic Policy After the Great Recession.* Cambridge: MIT Press.

Blanchard, O. J., and T. Tashiro. 2019. "Fiscal Policy Options for Japan." PIIE Policy Brief 19-7, Peterson Institute for International Economics, Washington, DC.

Blanchard, O. J., and A. Ubide. 2019. "Why Critics of a More Relaxed Attitude on Public Debt Are Wrong." PIIE Realtime Economic Issues Watch, July 15, PIIE Realtime Economic Issues Watch (blog), July 15, 2019. https://www.piie.com/blogs/realtime-economic-issues-watch/why-critics-more-relaxed-attitude-public-debt-are-wrong.

Blimpo, M. P., and M. Cosgrove-Davies. 2019. *Electricity Access in Sub-Saharan Africa: Uptake, Reliability, and Complementary Factors for Economic Impact.* Washington, DC: World Bank.

Bocola, L. 2016. "The Pass-Through of Sovereign Risk." *Journal of Political Economy* 124 (4): 879-926.

Bohn, H. 1998. "The Behavior of U.S. Public Debt and Deficits." *Quarterly Journal of Economics* 113 (3): 949-63.

Borensztein, E., M. Chamon, O. Jeanne, P. Mauro, and J. Zettelmeyer. 2004. "Sovereign Debt Structure for Crisis Prevention." IMF Occasional Paper 237, International Monetary Fund, Washington, DC.

Bradley, M., G. E. Jarrell, and E. H. Kim. 1984. "On the Existence of an Optimal Capital Structure: Theory and Evidence." *Journal of Finance* 39(3): 857-78.

Brender, A., and A. Drazen. 2005. "Political Budget Cycles in New versus Established Democracies." *Journal of Monetary Economics* 52 (7): 1271-95.

Buckle, R. A., and A. A. Cruickshank. 2013. "The Requirements for Long-Run Fiscal Sustainability." Treasury Working Paper 13/20, New Zealand Treasury, Wellington.

Bulow, J., and K. Rogoff. 1989. "A Constant Recontracting Model of Sovereign Debt." *Journal of Political Economy* 97 (1): 155-78.

Burnside, C., M. Eichenbaum, and S. Rebelo. 2004. "Government Guarantees and Self-Fulfilling Speculative Attacks." *Journal of Economic Theory* 119 (1): 31-63.

Calderón, C., C. Cantu, and P. Chuhan-Pole. 2018. *Infrastructure Development in Sub-Saharan Africa: A Scorecard.* Washington, DC: World Bank.

Calderón, C., and L. Servén. 2010. "Infrastructure and Economic Development in Sub-Saharan Africa." *Journal of African Economies* 19 (suppl_1): i13-i87.

Calvo, G. A. 1998. "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops." *Journal of Applied Economics* 1(1): 35-54.

Candelon, B., and L. Lieb. 2013. "Fiscal Policy in Good and Bad Times." *Journal of Economic Dynamics and Control* 37 (12): 2679-94.

Canzoneri, M., R. Cumby, and B. Diba. 2016. "Optimal Money and Debt Management: Liquidity Provision vs Tax Smoothing." *Journal of Monetary Economics* 83 (August): 39-53.

Catão, L., A. Fostel, and S. Kapur. 2009. "Persistent Gaps and Default Traps" *Journal of Development Economics* 89 (2): 271-84.

Catão, L., and S. Kapur. 2006. "Volatility and the Debt-Intolerance Paradox." *IMF Staff Papers* 53 (2): 195-218.

Cecchetti, S., M. Mohanty, and F. Zampolli. 2011. "The Real Effects of Debt." BIS Working Paper 352, Bank for International Settlements, Basel.

Chang, R., and A. Velasco. 2000. "Financial Fragility and the Exchange Rate Regime." *Journal of Economic Theory* 92 (1): 1-34.

Chatterjee, S., J. Gibson, and F. Rioja. 2017. "Optimal Public Debt Redux." *Journal of Economic Dynamics and Control* 83: 162-74.

Chen, S., and Y. Lu. 2016. "Does Balance Sheet Strength Drive the Investment Cycle? Evidence from Pre- and Post-Crisis Cyprus." IMF Working Paper 16/248, International Monetary Fund, Washington, DC.

Chevalier, J. A. 1995. "Do LBO Supermarkets Charge More? An Empirical Analysis of the Effects of LBOs on Supermarket Pricing." *Journal of Finance* 50 (4): 1095-112.

Chudik, A., K. Mohaddes, M. Hashem, and M. Raissi. 2017. "Is There a Debt-Threshold Effect on Output Growth?" *The Review of Economics and Statistics* 99 (1): 135-50.

Cioffi, M., G. Messina, and P. Tommasino. 2012. "Parties, Institutions and Political Budget Cycles at the Municipal Level." Bank of Italy Working Paper 885, Bank of Italy, Rome.

Claessens, S., and M. A. Kose. 2014. "Financial Crises Explanations, Types, and Implications." In *Financial Crises: Causes, Consequences, and Policy Responses*, edited by S. Claessens, M. A. Kose, L. Laeven, and F. Valencia, 3-59. Washington, DC: International Monetary Fund.

Claessens, S., and M. A. Kose. 2018. "Frontiers of Macrofinancial Linkages." BIS Papers 95, Bank for International Settlements, Basel.

Claessens, S., M. A. Kose, and M. Terrones. 2009. "What Happens During Recessions, Crunches, and Busts?" *Economic Policy* 24 (60): 653-700.

Claessens, S., M. A. Kose, and M. Terrones. 2010. "The Global Financial Crisis: How Similar? How Different? How Costly?" *Journal of Asian Economics* 21(3): 247-64.

Clements, B., R. Bhattacharya, and T. Q. Nguyen. 2003. "External Debt, Public Investment, and Growth in Low-Income Countries." IMF Working Paper 03/249, International Monetary Fund, Washington, DC.

Codogno, L., C. Favero, and A. Missale. 2003. "Yield Spreads on EMU Government Bonds." *Economic Policy* 18 (37): 505-32.

Cohen, D. 1993. "Low Investment and Large LDC Debt in the 1980s."*American Economic Review* 83 (3): 437-49.

Cole, H. L., and T. J. Kehoe. 1998. "Models of Sovereign Debt: Partial Versus General Reputations." *International Economic Review* 39 (1): 55-70.

Cole, H. L., and T. J. Kehoe. 2000. "Self-Fulfilling Debt Crises." *The Review of Economic Studies* 67 (1): 91-116.

Corsetti, G., A. Erce, and T. Uy. 2019. "Debt Sustainability and the Terms of Official Support." Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC, November 7-8.

CRFB (Committee for a Responsible Federal Budget). 2019. "Why Should We Worry About the National Debt?" Budgets & Projections paper, April 16, Committee for a Responsible Federal Budget, Washington, DC.

Croce, M. M., T. T. Nguyen, S. Raymond, and L. Schmid. 2018. "Government Debt and the Returns to Innovation." *Journal of Financial Economics*. Advance online publication.

D'Erasmo, P., and E. Mendoza. 2019. "History Remembered: Optimal Sovereign Default on Domestic and External Debt." Working Paper 19-31, Federal Reserve Bank of Philadelphia.

D'Erasmo, P., E. G. Mendoza, and J. Zhang. 2016. "What Is a Sustainable Public Debt?" In *Handbook of Macroeconomics, Volume 2*, edited by J. B. Taylor and H. Uhlig, 2493-597. Amsterdam: Elsevier.

Das, S., and V. Tulin. 2017. "Financial Frictions, Underinvestment, and Investment Composition: Evidence from Indian Corporates." IMF Working Paper 17/134, International Monetary Fund, Washington, DC.

DeAngelo, H., and R. W. Masulis. 1980. "Optimal Capital Structure under Corporate and Personal Taxation." *Journal of Financial Economics* 8 (1): 3-29.

Debrun, X., and T. Kinda. 2016. "That Squeezing Feeling: The Interest Burden and Public Debt Stabilization." *International Finance* 19 (2): 147-78.

Debrun, X., J. D. Ostry, T. Willems, and C. Wyplosz. 2019. "Public Debt Sustainability." CEPR Discussion Paper 14010, Centre for Economic Policy Research, London.

Dell'Ariccia, G, D. Igan, L. Laeven, and H. Tong. 2016. "Credit Booms and Macrofinancial Stability." *Economic Policy* 31 (86): 299-355.

Dincer, N., and B. Eichengreen. 2014. "Central Bank Transparency and Independ-ence: Updates and New Measures." *International Journal of Central Banking* 10 (1): 189-259.

Dovis, A., M. Golosov, and A. Shourideh. 2016. "Political Economy of Sovereign Debt: A Theory of Cycles of Populism and Austerity." NBER Working Paper 21948, National Bureau of Economic Research, Cambridge, MA.

Drazen, A. 2001. "The Political Business Cycle after 25 Years." In *NBER Macroeconomics Annual 2000, Volume 15*, edited by B. S. Bernanke and K. Rogoff, 75-117. Cambridge: MIT Press.

Dubois, E. 2016. "Political Business Cycles 40 Years after Nordhaus." *Public Choice* 166 (1-2): 235-59.

Dybvig, P. H., and J. F. Zender. 1991. "Capital Structure and Dividend Irrelevance with Asymmetric Information." *Review of Financial Studies* 4 (1): 201-19.

Eaton, J., and M. Gersovitz. 1981. "Debt with Potential Repudiation: Theoretical and Empirical Analysis." *Review of Economic Studies* 48 (2): 289-309.

Égert, B., T. J. Kozluk, and D. Sutherland. 2009. "Infrastructure and Growth: Empirical Evidence." CESifo Working Paper 2700, CESifo, Munich.

Eichengreen, B. 2019. "The Return of Fiscal Policy." *Project Syndicate*, May 13, 2019. https://www.project-syndicate.org/commentary/return-of-fiscal-policy-by-barry-eichengreen-2019-05.

Eichengreen, B., and C. Arteta. 2002. "Banking Crises in Emerging Markets: Presumptions and Evidence." In *Financial Policies in Emerging Markets*, edited by M. I. Blejer and M. Skreb. Cambridge: MIT Press.

Eichengreen, B., A. El-Ganainy, R. Esteves, and K. J. Mitchener. 2019. "Public Debt through the Ages." NBER Working Paper 25494, National Bureau of Economic Research, Cambridge, MA.

Eichengreen, B., R. Hausmann, and U. Panizza. 2006. ''The Pain of Original Sin.'' In *Other People's Money*, edited by B. Eichengreen and R. Hausmann. Chicago: University of Chicago Press.

Elmendorf, D. W., and N. G. Mankiw. 1999. "Government Debt." In *Handbook of Macroeconomics, Volume 1*, edited by J. B. Taylor and M. Woodford, 1615-69. Amsterdam: North Holland.

Eren, E., and S. Malamud. 2019. "Dominant Currency Debt." Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC, November 7-8.

Escolano, J. 2010. "A Practical Guide to Public Debt Dynamics, Fiscal Sustainability, and Cyclical Adjustment of Budgetary Aggregates." IMF Technical Notes and Manuals 10/02, International Monetary Fund, Washington, DC.

Fang, C., J. Schumacher, and C. Trebesch. 2019. "Restructuring Sovereign Bonds: Holdouts, Haircuts and the Effectiveness of CACs." Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC, November 7-8.

Fatás, A., A. Ghosh, U. Panizza, and A. Presbitero. 2019. "The Motives to Borrow." CEPR Discussion Paper 13735, Centre for Economic Policy Research, Washington, DC.

Fay, M., L. Andres, C. Fox, U. G. Narloch, S. Straub, and M. A. Slawson. 2017. *Rethinking Infrastructure in Latin America and the Caribbean: Spending Better to Achieve More*. Washington, DC: World Bank.

Flodén, M. 2001. "The Effectiveness of Government Debt and Transfers as Insurance." *Journal of Monetary Economics* 48 (1): 81-108.

Flood, R. P., and P. M. Garber. 1984. "Collapsing Exchange Rate Regimes: Some Linear Examples." *Journal of international Economics* 17 (1-2): 1-13.

Flood, R. P., and N. P. Marion. 2000. "Self-Fulfilling Risk Predictions:: An Application to Speculative Attacks." *Journal of International Economics* 50 (1): 245-68.

Foster, V., and M. C. Briceño-Garmendia. 2010. *Africa's Infrastructure: A Time for Transformation.* Washington, DC: World Bank.

Frankel, J. A., C. A. Vegh, and G. Vuletin. 2013. "On Graduation from Fiscal Procyclicality." *Journal of Development Economics* 100 (1): 32-47.

Furceri, D., and A. Zdzienicka. 2012. "How Costly Are Debt Crises?" *Journal of International Money and Finance* 31 (4): 726-42.

Furman, J., and L. H. Summers. 2019. "Who's Afraid of Budget Deficits? How Washington Should End Its Debt Obsession." *Foreign Affairs* 98: 82-94.

Gale, W. G., and P. R. Orszag. 2003. "Economic Effects of Sustained Budget Deficits." *National Tax Journal* 56 (3): 463-85.

Ghosh, A. R., J. I. Kim, E. G. Mendoza, J. D. Ostry, and M. S. Qureshi. 2013. "Fiscal Fatigue, Fiscal Space and Debt Sustainability in Advanced Economies." *Economic Journal* 123 (566): F4-F30.

Giavazzi, F., and M. Pagano. 1990. "Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries." In *NBER Macroeconomics Annual 1990, Volume* 5, edited by O. J. Blanchard and S. Fischer, 75-122. Cambridge: MIT Press.

Giavazzi, F., and M. Pagano. 1995. "Non-Keynesian Effects of Fiscal Policy Changes: International Evidence and the Swedish Experience." NBER Working Paper 5332, National Bureau of Economic Research, Cambridge, MA.

Gourinchas, P.-O., and M. Obstfeld. 2012. "Stories of the Twentieth Century for the Twenty-first," *American Economic Journal: Macroeconomics* 4 (1): 226-65.

Greenlaw, D., J. D. Hamilton, P. Hooper, and F. S. Mishkin. 2013. "Crunch Time: Fiscal Crises and the Role of Monetary Policy." NBER Working Paper 19297, National Bureau of Economic Research, Cambridge, MA.

Gruber, J. W., and S. B. Kamin. 2012. "Fiscal Positions and Government Bond Yields in OECD Countries." *Journal of Money, Credit and Banking* 44(8): 1563-87.

Guimaraes, B. 2011. "Sovereign Default: Which Shocks Matter?" *Review of Economic Dynamics* 14 (4): 553-76.

Harding, D., and A. Pagan. 2002. "Dissecting the Cycle: A Methodological Investigation." *Journal of Monetary Economics* 49 (2): 365-81.

Harding, M., and M. Klein. 2019. "Monetary Policy and Household Net Worth." Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC: November 7-8.

Hauner, D. 2009. "Public Debt and Financial Development." *Journal of Development Economics* 88 (1): 171-83.

Heathcote, J. 2005. "Fiscal Policy with Heterogeneous Agents and Incomplete Markets." *The Review of Economic Studies* 72 (1): 161-88.

Henderson, D. R. 2019. "Who's Afraid of Budget Deficits? I Am." *Defining Ideas*, February 20, 2019. https://www.hoover.org/research/whos-afraid-budget-deficits-i-am.

Holston, K., T. Laubach, and J. C. Williams. 2017. "Measuring the Natural Rate of Interest: International Trends and Determinants." *Journal of International Economics* 108 (Supplement 1): S59-S75.

Huang, Y., M. Pagano, and U. Panizza. 2017. "Local Crowding Out in China." EIEF Working Paper 17/07, Einaudi Institute for Economics and Finance, Rome.

Huidrom, R., M. A. Kose, J. J. Lim, and F. Ohnsorge. 2016. "Do Fiscal Multipliers Depend on Fiscal Positions?" Policy Research Working Paper 7724, World Bank, Washington, DC.

Huidrom, R., M. A. Kose, J. J. Lim, and F. Ohnsorge. 2019. "Why Do Fiscal Multipliers Depend on Fiscal Positions?" *Journal of Monetary Economics.* Advance online publication. https://doi.org/10.1016/.

Huidrom, R., M. A. Kose, and F. Ohnsorge. 2018. "Challenges of Fiscal Policy in Emerging and Developing Economies." *Emerging Markets Finance and Trade* 54 (9): 1927-45.

Ilzetzki, E, E. G. Mendoza, and C. A. Végh. 2013. "How Big (Small?) Are Fiscal Multipliers?" *Journal of Monetary Economics* 60 (2): 239-54.

IMF (International Monetary Fund). 2018. *Fiscal Monitor: Capitalizing on Good Times*. April. Washington, DC: International Monetary Fund.

Jeanne, M. O. 2003. "Why Do Emerging Economies Borrow in Foreign Currency?" IMF Working Paper 03/77, International Monetary Fund, Washington, DC.

Jeon, K., and Z. Kabukcuoglu. 2018. "Income Inequality and Sovereign Default." *Journal of Economic Dynamics and Control* 95 (October): 211-32.

Jensen, M. C., and W. H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3 (4): 305-60.

Kalemli-Ozcan, S., L. Laeven, and D. Moreno. 2018. "Debt Overhang, Rollover Risk, and Corporate Investment: Evidence from the European Crisis." NBER Working Paper 24555, National Bureau of Economic Research, Cambridge, MA.

Kalemli-Ozcan, S., X. Liu, and I. Shim. 2019. "Exchange Rate Fluctuations and Firm Leverage." Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC, November 7-8.

Kashyap, A., and G. Lorenzoni. 2019. "Borrower and Lender Resilience." Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC, November 7-8.

Kim, E. H. 1982. "Miller's Equilibrium, Shareholder Leverage Clienteles, and Optimal Capital Structure." *Journal of Finance* 37 (2): 301-19.

Kim, Y. J., and J. Zhang. 2019. "Debt and Growth." Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC, November 7-8.

Klomp, J., and J. De Haan. 2011. "Do Political Budget Cycles Really Exist?" *Applied Economics* 45 (3): 329-41.

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., and M. E. Terrones. 2015. *Collapse and Revival: Understanding Global Recessions and Recoveries*. Washington, DC: International Monetary Fund.

Kraay, A. 2012. "How Large Is the Government Spending Multiplier? Evidence from World Bank Lending." *Quarterly Journal of Economics* 127 (2): 829-87.

Kraay, A. 2014. "Government Spending Multipliers in Developing Countries: Evidence from Lending by Official Creditors." *American Economic Journal: Macroeconomics* 6 (4): 170-208.

Kraay, A., and V. Nehru. 2006. "When Is External Debt Sustainable?" *World Bank Economic Review* 20 (3): 341-65.

Krugman, P. 1979. "A Model of Balance of Payments Crises." *Journal of Money, Credit, and Banking* 11 (3): 311-25.

Krugman, P. 1988. "Financing vs. Forgiving a Debt Overhang." *Journal of Development Economics* 29 (3): 253-68.

Krugman, P. 1999. "Balance Sheets, the Transfer Problem, and Financial Crises." *International Tax and Public Finance* 6 (4): 459-72.

Krugman, P. 2014. "Currency Regimes, Capital Flows, and Crises." *IMF Economic Review* 62 (4): 470-93.

Krugman, P. 2019. "Perspectives on Debt and Deficits." *Business Economics* 54 (3): 157-59.

Kumar, M., and J. Woo. 2010. "Public Debt and Growth." IMF Working Paper 174, International Monetary Fund, Washington, DC.

Kumhof, M., and E. Tanner. 2005. "Government Debt: A Key Role in Financial Intermediation," IMF Working Paper 05/57, International Monetary Fund, Washington, DC.

Laeven, L., and F. Valencia. 2018. "Systemic Banking Crises Revisited." IMF Working Paper 18/206, International Monetary Fund, Washington, DC.

Laubach, T. 2009. "New Evidence on the Interest Rate Effects of Budget Deficits and Debt." *Journal of the European Economic Association* 7 (4) 858-85.

Leeper, E. M., and C. Leith. 2016. "Understanding Inflation as a Joint Monetary-Fiscal Phenomenon." In *Handbook of Macroeconomics 2,* edited by J. B. Taylor and H. Uhlig, 2305-2415. Amsterdam: Elsevier.

Leeper, E. M., N. Traum, and T. B. Walker. 2017. "Clearing up the Fiscal Multiplier Morass." *American Economic Review* 107 (8): 2409-54.

Leland, H. E. 1994. "Corporate Debt Value, Bond Covenants, and Optimal Capital Structure." *Journal of Finance* 49 (4): 1213-52.

Leland, H. E., and K. B. Toft. 1996. "Optimal Capital Structure, Endogenous Bankruptcy, and the Term Structure of Credit Spreads." *Journal of Finance* 51 (3): 987-1019.

Magud, N., and S. Sosa. 2015. "Investment in Emerging Markets: We Are Not in Kansas Anymore…Or Are We?" IMF Working Paper 15/77, International Monetary Fund, Washington, DC.

Manasse, P., and N. Roubini. 2009. "'Rules of Thumb' for Sovereign Debt Crises." *Journal of International Economics* 78 (2): 192-205.

Mauro, P., and J. Zhou. 2019. "Can We Sleep More Soundly?" Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC, November 7-8.

Mazza, J. 2019. "Is Public Debt a Cheap Lunch?" *Bruegel* (blog), January 21, 2019. https://bruegel.org/2019/01/is-public-debt-a-cheap-lunch/.

Mendoza, E. G., and P. M. Oviedo. 2006. "Fiscal Policy and Macroeconomic Uncertainty in Developing Countries: The Tale of the Tormented Insurer." NBER Working Paper 12586, National Bureau of Economic Research, Cambridge, MA.

Mendoza, E. G., and P. M. Oviedo. 2009. "Public Debt, Fiscal Solvency and Macroeconomic Uncertainty in Latin America: The Cases of Brazil, Colombia, Costa Rica and Mexico." *Economía Mexicana: Nueva Época* XVIII (2):133-73.

Mendoza, E. G., and M. E. Terrones. 2008. "An Anatomy of Credit Booms: Evidence from Macro Aggregates and Micro Data." NBER Working Paper 14049, National Bureau of Economic Research, Cambridge, MA.

Mendoza, E. G., and V. Z. Yue. 2012. "A General Equilibrium Model of Sovereign Default and Business Cycles." *The Quarterly Journal of Economics* 127 (2): 889-946.

Missale, A. 2012. "Sovereign Debt Management and Fiscal Vulnerabilities." BIS Papers 65, Bank for International Settlements, Basel.

Modigliani, F., and M. H. Miller. 1958. "The Cost of Capital, Corporate Finance, and the Theory of Investment." *American Economic Review* 48 (4): 261-97.

Myers, S. C. 1977. "Determinants of Corporate Borrowing." *Journal of Financial Economics* 5 (2): 147-75.

Myers, S. C. 1984. "The Capital Structure Puzzle." *Journal of Finance* 39 (3): 575-92.

Myers, S. C. 2001. "Capital Structure." *Journal of Economic Perspectives* 15 (2): 81-102.

Myers, S. C. 2003. "Financing of Corporations." In *Handbook of the Economics of Finance 1A*, edited by G. M. Constantinides, M. Harris, and R. M. Stulz, 215-53. Amsterdam: Elsevier.

Myers, S. C., and N. S. Majluf. 1984. "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have." *Journal of Financial Economics* 13 (2): 187-221.

Nickel, C., and A. Tudyka. 2014. "Fiscal Stimulus in Times of High Debt: Reconsidering Multipliers and Twin Deficits." *Journal of Money, Credit and Banking* 46 (7): 1313-44.

Nordhaus, W. D. 1975. "The Political Business Cycle." *Review of Economic Studies* 42 (2): 169-90.

Obstfeld, M. 1986. "Rational and Self-Fulfilling Balance of Payments Crises." *American Economic Review* 76 (1): 72-81.

Obstfeld, M. 2013. "On Keeping Your Powder Dry: Fiscal Foundations of Financial and Price Stability." *Monetary and Economic Studies* 31 (November): 25-37.

Obstfeld, M., and Rogoff, K. 1986. "Ruling Out Divergent Speculative Bubbles." *Journal of Monetary Economics* 17 (3): 349-62.

Ostry, J. D., A. R. Ghosh, and R. A. Espinoza. 2015. "When Should Public Debt Be Reduced?" IMF Staff Discussion Note 15-10, International Monetary Fund, Washington, DC.

Panizza, U., Y. Huang, and R. Varghese. 2018. "Does Public Debt Crowd Out Corporate Investment? International Evidence." CEPR Discussion Paper 12931, Centre for Economic Policy Research, London.

Panizza, U., and A. F. Presbitero. 2014. "Public Debt and Economic Growth: Is There a Causal Effect?" *Journal of Macroeconomics* 41 (September): 21-41.

Panizza, U., F. Sturzenegger, and J. Zettelmeyer. 2009. "The Economics and Law of Sovereign Debt and Default." *Journal of Economic Literature* 47 (3): 651-98.

Patillo, C., H. Poirson, and L. Ricci. 2002. "External Debt and Growth." IMF Working Paper 02/69, International Monetary Fund, Washington, DC.

Perotti, R. 1999. "Fiscal Policy in Good Times and Bad." *Quarterly Journal of Economics* 114 (4): 1399-436.

Pescatori, A., D. Sandri, and J. Simon. 2014. "Debt and Growth: Is There a Magic Threshold?" IMF Working Paper 14/34, International Monetary Fund, Washington, DC.

Peterman, W. B., and E. Sager. 2018. "Optimal Public Debt with Life Cycle Motives." Finance and Economics Discussion Series Working Paper 2018-028, Board of Governors of the Federal Reserve System, Washington, DC.

Philips, A. 2016. "Seeing the Forest through the Trees: A Meta-Analysis of Political Budget Cycles." *Public Choice* 168 (3): 313-41.

Rachel, L., and L. H. Summers. 2019. "On Falling Neutral Real Rates, Fiscal Policy, and the Risk of Secular Stagnation." BPEA Conference Draft, March 7-8, Brookings Institution, Washington, DC.

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

Reinhart, C. M., and K. S. Rogoff. 2010. "Growth in a Time of Debt." *American Economic Review* 100 (2): 573-78.

Reinhart, C., K. Rogoff, and M. Savastano. 2003. "Debt Intolerance." *Brookings Papers on Economic Activity* 34 (1): 1-74.

Riedl, B. 2019. "Yes, We Should Fear Budget Deficits." *Economics 21* (blog), February 8, 2019. https://economics21.org/yes-we-should-fear-budget-deficits.

Rodrik, D., and A. Velasco. 2000. "Short-Term Capital Flows," In *Annual World Bank Conference on Development Economics, 1999*, 59-90. Washington, DC: World Bank.

Rogoff, K. 2019a. "Risks to the Global Economy in 2019." *Project Syndicate*, January 11. https://www.project-syndicate.org/commentary/global-economy-main-risks-in-2019-by-kenneth-rogoff-2019-01.

Rogoff, K. 2019b. "Government Debt Is Not a Free Lunch." *Project Syndicate*, December 6, 2019. https://www.project-syndicate.org/commentary/government-debt-low-interest-rates-no-free-lunch-by-kenneth-rogoff-2019-11.

Rogoff, K., and A. Sibert. 1988. "Elections and Macroeconomic Policy Cycles." *Review of Economic Studies* 55 (1): 1-16.

Röhrs, S., and C. Winter. 2017. "Reducing Government Debt in the Presence of Inequality." *Journal of Economic Dynamics and Control* 82 (September): 1-20.

Romer, C. D., and D. H. Romer. 2018. "Phillips Lecture—Why Some Times Are Different: Macroeconomic Policy and the Aftermath of Financial Crises." *Economica* 85 (337): 1-40.

Ross, S. A. 1977. "The Determination of Financial Structure: the Incentive-Signalling Approach." *Bell Journal of Economics* 8 (1): 23-40.

Rozenberg, J., and M. Fay. 2019. *Beyond the Gap: How Countries Can Afford the Infrastructure They Need While Protecting the Planet*. Washington, DC: World Bank.

Rubin, R. E., P. R. Orszag, and A. Sinai. 2004. "Sustained Budget Deficits: Longer-Run U.S. Economic Performance and the Risk of Financial and Fiscal Disarray." Paper presented at the AEA-NAEFA Joint Session, "National Economic and Financial Policies for Growth and Stability," San Diego, CA, January 4.

Salomao, J., and L. Varela. 2019. "Exchange Rate Exposure and Firm Dynamics." Prepared for the Twentieth Jacques Polak Annual Research Conference, Washington, DC, November 7-8.

Sandleris, G. 2008. "Sovereign Defaults: Information, Investment and Credit." *Journal of International Economics* 76 (2): 267-75.

Schularick, M., and A. M. Taylor. 2012. "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008." *American Economic Review* 102 (2): 1029-61.

Shi, M., and J. Svensson. 2006. "Political Budget Cycles: Do They Differ across Countries and Why?" *Journal of Public Economics* 90 (8-9): 1367-89.

Stenberg, K., O. N. Hanssen, T. T.-T. Edejer, M. Bertram, C. Brindley, A. Meshreky, J. E. Rosen, et al. 2017. "Financing Transformative Health Systems Towards Achievement of the Health Sustainable Development Goals: A Model for Projected Resource Needs in 67 Low-Income and Middle-Income Countries." *Lancet Global Health* 5 (9): e875-e887.

Streb, J., D. Lema, and G. Torrens. 2009. "Checks and Balances on Political Budget Cycles: Cross-Country Evidence." *Kyklos* 62 (3): 425-46.

Stulz, R. 1990. "Managerial Discretion and Optimal Financing Policies." *Journal of Financial Economics* 26 (1): 3-27.

Sutherland, A. 1997. "Fiscal Crises and Aggregate Demand: Can High Public Debt Reverse the Effects of Fiscal Policy?" *Journal of Public Economics* 65 (2): 147-62.

Titman, S. 1984. "The Effect of Capital Structure on a Firm's Liquidation Decision." *Journal of Financial Economics* 13 (1): 137-51.

UNCTAD (United Nations Conference on Trade and Development). 2014. *World Investment Report 2014—Investing in the SDGs: An Action Plan*. Geneva: United Nations.

Vegh, C. A., D. Lederman, F. Bennett. 2017. *Leaning Against the Wind: Fiscal Policy in Latin America and the Caribbean in a Historical Perspective.* Washington, DC: World Bank.

Vorisek, D., and S. Yu. 2020. "Understanding the Cost of Achieving the Sustainable Development Goals." Policy Research Working Paper 9164, World Bank, Washington, DC.

Weidemaier, W. M. C., and A. Gelpern. 2014. "Injunctions in Sovereign Debt Litigation." *Yale Journal on Regulation* 31 (1): 189-218.

World Bank. 2015. *Global Economic Prospects Report: Having Fiscal Space and Using It.* January. Washington, DC: World Bank.

World Bank. 2018. *Global Economic Prospects: Broad-Based Upturn, but for How Long?* January. Washington, DC: World Bank.

World Bank and IMF (International Monetary Fund). 2001. *Developing Government Bond Markets: A Handbook.* Washington, DC: World Bank.

Wyplosz, C. 2019. "Olivier in Wonderland." Vox CEPR Policy Portal, June 17, 2019. https://voxeu.org/content/olivier-wonderland.

Yared, P. 2019. "Rising Government Debt: Causes and Solutions for a Decades-Old Trend." *Journal of Economic Perspectives* 33 (2): 115-40.