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ABSTRACT

Debt in emerging market and developing economies (EMDEs) is at its highest level in half a century. In about nine out of 10 EMDEs, debt is higher now than it was in 2010 and, in half of the EMDEs, debt is more than 30 percentage points of gross domestic product higher. Historically, elevated debt levels increased the incidence of debt distress, particularly in EMDEs and particularly when financial market conditions turned less benign. This paper reviews an encompassing menu of options that have, in the past, helped lower debt burdens. Specifically, it examines orthodox options (enhancing growth, fiscal consolidation, privatization, and wealth taxation) and heterodox options (inflation, financial repression, debt default and restructuring). The mix of feasible options depends on country characteristics and the type of debt. However, none of these options comes without political, economic, and social costs. Some options may ultimately be ineffective unless vigorously implemented. Policy reversals in difficult times have been common. The challenges associated with debt reduction raise questions of global governance, including to what extent advanced economies can cast their net wider to cushion prospective shocks to EMDEs.

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I. Introduction

Global debt is at its highest level in half a century. This is a broad-based phenomenon, with government, private, domestic, and external debt all at multi-decade highs in advanced countries and emerging market and developing economies (EMDEs) alike. The pandemic-induced recession of 2020 led to the largest single-year surge in global debt since at least 1970. The spike came on the heels of a decade-long global debt wave that has been the largest, fastest, and most broad-based debt wave since 1970.

Nevertheless, with interest rates at or near record lows, debt servicing burdens have remained manageable for advanced economies. Economic growth has been, for the most part, well above the (mostly) negative real (and in many cases nominal) interest rates since the global financial crisis; in many cases, government debt service has been falling. This observation has fueled a growing literature that asks whether, despite somber potential output growth projections as populations age and climate change impacts increase, there might be significant scope for larger deficits and higher debt levels than in the past. Blanchard (2019) has stressed the persistently negative differentials between the interest rate (r) on government debt and the growth rate (g), that is $r < g$. This literature has focused almost exclusively on advanced economies, in general, and the United States (the issuer of the dominant global currency), in particular.

Unfortunately, the advanced-economy calculus does not transfer well to EMDEs, which currently account for about two-fifths of global GDP. First, in contrast to advanced economies, the interest burden on government debt in EMDEs (as a group) has been steadily rising since 2014, despite the fact that $r < g$ in many of these countries as well (Figure 1). Even in countries that enjoy a “growth dividend” from $r < g$, the debt-to-GDP ratio will rise if primary deficits are not small enough. Similarly, even if interest rates are falling—as, in general, they have been doing—the interest burden relative to GDP can still be rising, if the stock of debt is increasing quickly enough. Second, the decline in interest rates is not universal, as sovereign credit rating downgrades among EMDEs have been rising markedly in recent years, a trend that intensified during the pandemic. Third, EMDEs would likely face an even larger debt-servicing burden should policy normalization in advanced economies translate into higher global interest rates. The fact that many EMDEs have substantial financing needs beyond 2021 amplifies this risk.

This paper reviews policy options available for EMDEs should their debt trajectories ultimately prove to be unsustainable. The paper does not offer a prediction about the odds of a generalized EMDE debt crisis nor does it recommend any particular debt reduction strategy, as we are not aware of a “silver bullet” to cope with a debt overhang. Nevertheless, given the rapidly rising debt burdens and the substantial uncertainty going forward, it is both useful and timely to review what the literature offers on the policy options available to cope with the present challenges faced by EMDEs. Importantly, our discussion is encompassing, as it includes both orthodox approaches (such as cutting budget deficits) and a variety of heterodox strategies that advanced countries have availed themselves of in the past century on many occasions (Reinhart and Rogoff 2009, 2014). The role of economic growth in debt reduction is also central to the discussion of policy options.

Section II briefly documents the pertinent facts: the extraordinary post-2008 decline in global nominal and real interest rates, as well as the sharp increase in debt levels. Following Reinhart, Reinhart, and Rogoff (2012), we emphasize the importance of looking at a holistic picture of debt that includes not only government debt, but private debt, external debt, and pension liabilities. As Diaz Alejandro (1985) perceptively emphasized, contingent liabilities cannot be ignored. Although all countries are facing multi-dimensional debt problems, advanced economies have a considerably longer runway to deal with debt pressures than do EMDEs where risks of sovereign default remain a prominent market issue governing their risk premia. Whereas for advanced economies, high debt can constrain their ability to fight recessions, the risk of default looms much larger in EMDEs, particularly the poorest of these. In 2021, more than one half of the 73 countries eligible for the Debt Service Suspension Initiative (DSSI) are either in debt distress or at high risk of distress. Sovereign debt crises have long-lasting effects on growth, inequality, and poverty. But in both groups of countries, government debt is only one piece of the puzzle in forming a full picture of broader challenges and constraints.

Section III examines orthodox methods for dealing with extreme debt duress. These include fiscal consolidation by cutting budget deficits (oftentimes referred to as “austerity”) and privatizing a broad array of government assets. In practice, the term “austerity” often refers to the budget impact on low- and middle-income citizens, so we include raising wealth taxes mainly on the rich as a separate category of orthodox policies. We also discuss the central role of economic growth in debt reduction in this section.

The next section turns to heterodox approaches, including inflation, financial repression, and default. These, in effect, have been commonplace in both EMDEs and advanced economies, in the latter group particularly prior to World War II. Inflation and financial repression, of course, are both “less conventional” taxes, each with its own significant efficiency and redistributive implications. An important point lost in the U.S.-centric literature is that even in countries that have succeeded in shifting most government borrowing to domestic currency (and overcoming what Eichengreen and Hausman (1999) term “original sin”), a sizable share of private external borrowing remains in foreign currency. In fact, this problem remains significant for advanced economies outside the United States and even exists to some degree for the euro area (Maggiore, Neimann, and Schreger 2020). At any rate, outright defaults on domestic currency government debt, as Reinhart and Rogoff (2009) document, have not been uncommon, and remain a concern for some EMDEs, even if most advanced economies have “graduated” from sovereign default.

We also include under heterodox policies the large pandemic-induced loan and grant programs from the wealthier northern European countries to the lower income southern European countries. There is nothing new about having a rich donor country to help lighten the fiscal burden of a low(er)-income debtor: Bulow and Rogoff (1988) and Bevilacqua, Bulow and Rogoff (1992) suggest that the expectation of future transfers are implicitly discounted into EMDE borrowing rates. Markets might reasonably believe that periphery Europe government bond rates today strongly embody such expectations of future transfers as needed in crises with, for example, 10-year government bonds for Portugal, Greece, and Italy all trading at yields comfortably below 1 percent. Nevertheless, the very different governance structure of Europe is a distinct new twist.

In the conclusions, we emphasize that whereas none of the options for dealing with high debt is particularly attractive, it is important to be aware of the complete menu of options discussed in the academic literature to be prepared to make informed choices, should a need arise. The difficulties associated with debt reduction policies also raise questions of global governance for future research, including to what extent the richest countries can cast their net wider to cushion prospective shocks to EMDEs.

Lastly, we note that our focus here is on those countries that have managed to maintain continued market access, after initial outflows at the onset of the pandemic. This includes lower middle-income countries that can access international capital markets. This is not to understate the huge distress facing the low-income countries (LICs), many of whom do not have market access; in fact, almost half of the LICs entered the pandemic either in or near debt distress (World Bank 2019a).¹ However, on average low-income countries are borrowing 25 percent of their government debt from the official sector rather than the market and face somewhat different issues from those discussed here.

II. The post-pandemic debt landscape

II.1. Unprecedented debt levels

In 2020, global debt rose by 29 percentage points of GDP, to 262 percent of GDP—the largest single-year increase since at least 1970 (Figure 2). This large increase was broad-based, evident across government and private debt, across domestic and external debt, and in the majority of countries. In EMDEs, total debt had reached 206 percent of GDP—its highest level since at least 1970. This increase was mainly, but not solely, driven by China: in about 90 percent of EMDEs, debt was higher in 2020 than in 2010 and, in a half of EMDEs, more than 30 percentage points of GDP higher. In advanced economies, total debt reached 300 percent of GDP in 2020.

Government debt. In 2020, amid the worst recession since World War II and unprecedented fiscal stimulus, global government debt registered its fastest single-year jump since 1970 to its highest level in half a century, 97 percent of GDP (Kose et al. 2021).² Government debt rose in almost nine-tenths of countries and at its fastest pace in at least half a century in one-quarter of countries. It reached 120 percent of GDP in advanced economies, the highest since the post-World War II

¹ In LICs, government debt rose to 66 percent of GDP in 2020, and has become increasingly non-concessional over the past decade as they have accessed capital markets and borrowed from non-Paris Club creditors (World Bank 2018). In many, the largest part of official bilateral debt is now to non-Paris-Club creditors while the share of bilateral debt to Paris Club creditors and multilateral creditors has declined (Bredenkamp et al. 2019). China, in particular, is now the largest official creditor to some of these countries (Horn, Reinhart, and Trebesch 2020). Of the global population categorized as extremely poor (less than \$1.90 per day), about two-fifths live in low-income countries (World Bank 2021).

² The increase in government debt in 2020 reflected both output collapses and sharp deteriorations in primary fiscal balances, but the contribution of the output collapse to the government debt buildup in 2020 was less than half of that of large primary fiscal deficits, in advanced economies and EMDEs alike (Kose, Ohnsorge, and Sugawara forthcoming).

period, and 63 percent of GDP in EMDEs, the highest since 1987, during the Latin American debt crisis.

Private debt. Private debt also rose at a record pace and to an unprecedented high in 2020 as output collapsed, lockdowns closed businesses, and accommodative policy measures supported credit extension. Globally, it jumped by 16 percentage points of GDP to 165 percent of GDP in 2020, its highest level since records started in 1970. Similar to government debt, the jump in private debt was broad-based, affecting more than four-fifths of countries with available data. In EMDEs, private debt rose by 17 percentage points of GDP, the largest single-year increase on record, to a record high of 142 percent of GDP.

External debt. Although the bulk of the rise in global debt was domestically financed, global external debt nevertheless rose by 11 percentage points of GDP in 2020, to 114 percent of GDP in 2020. As a result, the stock of external debt at the global level now exceeds its 2010 level (107 percent of GDP), after a decade of decline amid heightened post-financial crisis regulation. The increase in 2020 mainly reflected a 14-percentage point of GDP increase in advanced economies; In EMDEs, external debt rose by 2 percentage points of GDP in 2020, to 30 percent of GDP in 2020.

II.2. Different types of debt: Resolution and linkages

Resolution. When measuring total external debt, we are aggregating private and public debt although they typically face different resolution mechanisms. For one thing, the enforcement mechanism is quite different, with domestic public debt relying as heavily on reputation as on domestic court enforcement, and external debt (funds borrowed under foreign law and often in foreign currency) relying on a mix of reputation and foreign legal enforcement. For private debt, efficient bankruptcy regimes can help limit the implications of private bankruptcies for financing costs, credit extension, employment losses, and ultimately economic activity; speedy debt resolution and strong creditor rights can also help reduce nonperforming loans (World Bank 2021c). For public debt, there is no world bankruptcy court that offers similar advantages to resolution mechanisms for private debt (Rogoff and Zettelmeyer 2003), although IMF programs can sometimes partly fill this role. Unfortunately, inefficient insolvency regimes for private debt are a particular problem in EMDEs, where the average secured creditor recovers only 40 percent of their claim, compared with 70 percent in advanced economies (World Bank 2020b).

Linkages. Exact linkages between the different categories of debt are not well understood, and at present the necessary work on the political economy of governments choosing external over domestic debt is woefully underdeveloped. But academic research has produced a legion of evidence showing that under duress, and particularly in a crisis, different debt vulnerabilities tend to interact and magnify each other. A famous example is the European debt crisis “doom loop” because domestic banks were major holders of own-country debt while periphery governments stood behind their banks (Alogoskoufis, Spyros and Sam Langfield 2019). Reinhart and Rogoff (2011) find that financial crises can predict public debt crises (particularly in EMDEs), albeit not the reverse. However, high government debt weakens the credibility of the government’s capacity to cushion the banking system; Koh et al. (2020) report that a somewhat smaller share of private

debt booms (36 percent) than government debt booms (about 45 percent) since 1970 have been associated with financial crises.³

There is a plethora of other areas besides financial firms where private, or quasi-private debt can radically impact the government balance sheets. These issues often come to the fore in a debt crisis, with discoveries of “hidden debt” both magnifying a crisis directly and undermining confidence. The hidden debts of state-owned companies played a significant role in amplifying the 2010 Greek debt crisis (Zettlemeyer and Gulati, 2013), but there is a long history of these types of problems (Reinhart and Rogoff, 2009).

In modern times, publicly provided pensions stand out as an example of a new kind of obligation that, while in principle not always carrying the same legal status as debt (government or private), in practice representing a very strong political claim (Rogoff 2020, Kotlikoff 2019). It remains to be seen how easily a government can impose pension austerity (that is, partially default on pension commitments) in the event of extreme duress. The massive growth of public pension spending, first in the advanced economies after World War II, and more recently in EMDEs, remains a wild card in the future where there is less historical precedent to use as a guide for markets and policy makers. To put this in perspective, consider that across advanced economies, the size of publicly provided pensions swamps the size of payments for marketable government debt.⁴

In recognition of the fundamental interlinkages between various categories of debt, the IMF and the World Bank have in recent years greatly expanded their debt reporting systems to try to create greater debt transparency (Teeling 2018). The hope is that greater transparency will reduce the magnification effects of interlinkages and hidden debts during debt crises and help speed the resolution process. Of course, much further work remains to be done, and it may take years to fully evaluate the improvements. Nevertheless, the current situation on understanding global debt linkages is a far cry from the situation before the 2008 financial crisis where, until Reinhart and Rogoff (2009), even data on the history of public debt, such as we have used to construct Figure 2, was not readily available (Abbas and Rogoff 2019).

II.3 The precipitous drop in safe real interest rates

Sharply lower real interest rates have been the most prominent feature of financial markets over the past decade, underpinning (or more precisely correlating with) not only higher bond prices -- and therefore debt capacity—but higher prices for all long-lived assets from equity to housing to fine art. If one uses the inflation-indexed 10-year U.S. Treasury rate as a measure of the real interest rate on government debt, the yield has fallen from an average of about 2 percent during the 21st century prior to 2008, to minus 1 percent in July 2021 (Figure 3). The sharp drop in rates has caused some to conjecture that a new dawn lies ahead, with ultra-low rates giving governments room to significantly ramp up government spending and transfers (Blanchard, 2019, Stock 2020),

³ Relatedly, Kaminsky and Reinhart (1999) show that simultaneous banking and currency crises can interact and cause deeper recessions.

⁴ For example, The OECD average level (including state and local) is 8 percent of GDP; for France over 13 percent of GDP, for Greece and Italy over 15 percent of GDP, far in excess of net interest payments. See Rogoff (2020), who characterizes commitments to publicly provided pensions as “junior debt.”

at least on a medium-term basis. Others, e.g., Furman and Summers (2020), have argued that governments can now afford to aggressively stimulate the economy in recessions without having to take offsetting steps to bring debt back down afterwards.⁵

Of course, much depends on how permanent and long-lasting the fall in real rates will prove. In a sweeping history of interest rates markets, Schmelzing (2019) finds that global real interest rates have been trending downward for eight centuries, at a pace of under 1 percentage point every 50 years since the Napoleonic Wars. But this is nothing like the nearly 3 percentage point drop that has occurred since 2000. Whether interest rates ever revert to historical trend, and how quickly they will do so very much depends on the underlying driving forces. Slowing productivity growth (Gordon 2016; Dieppe 2020), adverse demographics (Carvalho et al. 2016), growing inequality (Straub 2019), and rising global savings (Dooley et al. 2004; Cabellero et.al. 2008) are among the important core arguments that have been advanced, although perhaps they are better able to explain the gentle downward long-run trend in real interest rates than the sharp downward drop of the past 12 years.

An argument which, adding to the above, might help explain the precipitous post-financial crisis drop is perceived tail risk, that is risks of large negative shocks of which the pandemic and the financial crises are examples. Reinhart, Reinhart, and Rogoff (2015) argue, following the model of Barro (2008), that a small increase in perceptions of extreme tail events such as the financial crisis (and now the pandemic) can lead to a striking fall in the safe real interest rate. Kozlowski et al. (2020) calibrate a version of Barro's model with investment and find that a small shift in tail risk can also lead to a sharp drop in investment and growth. If perceptions of tail risk are a dominant factor in today's hyper-low interest rates, it is very difficult to calibrate when such fears might dissipate.

Regardless, the reality is quite different for EMDEs than for advanced economies when it comes to interest rates. Even with today's extraordinarily low global interest rates, the interest rates paid by EMDEs are nothing close to zero, making the debt problems in these countries much more prominent today, particularly as they still struggle with the protracted adverse effects of the pandemic and face pressures to deal with growing inequality. This raises the question of what the options might be for a country with high debt where market interest rates start to rise to the point where sustainability becomes a serious problem. We turn to this question in the next section.

III. Reducing debt: Orthodox approaches

In this section, we consider "orthodox" approaches to dealing with high debt. These mainly include growth above the interest rate, fiscal consolidation through raising taxes and/or lower spending. Other orthodox approaches that can be important in some contexts include privatization of public companies (though the calculus must include foregone future revenues), and wealth taxes.

⁵ Relatedly, Jiang et al. (2021) argue that there is a very large liquidity premium on U.S. government debt of about 2 percent, a result that Mian et al. (2021) argue radically tilts the calculus of funding the U.S. government toward deficits rather than taxes, up to a debt level of at least 220 percent of GDP.

III.1. Strong growth

In the past, some advanced economies and EMDEs were able to reduce their debt stocks (relative to GDP) by achieving higher growth rates than interest rates.⁶ For the United States, Hall and Sargent (2011) report that real output growth accounted for about half of the debt reduction in the 1940s—more than twice as much as interest rates—and a somewhat smaller, although still debt-reducing, role thereafter. Reinhart, Reinhart, and Rogoff (2015) argue that faster growth following World War II was bolstered by the re-integration of military personnel into the civilian sector and the application of technologies developed during the war. Among more than 50 EMDEs that did not restructure their debt during 1980-2010, growth in excess of interest rates was the main driver of government debt reduction (Baldacci, Gupta, and Mulas-Granados 2012).

The debate about the implications of the differential between growth and interest rates for debt accumulation intensified before the COVID-19 pandemic amid a sharp increase in debt levels along with a slowdown in growth. Although some of the arguments in favor of additional debt accumulation, such as large infrastructure investment needs, also apply to EMDEs, there is a wider range of challenges confronting these economies. EMDEs with access to global financial markets often have a history of debt distress, borrow in foreign currency, and suffer from capital flight during periods of market volatility.

Historically, most of the time, growth rates have been sufficiently high to exceed the interest cost of government debt in advanced economies and EMDEs alike. Mauro and Zhou (2020) find this for 55 mostly advanced economies over the past 200 years; Yared (2019) and Blanchard (2019) document this for the United States. Kose, Ohnsorge and Sugawara (2020) find that the interest rate-growth differential was negative in just over half of country-year pairs (52 percent of country-year pairs among 34 advanced economies and 57 percent of country-year pairs among 83 EMDEs) during 1990-2020.

However, growth alone has typically not been sufficient to lower debt over extended periods. Kose, Ohnsorge, and Sugawara (2020) document that even in about one-quarter of the country cases with growth exceeding interest rates, the differential was not sufficiently large to offset the increase in debt from primary deficits. As a result, during 1990-2020, debt was on a steadily rising trajectory in about half of the cases—in 46 percent of advanced-economy country-year pairs and 53 percent of EMDE country-year pairs (Figure 4). In 22 external government debt reduction events in EMDEs during 1970-2000 examined by Reinhart, Rogoff, and Savastano (2003), only one event featured growth as the sole source of debt reduction and only four events featured growth as a principal contributor to debt reduction.

Importantly, periods of elevated debt levels—when a reduction in debt might be most desirable—have not been accompanied, or followed, by high growth (Reinhart, Reinhart, and Rogoff 2012; Reinhart and Rogoff 2010).⁷ A broader meta-analysis of the large ensuing literature on debt and

⁶ For details, see Barro (1979); Bohn (2008); Baldacci, Gupta, and Mulas-Granados (2015); Reinhart, Reinhart, and Rogoff (2015).

⁷ An obvious confusion, and yet one that abounds in the journalistic and political discussions, is the distinction between having high debt, and making debt higher. Owing money may be a negative for growth,

growth linkages suggests that very high debt levels have been associated with lower, if not negative, growth (Bitar, Chakrabarti, and Zeaiter 2018). This negative link between debt and growth might operate through multiple channels. First, higher government debt typically comes with higher debt service in EMDEs, whereas this is not always the case in advanced economies. This higher spending on debt service needs to be financed through some combination of increased borrowing, increased taxes, and reduced government spending.⁸ Spending cuts may even include expenditures on critical government functions, such as social safety nets, health and education expenditures, or growth-enhancing public investment (Debrun and Kinda 2016; Obstfeld 2013).

Second, high debt could also weigh on growth because it is a source of uncertainty about macroeconomic and policy prospects (Lo and Rogoff 2015). This includes risks that the government may need to resort to distortionary taxation to rein in deficits and debt (as described in the next sub-section). Higher interest rates and uncertainty can crowd out productivity-enhancing private investment and weigh on output growth.

In addition, periods of low interest rates can come to a swift end. This is a much larger risk for EMDEs than advanced economies. Over the past two decades, demographic shifts and slowing productivity growth have put downward pressure on interest rates in advanced economies (Holston, Laubach, and Williams 2017). In EMDEs, these underlying pressures have been less pronounced and may be offset by other forces. First, countries with elevated debt levels tend to have higher interest rate-growth differentials that deteriorate faster in response to shocks than in countries with low debt (Lian, Presbitero, and Wiriadinata 2020). Second, interest rate-growth differentials were significantly lower in years just preceding debt booms but then became significantly higher (Kose, Ohnsorge, and Sugawara forthcoming). Mauro and Zhou (2020) illustrate how interest rates soared just before debt default episodes in EMDEs, even after long periods of low interest rates.

Looking ahead, several factors argue for caution in relying on high growth alone to lower debt burdens in EMDEs and advanced economies alike. First, past episodes when debt reduction was achieved through rapid growth typically followed periods in which debt ramped up quickly after one-off shocks such as wars (Reinhart, Reinhart, and Rogoff 2015). While this may parallel the debt buildup during the COVID-19 pandemic, the uptick in debt in 2020 followed a steady debt buildup during the decade preceding the pandemic when broader spending pressures and revenue weaknesses, rather than temporary shocks, raised debt.

Second, the generally favorable interest rate growth differentials over the last five decades may dissipate over the next decade. Even before the COVID-19 pandemic struck, the global economy was undergoing a decade of slowing productivity growth accompanied by weak investment

but the ability to spend money when needed is extremely helpful. Advanced economies had the incredible luxury during the pandemic to be able to spend forcefully to help citizens and to prevent longer-term scarring of the economy. Most EMDEs, already facing higher interest rates and rising interest burdens during the pandemic, were much less well positioned.

⁸ Several studies point to negligible growth effects of expansionary fiscal policy when government debt is high. For example, Huidrom et al. 2020 estimate for both advanced economies and EMDEs that fiscal multipliers were insignificant when debt was high.

(Dieppe 2020; Kose and Ohnsorge 2020). The additional damage from the pandemic may further steepen the slowdown in potential output growth (World Bank 2021a).

Third, interest rates may begin to rise if inflationary pressures strengthen. Longer-term structural factors have depressed inflation globally over the past five decades: robust population growth in EMDEs; rapid expansion of global value chains accompanied by trade and financial liberalization; and a broad-based switch to more resilient monetary, exchange rate, and fiscal frameworks. However, as global value chains have matured and the momentum for trade liberalization has faded, trade growth and its accompanying competitive pressures have slowed (Constantinescu, Mattoo, and Ruta 2020); global population growth is slowing (Kilic Celik, Kose, and Ohnsorge 2020); and, especially in EMDEs, the unprecedented policy stimulus, including through new instruments, during the pandemic may erode monetary and fiscal frameworks if not carefully managed (Ha and Kindberg-Hanlon 2021). If this eventually increases inflationary pressures, it could also be reflected in higher interest rates.

III.2. Fiscal consolidation

Fiscal consolidation can generate primary fiscal surpluses, through expenditure cuts or revenue increases, to pay off existing debt. Over the next few years, many countries plan to implement some fiscal consolidation after the record deficits caused by the pandemic. In 2020, global primary fiscal deficits, on average, widened by 7 percentage points of GDP, to 9 percent of GDP—the steepest single-year deterioration in the past four decades. The deterioration was broad-based, affecting more than 80 percent of advanced economies and EMDEs, but particularly pronounced in advanced economies where primary deficits widened to 10 percent of GDP—considerably more than in EMDEs.

Blanchard, Felman and Subramanian (2021) argue that a new consensus on fiscal policy has emerged in advanced economies with the following three features. First, stimulus (fiscal or monetary) is warranted to support growth. Second, since monetary policy is near the zero-lower bound in most major economies, fiscal policy needs to be the tool for stimulus.⁹ Third, sustainability concerns about fiscal stimulus are mitigated by prospects for interest rates being below growth rates.

However, regardless of the reality for advanced economies, for some EMDEs, fiscal consolidation may be an appropriate option for debt reduction. In EMDEs, greater uncertainty about prospects for growth and interest rates argues for heavy reliance on fiscal consolidation to lower debt (Blanchard, Felman, and Subramanian 2021). In addition, especially during times of financial market stress, EMDEs are more likely than advanced economies to lose market access. Loss of financial market access, or the threat thereof, may force EMDEs into severe fiscal consolidation.

⁹ The view that normal monetary policy (interest rate policy) is unavailable at the zero bound assumes away the possibility that unconstrained negative interest rate policy can be achieved either by digitizing currency or by taxing paper currency, policies considered by Rogoff (2016).

III.3. Privatization

Proceeds from privatization of public assets, such as state-owned utility companies or land, have been used to lower government financial requirements or debt (Barnett 2000; Katsoulakos and Likoyanni 2002). Privatization has also often been included in programs of international financial institutions with heavily indebted governments (Davis et al. 2003). Privatization can be a useful strategy to overcome serious short-term liquidity shortages, but it does not necessarily improve the long-term trajectory of government finances unless it is accompanied by efficiency gains when private entities take over public assets (Reinhart, Reinhart, and Rogoff 2015).

Privatization has typically been associated with higher growth and greater economic efficiency and firm profitability.¹⁰ But, at least in Latin America, it has also been associated with greater inequality (Birdsall and Nellis 2003). Recent privatizations in Greece have had mixed effects. For example, Pempetzoglou and Patergiannaki (2017) find that privatization of water services did not improve service delivery or investment whereas Fragoudaki and Giokas (2020) report that privatization improved productivity. Over the past two decades, the emphasis has shifted towards the importance of putting in place the right conditions for successful privatization outcomes in EMDEs (Estrin and Pelletier 2018).

Looking ahead, privatizations are likely to offer benefits for growth as well as debt reduction for some EMDEs. However, several preconditions need to be met for these economies to fully realize the potential of privatizations—and some of these preconditions may be difficult to put in place. For example, Estrin and Pelletier (2018) highlight the importance of implementing complementary policies, such as pricing reform and easing market entry including to foreign ownership, and building regulatory capacity, including creating strong and independent regulators. Generally, EMDEs score considerably lower on such indicators of business climates than advanced economies (World Bank 2020a).

III.4 Wealth taxation

Since the global financial crisis, there has been renewed interest in wealth taxes, stemming from mounting concerns about an unequal distribution of wealth (IMF 2013 and 2021a; OECD 2013).¹¹ Wealth taxes have also been advocated as one-off levies that might help pay off debt faster than years of income tax revenue collection (IMF 2013). Some have similarly called for a one-off wealth tax to pay off some of the indebtedness resulting from, and expenditures related to, the COVID-19 pandemic (Landais, Saez, and Zucman 2020).¹²

¹⁰ For evidence in support of privatizations, see Sheshinski and Lopez-Calva (2003) and Megginson and Netter (2001) for literature reviews; Barnett (2000) for 18 EMDEs; Abdeldayem and Al Dulaimi (2019) for the Arab Republic of Egypt.

¹¹ As noted earlier, in political rhetoric that has seeped into economic mainstream, smaller budget deficits are often described as “austerity” when in fact the real concern should be raising living standards for low-income and middle-income citizens. Thus, surely there are budget-neutral policies that raise taxes on the wealthy and use the proceeds to benefit low- and middle-income citizens that should be viewed as reducing austerity.

¹² Scheuer and Slemrod (2021) provide a comprehensive review of tradeoffs involving wealth taxes.

However, wealth taxes have been repealed in many OECD countries since the 1990s because of the practical challenges of administering these types of taxes and the limited gains in terms of revenues raised and redistribution achieved (OECD 2018). Even in the four OECD countries (France, Luxembourg, Norway, and Switzerland) that still maintain wealth taxes, they account for a small share of tax revenues—on average, 0.9 percent of GDP, compared with overall tax revenues of almost 40 percent of GDP.

In EMDEs, wealth taxes have also been advocated as a means of addressing inequality, such as in South Africa (Chatterjee, Czajka, and Gethin 2021). Wealth taxes in Argentina, Colombia, and Uruguay have typically generated even lower revenues relative to GDP than in advanced economies (Morgan and Carvalho 2021). In 2018, revenues from wealth taxes ranged from 0.05 (Colombia) to 0.98 (Uruguay) percent of GDP, compared with 0.08 (France) to 2.82 (Luxembourg) percent of GDP in advanced economies. Moldova and Bolivia introduced wealth taxes in 2016 and 2020, respectively; revenues from these taxes have surprised on the upside in Bolivia but disappointed in Moldova (World Bank 2019b).

EMDEs face significant challenges in raising revenues through wealth taxes. Since a substantial fraction of the wealth of rich taxpayers is held offshore, their assets are often difficult to reach with wealth taxation, and the administrative challenges of tax collection are pronounced. Even in advanced economies, taxation of wealthy individuals is often administered through specialized staff and units within tax administrations (Kangave et al. 2020). Where enforcement capacity is weaker, reported wealth tends to be more responsive to tax changes (Morgan and Carvalho 2021).

IV. Reducing debt: Heterodox approaches

IV.1. Unexpected inflation

Unexpected inflation is a way to erode real debt burdens over time if it raises nominal incomes faster than nominal interest rates rise. Recent studies provided empirical evidence for advanced economies as well as EMDEs about the role of inflation in reducing debt levels. Aizenman and Marion (2011) estimate that inflation reduced the stock of U.S. government debt after World War II (108 percent of GDP) by one-third within a decade. Similar debt-reducing effects of inflation have been found in other countries over the past two centuries (Reinhart and Rogoff 2014a). In Latin America in the mid- to-late-1980s and early 1990s, hyperinflation significantly reduced domestic debt stocks (Reinhart and Sbrancia 2015). In a sample of 10 advanced economies, debt fell faster after World War II in countries with higher inflation but also greater reliance on distortionary non-market interventions and a shorter maturity structure of debt (Abbas et al. 2021). Some have recommended engineering inflation through fiscal and monetary policy, especially in advanced economies, for lowering debt after the global financial crisis (Aizenmann and Marion 2011) and once again in the COVID-19 pandemic (Bianchi, Faccini, and Melosi 2020).

However, even if sufficiently high inflation could be engineered against the structural pressures that have depressed inflation for the past decades, it has drawbacks as a debt reduction strategy. First, it would take a major increase in inflation to make a significant dent in today's debt-to-GDP ratios (Fukunaga, Komatsuzaki, and Matsuoka 2021). The subsequent disinflation that would be needed to return to low and stable inflation would be economically costly (Abbas et al. 2021).

Second, a large share of short-term debt and a large share of foreign currency-denominated debt—more common in EMDEs than in advanced economies—reduce the attractiveness of inflation as a debt reduction strategy. If a large share of debt is short-term, interest rates on newly issued debt will rise as inflation rises and short-term debt is rolled over. This so-called Fisher effect would dampen any debt reduction benefits of inflation because private agents would anticipate inflation as they roll over maturing debt and demand proportionately higher nominal interest rates to compensate (Akitoby, Binder, and Komatsuzaku 2017). If a large share of debt is foreign currency-denominated, the depreciation that accompanies inflation would raise debt service burdens on this part of debt, potentially to an unsustainable level. Reinhart and Rogoff (2011a) document that, historically, inflation crises have often been accompanied by exchange rate crises.¹³ Since 1950, the correlation between the share of countries in inflation crises and in exchange rate crises was about 0.75.

Third, over the long term, high inflation can also risk undermining investor confidence and the hard-won credibility that EMDE central banks have achieved over the past three decades (Ha, Kose, and Ohnsorge 2019). As high inflation becomes entrenched in expectations, it turns into an ineffective strategy for reducing the real value of debt unless accompanied by capital controls and financial repression as discussed in the next sub-section (Reinhart and Sbrancia 2015).

Fourth, surprise inflation as a debt reduction strategy would mostly be useful for a one-off reduction in high debt levels—for example, debt accumulated during a war. If high debt levels are the result of persistent spending pressures or revenue weakness (as they have been in the latest wave of debt accumulation), a bout of surprise inflation cannot reduce elevated debt levels in a lasting manner.

IV.2. Financial repression

Financial repression—capital controls and financial sector regulation—are means to achieve differentials between real interest rates and growth rates far in excess of what market-based risk considerations would justify (Reinhart, Reinhart, and Rogoff 2015). Financial repression can trap savings in specific debt instruments, impose limits on interest rates or lending, or discourage competition in the financial system through state ownership of banks and barriers to entry (Reinhart and Sbrancia 2015; Reinhart and Rogoff 2014b; Cagan 1956). Consistent with the findings in Hilscher, Raviv, and Reis (2014), unexpected inflation can gain far more traction when teamed with financial repression that extends the maturity of debt.

Financial repression was an important mechanism for debt reduction until the financial liberalizations of the 1980s and 1990s. For 12 advanced economies after World War II, Reinhart and Sbrancia (2015) estimate that financial repression “liquidated” government debt through negative real interest rates by 1-5 percent of GDP per year. In France, about three-quarters of the 35 years immediately following the war saw a steady drain on the wealth of bondholders, with the real rate averaging around -9 percent in those years (Reinhart, Reinhart, and Rogoff 2015). For Argentina, this liquidation amounted to about 3 percent of GDP, and for India and South Africa to

¹³ In fact, many types of individual crises have often overlapped with other crises into conglomerate crises (Reinhart 2021).

just over 1 percent of GDP (Reinhart and Sbrancia 2015). This is in line with an earlier study by Giovannini and De Melo (1993), who estimate that financial repression created fiscal savings of as much as 5 percent of GDP in some of the 24 OECD countries in their sample during the 1970s and 1980s.

Some of the policy measures that were employed in advanced economies during and after the 2007-09 global financial crisis have shared characteristics of financial repression. For example, large central bank holdings of government debt in advanced economies during and after the crisis have been interpreted as indicative of financial repression (Reinhart, Kierkegaard, and Sbrancia 2011). A shift of bank assets toward domestic government bonds during the euro area crisis has also been interpreted as evidence of financial repression (Becker and Ivashina 2018). Similarly, bank reserve requirements and other macroprudential regulations—which were imposed over financial stability concerns but steer bank asset holdings towards government debt—have been associated with financial repression (Mullin 2021). Capital controls in EMDEs or restrictions on pension fund investments after the global financial crisis have also operated to lower interest rates or trap savings domestically and, hence, may have constituted financial repression (Reinhart 2012; Reinhart and Rogoff 2011b).

The issue of financial repression has gained new urgency during the pandemic. A number of countries have implemented interest rate controls (Calice, Diaz Kalan, and Masetti 2020). Similarly, asset purchases have become more widespread, including in EMDEs. While the size of announced or completed purchases has, thus far, remained modest (1-6 percent of GDP), they may be used to finance deficits and contribute to domestic debt accumulation. In addition, these types of programs may eventually undermine the independence of central banks if sustained for a prolonged period (Ha and Kindberg-Hanlon 2021).

While financial repression has played an important role in past debt reductions, it is a costly way of lowering debt because it discourages more productive uses of savings. For 55 countries during 1975-2018, Mauro and Zhu (2020) find that “financial repression years” were associated with significantly narrower differentials between interest rates and growth, by 2 to 6 percentage points.¹⁴ For interest rate controls, Jafarov, Maino, and Pani (2019) find evidence of reduced incentives for saving, lower investments, a distorted investment allocation, reduced access to financing for some small borrowers, a shift towards shorter debt maturities, and lower bank profitability. Roubini and Sala-i-Martin (1992) report that growth among almost 100 countries during 1960-1985 was lower during periods of greater financial repression and that financial repression explains a meaningful portion of Latin America’s low growth. The magnitudes estimated in the literature suggest that it would take several years to meaningfully lower debt stocks through financial repression.

Financial repression is likely to be most attractive when government debt is very high such that other, less distortionary options for debt reduction are precluded. Chari, DAVIS, and Kehoe (2020) show that taxation would be a less costly way of reducing debt because it would allow savings

¹⁴ The authors define financial repression years as the periods before financial market liberalizations, as defined in Abiad, Detragiache, and Tressel (2010), or of structural breaks in uncovered interest parity.

to flow to productive investments instead of trapping them in government debt at below-market interest rates.¹⁵

In addition, once in place, financial repression is difficult to unwind. Mauro and Zhu (2020) find that interest rates continued to be low several years after financial repression episodes ended, fueling further debt buildups. As a result, when several Latin American economies shifted from financial repression to liberalization in the 1980s, they suffered financial crises after liberalization (Diaz-Alejandro 1985).¹⁶

Financial repression may also be more difficult to deploy as a tool for debt resolution now than in the past because of a different institutional environment and composition of debt. Financial repression policies in advanced economies in the past relied on capital controls and the use of non-market debt instruments that were held by captive domestic institutions. Since then, capital account and financial liberalizations have reduced the capacity for financial repression to lower debt. For example, on average in advanced economies, about one-third of government debt is now held by non-residents, who can readily reduce their holdings of debt with negative real interest rates, and four-fifths is in market instruments (Abbas et al. 2021).

IV.3. Debt default and restructuring

IV.3.1. External debt

For debt that is owed to foreigners, denominated in foreign currency, and adjudicated by foreign courts, default and debt restructuring can become a country's only option. Foreign currency-denominated debt cannot be inflated away. Foreign courts are far less inclined to do a government's bidding than domestic courts. Foreign creditors cannot be coerced the same way as domestic bondholders when, for example, regulations and restrictions are put in place that force residents to hold government debt at rates far below those they would command in an unrestricted market. When debt is foreign controlled and foreign-currency denominated, countries face a rollover risk.

Conversely, external sovereign debt differs from both private and sovereign debt in offering limited enforcement mechanisms since sovereigns are not subject to legal authority in the same way as private creditors (Aguar and Amador 2014; Weidemaier and Gelpern 2014), although creditors do have significant rights if contracts are written to be adjudicated under foreign law. In practice, creditors' main recourse in response to payment default is to threaten to interfere with future lending, which Eaton and Gersovitz (1981) interpret as loss of reputation, while Bulow and Rogoff (1989) suggest that the role of foreign courts is in blocking future loans—by giving existing

¹⁵ Chari, Dovis, and Kehoe (2020) model financial repression as a requirement for banks to hold a fraction of their assets in government debt and consider as tax instruments proportional taxes on labor income and capital and government debt.

¹⁶ Conversely, several studies find that financial liberalization is associated with higher growth (Bekaert, Harvey, and Lundblad 2005; Bumann, Hermes, and Lensinck 2013); lower risks of financial crisis over the longer term (Hartwell 2017); and greater bank efficiency, provided bank regulation and supervision is appropriate (Hermes and Meesters 2015). We note that the risks associated with liberalizing short-term capital flows are likely to be considerably more acute than, say, liberalizing equity markets.

creditors priority over any lenders that come in after a default. As a result of the related reputational and foreign court legal risks, default and restructuring therefore typically involve lengthy negotiations between the debtor and creditors.

Over the past 200 years, the average advanced economy defaulted more than twice on external debt and the average EMDE more than four times (Reinhart and Rogoff 2008, 2009). The average EMDE spent about one-quarter of these two centuries in default. Compared with these two centuries of history, the 2000s were unusually calm, with less than 20 percent of countries in default in any year (Reinhart and Rogoff 2008). Even the longer period from World War II until 2010 was exceptional because no advanced economy defaulted outright, although the United Kingdom came close several times in the 1950s-1970s (Reinhart, Reinhart, and Rogoff 2015). Nevertheless, two centuries of history suggests that few countries can really be considered to have “graduated” permanently from default (Qian, Reinhart, and Rogoff 2011).

External defaults in EMDEs are often protracted, with a median duration of three years since World War II (Reinhart and Rogoff 2011a). When debt restructuring was agreed, the median haircut in more than 300 external debt restructuring episodes since 1815 amounted to 40-50 percent of the net present value of outstanding debt (Meyer, Reinhart, and Trebesch 2019).¹⁷ More recently, debt restructuring episodes in EMDEs over the period 1998-2005 have featured haircuts of 13-73 percent of net present value (Sturzenegger and Zettelmeyer 2008). The growth outlook of debt distressed countries often improved once debt relief in the form of debt write-offs (rather than reschedulings) was granted (Reinhart and Trebesch 2016).

While default and debt restructuring may offer immediate debt stock or debt service reduction, they also impose long-term costs. In particular, bond yields are such that bond holders are compensated for default risk by excess returns, especially in countries with a history of serial default (Meyer, Reinhart, and Trebesch 2019). In 68 countries during 1970-2010, bond yields were significantly higher, and a return to market access was delayed longer, when debt restructuring featured higher haircuts (Cruces and Trebesch 2013).¹⁸ Since the 1990s, rising litigation in advanced-economy courts has intensified and prolonged the loss of market access (Schumacher, Trebesch, and Enderlein 2021). In addition, to the extent restructured debt is held by domestic financial institutions, it can weaken their balance sheets and undermine financial stability (Dell’Ariccia et al. 2018). The potential for financial disruption through this channel was laid bare in the Greek debt crisis a decade ago, when domestic banks sustained sizable losses in the sovereign debt restructuring (Zettelmeyer, Trebesch, and Gulati 2013).

¹⁷ This estimate is broadly in line with Kaminsky and Vega-Garcia (2016) for a smaller sample of Latin American countries.

¹⁸ For theoretical models of debt default, see Aguiar et al. (2016); Bulow and Rogoff (1989); Catao, Fostel, and Kapur (2009); Catao 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, while in another equilibrium, the government manages to roll over its debt (Calvo 1998; 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).

IV.3.2. Domestic debt

Domestic debt default takes different forms from external debt default. With domestic debt — which accounted for two-thirds of government debt in 64 countries since 1914 (Reinhart and Rogoff 2011c)—the monetary authorities can print money to buy back maturing debt. Because debt denominated in domestic currency is far less vulnerable to rollover risk than foreign-currency debt, it generally affords countries a broader range of options to reduce the stock of domestic debt.

In 68 episodes of outright *de jure* domestic debt default documented by Reinhart and Rogoff (2011c), a range of mechanisms was used: forcible conversions; lower coupon rates (for example, China and Greece in the 1920s and 1930s); unilateral reduction of principal, sometimes in conjunction with a currency conversion (for example, Ghana in the 1970s and 1980s; Austria, Germany, and Japan in the 1940s and 1950s), and suspensions of payments (for example, Bolivia in the 1920s, Peru and Mexico in the 1930s, and Panama in the 1980s). For example, Argentina defaulted three times on its domestic debt between 1980 and 2001 (1982, 1989-90, 2002-05), of which two defaults coincided with defaults in external debt (1982 and 2001).¹⁹ All three of Argentina's domestic debt defaults involved forcible conversions of U.S. dollar debt into local currency debt. These domestic *de jure* defaults were typically accompanied by galloping inflation. These episodes of domestic debt default were associated with significantly worse macroeconomic outcomes.

Even though governments that issue debt in domestic currency have more resilience to being forced into technical default by markets, they are, of course, still vulnerable to inflation risk and to nominal interest rate spikes should inflation expectations become unanchored. Risks to central bank credibility limit their ability to ensure rollover of government debt. Aguiar et al. (2013) model the trade-off between central banks maintaining inflation credibility and eliminating rollover risk for domestic debt. When inflation targeting is too rigid, the central bank is unable to print sufficient money to eliminate rollover risk; when there is no credible commitment to inflation targeting, inflation is undesirably high. Under the assumptions of their model, the optimal policy is to aim for an intermediate case where expected inflation is relatively low (although above the optimum with commitment), but with sufficient flexibility to eliminate rollover risk.²⁰

IV.3.3. Future of debt restructurings

Looking ahead, debt default—whether external or domestic—may well become more common after the debt runup caused by the pandemic. Historically, countries have often been able to continue borrowing heavily just before default (Reinhart and Rogoff 2009). While creditors may want to make contingency plans for a slew of debt defaults and restructurings, future restructurings will be complicated by some new as well as old challenges (Bulow et al. 2020).

The creditor base for EMDE debt, and especially LIC debt, has fragmented over the past two decades as noted above, and this will complicate any creditor coordination needed for debt

¹⁹ In addition to these *de jure* defaults, governments also implemented *de facto* defaults on domestic debt through inflation and financial repression.

²⁰ Although not strictly applicable to the case when monetary policy rates are at the zero-lower bound, the general logic of the model applies even in this case (Reinhart, Reinhart, and Rogoff 2015).

restructurings. In several EMDEs, a large share of debt is held by residents; in LICs, a growing share of debt is held on non-concessional terms and by non-traditional creditors, including private creditors. A growing number of restructurings has involved lawsuits (Schumacher, Trebesch, and Enderlein 2021). In addition, the incentive remains for both debtor and creditor countries to agree to shallow restructurings that provide near term relief but often do not address the core solvency problem (Bucheit and Gulati 2020). Shallow agreements have in the past been followed by a series of inconclusive restructurings until a more lasting resolution was found (Meyer, Reinhart, and Trebesch 2019).

Waiting to restructure debt until after a default occurs is associated with larger declines in GDP, investment, private sector credit, and capital inflows than preemptive debt restructurings (Asonuma et al. 2020). Public investment is particularly deeply cut back during delayed restructurings (Asonuma and Joo 2020a), eroding the foundation for future growth. Meanwhile, the opportunity for prompt debt rescheduling may recede as advanced economies rebound from the pandemic while EMDEs lag: there is evidence that debt restructuring tends to be delayed and shallower when growth in creditor countries is strong (Asonuma and Joo 2020b).

IV.3.4. Multilateral approaches to dealing with debt

Restructuring of sovereign debt has often taken place under umbrella initiatives that coordinated large numbers of debtors and creditors. Some umbrella initiatives have included the Multilateral Debt Relief Initiative from 2005; the HIPC Initiative from 1996; the Baker and Brady Plans from 1985 and 1989-94, respectively; and the Paris Club established in 1956.²¹ In these initiatives, debt relief was granted to a number of debtor countries on common principles, even if negotiated on a case-by-case basis. A common set of principles, enhanced by coordinated data gathering, was intended to address the information asymmetries and coordination problems between multiple creditors with various debt instruments that can hinder restructuring agreements (Eichengreen and Mody 2003; Truman 2002). Most of these umbrella initiatives offered substantial debt stock reduction but debt relief under these initiatives was protracted or often required multiple restructurings to achieve sustainable debt levels (Reinhart and Trebesch 2016).

More recently, new initiatives have sprung up that have parallels with multilateral debt relief initiatives, for example the Next Generation EU Fund and swap lines between central banks. We consider these in turn. Although we have been dividing countries into groups of advanced economies and EMDEs per standard practice, in fact the lines are much blurred (Reinhart and Rogoff 2008). Only very recently, the periphery countries of the euro area experienced a sudden stop very much like an emerging market sudden stop. Greece, which defaulted in the 1960s, ended up again being in default; Portugal, which was in an IMF program in the early 1980s, again received financial assistance from the Fund. Other Southern euro area countries experienced extreme duress that contributed to long recessions. At the time, Northern European countries were

²¹ In addition, several debt standstills were agreed in the leadup to these restructuring agreements, such as the Debt Service Suspension Initiative of 2020 and the Hoover Moratorium of 1931 (Forbes 1987, Ritschl 2012). Debt service standstills can be stop-gaps that provide breathing room to continue critical spending while allowing time for a comprehensive assessment of sustainability that can lead to more lasting changes (Buchheit and Gulati 2020).

reluctant to offer debt write-downs or grants to alleviate the situation, in part out of fear of undermining longer-term discipline. In contrast, relative to their GDP, the Southern euro area countries received considerably more generous relief than richer countries during the pandemic with the establishment of the Next Generation EU Fund, which provided EUR 750 billion over 2021-26 (of which about half was outright grants, Lane 2021, Fuest 2021).

Whereas subsidized loans are helpful in relieving budget stress, the impact of transfers is much larger and constitutes an alternative to debt write-downs that were not on the table politically in 2010. The effect of the transfers and loans, and the view that a regime change has taken place, has helped bring down borrowing spreads across the euro area periphery, even extending to European Union members that have not yet joined the euro. In a sense—because the Next Generation EU Fund can also be used to lower debt (Bańkowski et al. 2021)—it is an example of how countries with very strong balance sheets and market access can use some of their fiscal space to alleviate strains in countries in fiscal distress. For the moment, the academic literature around these ideas is still evolving, and more experience will be required to fully assess the issues surrounding a multilateral approach to dealing with debt distress.

Further discussion should also incorporate central bank swap lines, which the U.S. Federal Reserve issued on a large scale during the financial crisis, and on a larger scale during the pandemic, as well as SDR allocations, which were also issued on both occasions. Bahaj and Reis (2021) show that these swap lines served as international lender of last resort and supported demand for corporate bonds. This helped prevent liquidity strains in corporate debt markets from turning into corporate debt distress in recipient countries.

V. Conclusion

Two defining characteristics of the post-pandemic landscape are much higher public, private and external debts, as well as a generalized expansion of government safety net expenditures. Much of the recent literature on debt has focused on advanced economies and mainly on the United States. For EMDEs, the reality is very different. Not only has debt been growing very rapidly, but in contrast to advanced economies, the debt servicing burden has been growing at a rapid clip as well. Market access has been preserved outside LICs, but at interest rates nowhere near zero.

This paper has briefly assessed the fragilities confronted by EMDEs, which depend crucially not only on government debt but on private, external and pension debt, which Reinhart, Reinhart and Rogoff (2012) refer to as the “quadruple overhang”. It has also detailed the problem of elevated debt levels and laid out the menu of options for dealing with debt, including both orthodox and heterodox options, which individual countries can consider if their debts become unsustainable, or if they decide otherwise to bring down debt-to-GDP levels to reduce risk.

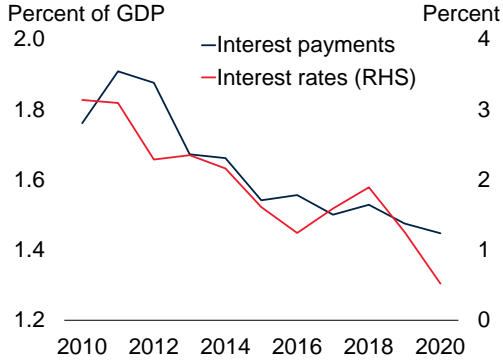
The appropriate mix of approaches depends on country characteristics and the type of debt concerned. For example, the policy options to resolve domestic debt are more varied than those to deal with external debt. While high growth, low interest rates, and financial repression are viable ways of lowering domestic or external debt, inflation is likely to be ineffective in lowering external debt, and debt restructuring is likely to be politically challenging (even if sometimes necessary) for domestic debt. In the current context of a decade of steadily rising debt and weaker growth

prospects, growth alone is unlikely to be sufficient to lower debt permanently. High inflation tends to go hand-in-hand with exchange rate depreciation or even currency crises (Reinhart and Rogoff 2014a). This constrains the use of inflation for debt reduction, especially in EMDEs where about 90 percent of external debt, on average, is denominated in foreign currency. In these countries, exchange rate depreciation would likely offset any debt-reducing benefits of inflation for external debt. Conversely, debt stock reductions that penalize domestic debt holders outright can meet stiff internal resistance, especially when they impose losses on important domestic stakeholders and when a large share of debt is held domestically (Reinhart and Rogoff 2011c).

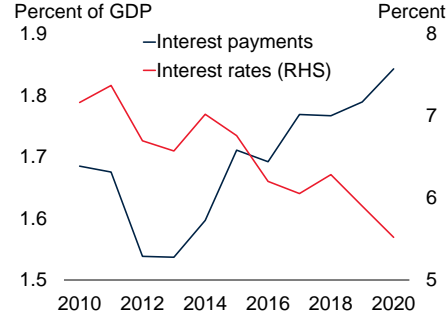
Unfortunately, none of the options to deal with debt is attractive or easy. Inflation, financial repression, and debt restructuring can impose heavy economic cost; wealth taxes or reforms to generate higher growth can face difficult technical, practical and political obstacles. As long as debt problems remain more pressing in EMDEs than in advanced economies and there is no easy path to debt reduction, there remains the prospect that the inequality between advanced economies (or even some EMDEs such as China) and the rest of the world could become much worse. In addition, the difficulties associated with debt reduction policies also raise questions of global governance for future research, including to what extent advanced economies can cast their net wider to cushion prospective shocks to EMDEs.

Figure 1. Interest payments and interest rates

A. Interest rates and payments in advanced economies



B. Interest rates and payments in EMDEs

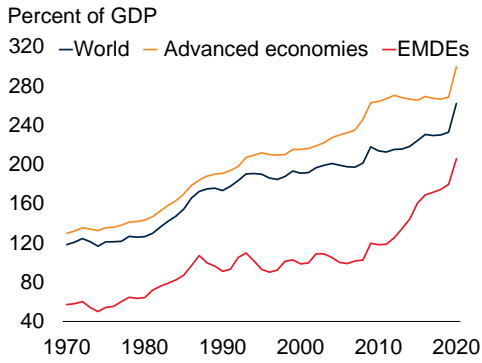


Sources: IMF; Kose et al. (2017); World Bank.

A. Nominal GDP-weighted averages of long-term nominal interest rates for up to 36 advanced economies and interest spending in percent of GDP for up to 37 advanced economies. Net interest payments are computed as a difference between primary balances and fiscal balances.

B. Nominal GDP-weighted averages of long-term nominal interest rates for up to 84 EMDEs and interest spending in percent of GDP for up to 150 EMDEs.

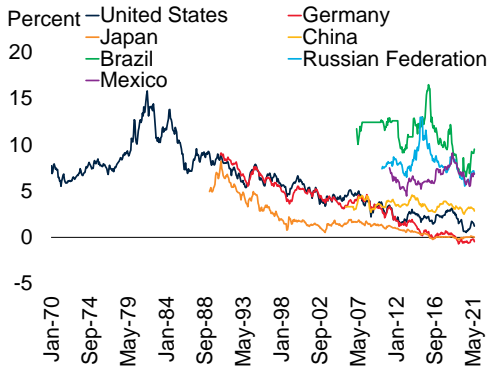
Figure 2. Total Debt



Sources: Kose et al. (2017, 2020); Mbaye, Moreno-Badia, and Chae (2018).

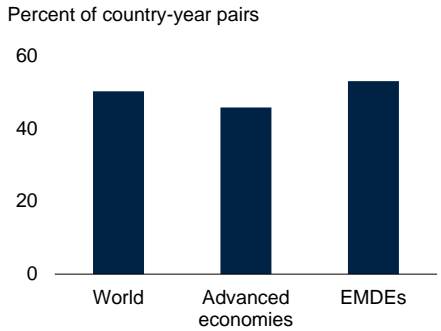
Note: Includes government and private debt. Data are available until 2020 for up to 191 countries. Nominal GDP weighted averages.

Figure 3. Ten-year government bond yields



Source: Bloomberg.

Figure 4. Share of country-year pairs with rising debt trajectory



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

Note: Share of country-year pairs for 34 advanced economies and 83 EMDEs in which debt is on a rising trajectory (i.e., negative sustainability gaps) over 1990-2020.

References

- Abbas, S. M. Ali, and K. Rogoff. 2019. "A Guide to Sovereign Debt Data." In Abbas, A, A. Pienkowski and K. Rogoff. 2019. *Sovereign Debt: A Guide for Economists and Practitioners*, Oxford University Press.
- Abbas, S. M. A., L. Blattner, M. De Broeck, A. El-Ganainy, and M. Hu. 2021. "Sovereign Debt Composition in Advanced Economies: A Historical Perspective." Working Paper 14/162, World Bank, Washington, DC.
- Abdeldayem, M. M. and S. H. Al Dulaimi. 2019. "Privatization and Financial Performance in Egypt since 1991," *Asian Economic and Financial Review* 9(4): 461-479
- Abiad, A., E. Detragiache, and R. Tressel. 2010. "A New Database of Financial Reforms." *IMF Staff Papers* 57(2): 281-302.
- Aguiar, M., S. Chatterjee, H. Cole, and Z. Stangebye. 2016. "Quantitative Models of Sovereign Debt Crises." In *Handbook of Macroeconomics Vol. 2*, 1697-1755. Amsterdam: Elsevier.
- Aguiar, M., M. Amador, E. Farhi, and G. Gopinath. 2013. "Crisis and Commitment: Inflation Credibility and the Vulnerability to Sovereign Debt Crises." Working Paper 19516, National Bureau of Economic Research, Cambridge MA.
- Aguiar, M. and Amador. 2014. "Sovereign Debt." In *Handbook of Macroeconomics Vol. 4*, 647-487. Amsterdam: Elsevier.
- Aizenman, J., and N. Marion. 2011. "Using Inflation to Erode the US Public Debt." *Journal of Macroeconomics* 33 (4): 524-541.
- Akitoby, B., A. Binder, and T. Komatsuzaki. 2017. "Inflation and Public Debt Reversals in the G7 Countries." *Journal of Banking and Financial Economics* 1 (7): 28–50.
- Alogoskoufis, S. and S. Langfield. 2019. "Regulating the Doom Loop", *International Journal of Central Banking*, forthcoming.
- Arslanalp, S. and P. B. Henry. 2005. "Is Debt Relief Efficient?" *The Journal of Finance* 60(2): 1017-1051.
- Asonuma, T. and H. Joo. 2020a. "Sovereign Debt Overhang, Expenditure Composition and Debt Restructurings," School of Economics Discussion Papers 1519, School of Economics, University of Surrey.
- Asonuma, T. and Joo, H., 2020b. "Sovereign Debt Restructurings: Delays in Renegotiations and Risk Averse Creditors." *Journal of the European Economic Association*, 18(5): 2394-2440.
- Asonuma, T., M. Chamon, A. Erce, and A. Sasahara. 2020. "Costs of Sovereign Defaults: Restructuring Strategies and the Credit-Investment Channel." Working Paper 19/69, International Monetary Fund, Washington, DC.

- Bahaj, S. and R. Reis, 2021. “Central Bank Swap Lines: Evidence on the Effects of a Lender of Last Resort,” forthcoming, *Review of Economic Studies*.
- Bańkowski, K., M. Ferdinandusse, S. Hauptmeier, P. Jacquinot, V. Valenta. 2021. “The Macroeconomic Impact of the Next Generation EU Instrument on the Euro Area,” ECB Occasional Paper 255, European Central Bank, Frankfurt.
- Baldacci, E., S. Gupta, and C. Mulas-Granados. 2012. “Reassessing the Fiscal Mix for Successful Debt Reduction.” *Economic Policy* 27 (71): 365–406.
- Baldacci, E., S. Gupta, and C. Mulas-Granados. 2015. “Debt Reduction, Fiscal Adjustment, and Growth in Credit-Constrained Economies.” *Journal of Applied Economics* 18 (1): 71-98.
- Barnett, S.A., 2000. “Evidence on the Fiscal and Macroeconomic Impact of Privatization.” Working Paper, International Monetary Fund, Washington, DC.
- Barro, R.J. 1979. “On the Determination of the Public Debt.” *Journal of Political Economy* 87(5, Part 1): 940-971.
- Becker, B., and V. Ivashina. 2018. “Financial Repression in the European Sovereign Debt Crisis.” *Review of Finance* 22 (1): 83–115.
- Bekaert, G., C.R. Harvey, and C. Lundblad. 2005. “Does Financial Liberalization Spur Growth?” *Journal of Financial Economics* 77 (1): 3-55.
- Bianchi, F., R. Faccini, and L. Melosi. 2020. “Monetary and Fiscal Policies in Times of Large Debt: Unity is Strength.” NBER Working Paper 27112, National Bureau of Economic Research, Cambridge, MA.
- Birdsall, N. and Nellis, J., 2003. Winners and losers: assessing the distributional impact of privatization. *World development*, 31(10), pp.1617-1633.
- Bitar, N., A. Chakrabarti, and H. Zeaiter. 2018. “Were Reinhart and Rogoff Right?” *International Review of Economics & Finance* 58 (November): 614-620.
- Blanchard, O. J. 2019. “Public Debt and Low Interest Rates.” *American Economic Review* 109 (4): 1197–1229.
- Blanchard, O., J. Felman, and A. Subramanian. 2021. “Does the New Fiscal Consensus in Advanced Economies Travel to Emerging Markets? Policy Brief 21-7, Peterson Institute, Washington, DC.
- Bohn, H. 1998. “The Behavior of U.S. Public Debt and Deficits.” *Quarterly Journal of Economics* 113(3): 949-963.
- Bredenkamp, H., R. Hausmann, A. Pienkowski, and C. Reinhart. 2019. “Challenges Ahead,” in Abbas, A., A. Pienkowski, and K. Rogoff (eds). 2019. *Sovereign Debt: A Guide for Economists and Practitioners*. Oxford: Oxford University Press.

- Buchheit, L. and M. Gulati. 2020. "Avoiding a Lost Decade—Sovereign Debt Workouts in the Post-COVID Era." Mimeo.
- Bulow, J., and K. Rogoff. 1989. "A Constant Recontracting Model of Sovereign Debt." *Journal of Political Economy* 97 (1): 155-178.
- Bulow, J., C. Reinhart, K. Rogoff, and C. Trebesch. 2020. "The Debt Pandemic." *Finance and Development* September: 13-16.
- Bumann, S., N. Hermes, and R. Lensinck. 2013. "Financial Liberalization and Economic Growth: A Meta-analysis." *Journal of International Money and Finance* 33: 255-81.
- Cagan, P. 1956. "The Monetary Dynamics of Hyperinflation." In *Studies in the Quantity Theory of Money*, edited by M. Friedman. Chicago: University of Chicago Press.
- Calice, P., F. Diaz Kalan, and O. Masetti. 2020. "Interest Rate Repression: A New Database." Working Paper 9457, World Bank, Washington, DC.
- Calvo, G. A. 1998. "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops." *Journal of Applied Economics* 1 (1): 35-54.
- Carvalho, C., A. Ferraro and F. Nechio. 2016. "Demographics and Real Interest Rates." *European Economic Review* 88(September): 208-226.
- Catão, L., A. Fostel, and S. Kapur. 2009. "Persistent Gaps and Default Traps" *Journal of Development Economics* 89 (2): 271-284.
- Catão, L. and Kapur, S. 2006. "Volatility and the Debt-Intolerance Paradox." *IMF Staff Papers* 53(2): 195-218.
- Chari, V. V., A. DAVIS, and P. J. Kehoe. 2020. "On the Optimality of Financial Repression." *Journal of Political Economy* 128 (2): 710-739.
- Chatterjee, A., L. Czajka, A. Gethin. 2021. "Taxing wealth in a context of extreme inequality legacy: The case of South Africa." Voxeu blog, April 24, available at: <https://voxeu.org/article/taxing-wealth-context-extreme-inequality-legacy-case-south-africa>.
- Chinn, M. D. and H. Ito. 2008. "A New Measure of Financial Openness," *Journal of Comparative Policy Analysis* 10(3): 309 - 322.
- 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.
- Constantinescu, C.; A. Mattoo; and M. Ruta. 2020. "The Global Trade Slowdown: Cyclical or Structural?" *World Bank Economic Review* 34(1): 121–142,

- 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, November 7-8, Washington, DC.
- Cruces, J. J., and C. Trebesch. 2013. “Sovereign Defaults: The Price of Haircuts.” *American Economic Journal: Macroeconomics* 5 (3): 85–117.
- Davis, J.M., T. J. Richardson, R. Ossowski, and S. A. Barnett. 2003. *Fiscal and Macroeconomic Impact of Privatization*. International Monetary Fund.
- Debrun, X., and T. Kinda. 2016. “That Squeezing Feeling: The Interest Burden and Public Debt Stabilization.” *International Finance* 19 (2): 147-178.
- Dell’Ariccia, G., C. Ferreira, N. Jenkinson, L. Laeven, A. Martin, C. Minoiu, and A. Popov. 2018. “Managing the Sovereign-Bank Nexus.” Monetary and Capital Markets Department, Research Department, and European Central Bank 18/16. International Monetary Fund, Washington, DC.
- Diaz-Alejandro, C. 1985. ““Good-Bye Financial Repression, Hello Financial Crash.” *Journal of Development Economics* 19(1-2): 1-24.
- Dieppe, A. 2020. *Global Productivity: Trends, Drivers, and Policy Challenges*, Washington, DC: World Bank.
- Dooley, M. P., P. Garber and D. Folkerts Landau. 2004. “The Revived Bretton Woods System: The Effects of Periphery Intervention and Reserve Management on Interest Rates & Exchange Rates in Center Countries,” Working Paper 10332, National Bureau of Economic Research, Cambridge, MA.
- Eaton, J. and M. Gersovitz. 1981. “Debt with Potential Repudiation: Theoretical and Empirical Analysis,” *Review of Economic Studies* 48: 289–309.
- Eichengreen, B. and R. Hausmann. 1999. “Exchange Rate and Financial Fragility.” Working Paper 7418, National Bureau of Economic Research, Cambridge, MA.
- Eichengreen, B. and A. Mody. 2003. “Is Aggregation a Problem for Sovereign Debt Restructuring?” *American Economic Review* 93(2): 80-84
- Estrin, S. and A. Pelletier. 2018. “Privatization in Developing Countries: What Are the Lessons of Recent Experience?” *World Bank Research Observer* 33(1): 65–102,
- Forbes, N. 1987. “London Banks, the German Standstill Agreements, and Economic Appeasement’in the 1930s.” *Economic History Review* 40(4): 571-587.
- Fragoudaki, A. and D. Giokas. 2020. “Airport Efficiency in the Dawn of Privatization: The Case of Greece.” *Journal of Air Transport Management* 86: 1018-21.
- Fuest, C. 2021. “The NGEU Economic Recovery Fund.” CESifo Forum 22 (1): 03-08.
- Fukunaga, I., T. Komatsuzaki, and H. Matsuoka. 2021. “Inflation and Public Debt Reversals in Advanced Economies.” *Contemporary Economic Policy* forthcoming.

- Furman, J., and L. Summers. 2020. "A Reconsideration of Fiscal Policy in the Era of Low Rates," Peterson Institute for Economic Policy Discussion Draft, November.
- Giovannini, A., and M. De Melo. 1993. "Government Revenue from Financial Repression." *The American Economic Review* 83 (4): 953-63.
- Gordon, R. 2016. *The Rise and Fall of American Growth*. Princeton, Princeton University Press.
- 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): 1563-1587.
- Ha, J. and G. Kindberg-Hanlon. 2021. "Asset Purchases in Emerging Markets: Unconventional Policies, Unconventional Times." In World Bank. 2021. *Global Economic Prospects*. January. Washington, DC: World Bank.
- Ha, J., M. A. Kose, and F. Ohnsorge. 2019. *Inflation in Emerging and Developing Economies: Evolution, Drivers and Policies*. Washington, DC: World Bank.
- Hall, G. J., and T. J. Sargent. 2011. "Interest Rate Risk and Other Determinants of Post-WWII U.S. Government Debt/GDP Dynamics." *American Economic Journal: Macroeconomics* 3(3): 192-214.
- Hartwell, C.A. 2017. "If You're Going Through Hell, Keep Going: Nonlinear Effects of Financial Liberalization in Transition Economies." *Emerging Market Finance and Trade* 53 (2): 250- 75.
- Hermes, N., and A. Meesters. 2015. "Financial Liberalization, Financial Regulation and Bank Efficiency: A Multi-country Analysis." *Applied Economics* 47 (21): 2154-72.
- Hilscher, J., A. Raviv, and R. Reis. 2014. "Inflating Away the Public Debt? An Empirical Assessment," Working Paper 20339, National Bureau of Economic Research, Cambridge, MA.
- 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.
- Horn, S., C. M. Reinhart, and C. Trebesch. 2020. "China's Overseas Lending." NBER Working Paper 26050, National Bureau of Economic Research, Cambridge, MA.
- Huang, Y., M. Pagano, and U. Panizza. 2020. "Local Crowding-Out in China." *Journal of Finance* 75 (6): 2855-2898.
- Huidrom, R., M. A. Kose, J. J. Lim, and F. Ohnsorge. 2020. "Why Do Fiscal Multipliers Depend on Fiscal Positions?" *Journal of Monetary Economics* 114 (October): 109-125.
- International Monetary Fund (IMF). 2013. *Fiscal Monitor: Taxing Times*. October. Washington, DC: International Monetary Fund.
- International Monetary Fund (IMF). 2021a *Factsheet: Debt Relief Under the Heavily Indebted Poor Countries (HIPC) Initiative*. Washington, DC: International Monetary Fund.

- Jafarov, M.E., M. R. Maino, and M. Pani. 2019. “Financial Repression is Knocking at the Door, Again.” Working Paper 19/211, International Monetary Fund, Washington, DC.
- Jiang, Z., A. Krishnamurthy and H. Lustig, 2021. “Foreign Asset Demand and the Dollar Exchange Rate.” *Journal of Finance* 76:3.
- Kaminsky, G. L., and C. M. Reinhart. 1999. “The Twin Crises: The Causes of Banking and Balance-of-Payments Problems.” *American Economic Review* 89 (3): 473-500.
- Kaminsky, G. L., and P. Vega-García. 2016. “Systemic and Idiosyncratic Sovereign Debt Crises.” *Journal of the European Economic Association* 14 (1): 80–114.
- Kangave, J., S. Nakato, R. Waiswa, M. Nalukwago Isingoma and P. Lumala Zzimbe. 2020. “Taxing High Net Worth Individuals: A Case Study of the Uganda Revenue Authority’s Approach,” Prepared for Second World Bank Tax Conference: Taxing Personal Income and Wealth in Developing Countries, Washington, DC: World Bank.
- Katsoulakos, Y. and Likoyanni, E., 2002. Fiscal and other macroeconomic effects of privatization. Available at SSRN 363900.
- Kilic Celik, S., M. A. Kose, and F. Ohnsorge. 2020. “Subdued Potential Growth: Sources and Remedies.” In *Growth in a Time of Change: Global and Country Perspectives on a New Agenda*, edited by H.-W. Kim and Z. Qureshi. Washington, DC: Brookings Institution.
- Koh, W. C., M. A. Kose, P. S. Nagle, F. Ohnsorge, and N. Sugawara. 2020. “Debt and Financial Crises.” Policy Research Working Paper 9116. World Bank, Washington, DC.
- Kose, M. A, P. Nagle, F. Ohnsorge, and N. Sugawara. 2020. *Global Waves of Debt*. Washington, DC: World Bank.
- Kose, M. A, P. Nagle, F. Ohnsorge, and N. Sugawara. 2021. “How Has the Pandemic Made the Fourth Wave of Debt More Dangerous?”. *Global Economic Prospects*. January. World Bank. Washington, DC, 12-18.
- Kose, M. A., F. Ohnsorge, and N. Sugawara. 2020. “Benefits and Costs of Debt: The Dose Makes the Poison.” Policy Research Working Paper 9166, World Bank, Washington, DC.
- Kose, M. A., F. Ohnsorge, and N. Sugawara. 2021. “A Mountain of Debt: Navigating the Legacy of the Pandemic.” *Working Paper*, forthcoming.
- 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 F. Ohnsorge. 2020. *A Decade After the Global Recession*. Washington, DC: World Bank.
- Kotlikoff, L. 2019. “Social Security Just Ran a 9 Trillion Deficit, and Nobody Noticed.” *The Hill* blog, May 14.

- Kozlowski, Julian, Laura Veldkamp, and Venky Venkateswaran, 2020. “The Tail That Wags the Economy: Beliefs and Persistent Stagnation.” *Journal of Political Economy* 128 (8).
- Lane, P.R. 2021. “The Resilience of the Euro.” *Journal of Economic Perspectives* 35(2): 3-22.
- Rogoff, K. 2016. *The Curse of Cash*. Princeton: Princeton University Press.
- Kumar, M. A. and J. Woo. 2010. “Public Debt and Growth,” Working Paper 10/174, International Monetary Fund, Washington, DC.
- Landais, C., E. Saez, and G. Zucman. 2020. “A progressive European wealth tax to fund the European COVID response,” VOXEU, April 3.
- Lian, W., A. Presbitero, and U. Wiriadinata. 2020. “Public Debt and r-g At Risk.” Working Paper 20/137, International Monetary Fund, Washington, DC.
- Lo, S., and K. Rogoff. 2015. “Secular Stagnation, Debt Overhang and Other Rationales for Sluggish Growth, Six Years On.” BIS Working Paper 482, Bank for International Settlements, Basel.
- Maggiore, M., B. Neiman, and J. Schreger. 2020. “International Currencies and Capital Allocation.” *Journal of Political Economy* 128(6): 2019-2066.
- Mauro, P., and J. Zhou. 2020. “r-g<0: Can We Sleep More Soundly?” IMF Working Paper 20/52, International Monetary Fund, Washington, DC.
- Mbaye, S., M. Moreno-Badia, and K. Chae. 2018. “Global Debt Database: Methodology and Sources.” IMF Working Paper 18/111, International Monetary Fund, Washington, DC.
- Meggison, W.L. and J. M. Netter. 2001. “From State to Market: A Survey of Empirical Studies on Privatization.” *Journal of Economic Literature* 39(2): 321-389.
- 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.
- Meyer, J., C. M. Reinhart, and C. Trebesch. 2019. “Sovereign Bonds Since Waterloo.” Working Paper 25543, National Bureau of Economic Research, Cambridge, MA.
- Mian, Atif, Ludwig Straub and Amir Sufi, 2021. “A Goldilocks Theory of Fiscal Policy.” mimeo, Harvard University.
- Morgan, M. and P. Carvalho Junior. 2021. “Taxing Wealth: General Principles, International Perspectives and Lessons for Brazil.” *Brazilian Journal of Political Economy*, 41: 44-64.
- Mullin, J. 2021. “A Look Back at Financial Repression,” Economic Focus Economic History First Quarter: 22-25.
- Obstfeld, M. 2013. “On Keeping Your Powder Dry: Fiscal Foundations of Financial and Price Stability.” *Monetary and Economic Studies* 31: 25-37.
- OECD. 2018. *The Role and Design of Net Wealth Taxes in the OECD*. Paris: OECD.

- 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.
- Pempetzoglou, M. and Z. Patergiannaki. 2017. “Debt-Driven Water Privatization: The Case of Greece.” *European Journal of Multidisciplinary Studies* 2(5): 102-111.
- Qian, R., C. M. Reinhart, and K. Rogoff. 2011. “On Graduation from Default, Inflation, and Banking Crises: Elusive or Illusion?” In *NBER Macroeconomics Annual 2010, Volume 25*, edited by D. Acemoglu and M. Woodford. Chicago: University of Chicago Press.
- Reinhart, C. M. 2012. “The Return of Financial Repression.” *Financial Stability Review*, No. 16, Banque de France, Paris.
- Reinhart, C. M. 2021. “From Health Crisis to Financial Distress.” Policy Research Working Paper 9616, World Bank, Washington, DC.
- Reinhart, C. M. and K. S. Rogoff. 2009. *This Time Is Different: Eight Centuries of Financial Folly*. Princeton, NJ: Princeton University Press.
- Reinhart, C.M. and K. S. Rogoff. 2008. “This Time Is Different: A Panoramic View of Eight Centuries of Financial Crises,” Working Paper 13882, National Bureau of Economic Research, Cambridge, MA.
- Reinhart, C. M. and K. S. Rogoff. 2010. “Growth in a Time of Debt.” *American Economic Review* 100 (2): 573–578.
- Reinhart, C. M. and K. S. Rogoff. 2011a. “From Financial Crash to Debt Crisis.” *American Economic Review* 101(5): 1676-1706.
- Reinhart, C. M. and K. S. Rogoff. 2011b. “A Decade of Debt.” NBER Working Paper 16827, National Bureau of Economic Research, Cambridge, MA.
- Reinhart, C. M. and K. S. Rogoff. 2011c. “The Forgotten History of Domestic Debt.” *The Economic Journal* 121 (May): 319–350.
- Reinhart, C. M. and K. S. Rogoff. 2014a. “This Time is Different: A Panoramic View of Eight Centuries of Financial Crises.” *Annals of Economics and Finance* 15 (2): 215-268.
- Reinhart, C. M. and K. S. Rogoff. 2014b. “Financial and Sovereign Debt Crisis: Some Lessons Learned and Those Forgotten.” In *Financial Crises: Causes, Consequences, and Policy Responses*, edited by S. Claessens, M. A. Kose, L. Laeven, and F. Valencia, 141-155. Washington, DC: International Monetary Fund.
- Reinhart, C. M., and C. Trebesch. 2016. “Sovereign Debt Relief and its Aftermath.” *Journal of the European Economic Association* 14 (1): 215–251.
- Reinhart, C. M., and M. Sbrancia. 2015. “The Liquidation of Government Debt.” *Economic Policy* 30 (82): 291- 333.
- Reinhart, C. M., J. F. Kierkegaard, and M. B. Sbrancia. 2011. “Financial Repression Redux.” *Finance & Development* 48 (1): 23-27.

- Reinhart, C. M., K. Rogoff, and M. Savastano. 2003. "Debt Intolerance." *Brookings Papers on Economic Activity* 34 (1): 1-74.
- Reinhart, C. M., V. Reinhart, and K. Rogoff. 2012. "Public Debt Overhangs: Advanced-Economy Episodes Since 1800." *Journal of Economic Perspectives* 26 (3): 69-86.
- Reinhart, C. M., V. Reinhart, and K. Rogoff. 2015. "Dealing with Debt." *Journal of International Economics* 96 (S1): S43-S55.
- Ritschl, A. 2012. "Reparations, Deficits, and Debt Default: the Great Depression in Germany," CEPR Discussion Paper 1149, Center for Economic Policy Research, London.
- Rogoff, K. 2020. "Falling Real Interest Rates, Rising Debt: A Free Lunch?" *Journal of Policy Modeling* 42 (4): 778-790.
- Roubini, N., and X. Sala-i-Martin. 1992. "Financial Repression and Economic Growth." *Journal of Development Economics* 39 (1): 5-30.
- Sandleris, G. 2008. "Sovereign Defaults: Information, Investment and Credit." *Journal of International Economics* 76 (2): 267-275.
- Scheuer, F. and J. Slemrod. 2021. "Taxing Our Wealth." *Journal of Economic Perspectives* 35(1): 207-30.
- Schumacher, J., C. Trebesch, and H. Enderlein. 2021. "Sovereign Defaults in Court." *Journal of International Economics* 131: 1033-88.
- Rogoff, K. and J. Zettelmeyer. 2002. "Bankruptcy Procedures for Sovereigns: A History of Ideas, 1976–2001." *International Monetary Fund Staff Papers* 49 (3): 471–507.
- Schmelzing, P. 2020. "Eight Centuries of Global Real Interest Rates, RG, and the 'Suprasecular' Decline," Staff Working Paper 845, Bank of England, London.
- Sheshinski, E. and L. F. Lopez-Calva. 2003. "Privatization and Its Benefits: Theory and Evidence." *CESifo Economic Studies* 49(3): 429–459,
- Stock, J. 2021. "The Rate Debate: Rethinking Economics in the Age of Cheap Money," *Foreign Affairs* (March/April): 174-185.
- Straub, L. 2019. "Consumption, Savings and the Distribution of Permanent Income" mimeo, Harvard University, June.
- Sturzenegger, F., and J. Zettelmeyer. 2008. "Haircuts: Estimating Investor Losses in Sovereign Debt Restructurings, 1998–2005." *Journal of International Money and Finance* 27 (5): 780-805.
- Teeling, G. 2018. "Debt Data Transparency." Background paper for Intergovernmental Group of Experts on Financing for Development, 2nd Session, United Nations Conference on Trade and Development, Geneva, November 7–9, 2018. https://unctad.org/system/files/non-official-document/tdb_efd2c03_Teeling_en.pdf.

- Truman, E.M. 2002. “Debt Restructuring: Evolution or Revolution?” *Brookings Papers on Economic Activity* 2002(1): 341-346.
- Weidemaier, W. M. C., and A. Gelpern. 2014. “Injunctions in Sovereign Debt Litigation.” *Yale Journal on Regulation* 31 (1): 189-218.
- World Bank. 2019a. *Addressing Debt Vulnerabilities in IDA Countries: Options for IDA19*. Washington, DC: World Bank.
- World Bank. 2019b. *Moldova Country Economic Memorandum: Rekindling Economic Dynamism*. Washington, DC: World Bank.
- World Bank. 2020a. *Doing Business*. Washington, DC: World Bank.
- World Bank. 2020b. *EFI—Finance: Insolvency and Corporate Restructuring*. Washington, DC: World Bank.
- World Bank. 2021a. *Global Economic Prospects*. January. Washington, DC: World Bank.
- World Bank. 2021b. *COVID 19: Debt Service Suspension Initiative*. Washington, DC: World Bank.
- World Bank. 2021c. *How Insolvency and Creditor/Debtor Regimes Can Help Address Nonperforming Loans*. Washington, DC: World Bank.
- Yared, P. 2019. “Rising Government Debt: Causes and Solutions for a Decades-Old Trend.” *Journal of Economic Perspectives* 33 (2): 115–140.
- Zettelmeyer, J., C. Trebesch, and M. Gulati. 2013. “The Greek Debt Restructuring: An Autopsy.” *Economic Policy* 28 (75): 513–563.