

Public debt as a ratio to GDP soared across the world during COVID-19 and is expected to remain elevated, posing a growing challenge for policymakers, particularly as real interest rates are rising across the world. This chapter examines the effectiveness of different approaches to reducing debt-to-GDP ratios. Based on econometric analyses and complemented with a review of historical experiences, the chapter reaches three main conclusions. First, adequately timed (for example, during economic expansions) and appropriately designed (for example, more expenditure- than revenue-based in advanced economies) fiscal consolidations have a high probability of durably reducing debt ratios. The debt-reducing effects of fiscal adjustments are reinforced when accompanied by growth-enhancing structural reforms and strong institutional frameworks. At the same time, because these conditions and accompanying policies may not always be present, and partly because fiscal consolidation tends to slow GDP growth, consolidations on average have negligible effects on debt ratios. Factors such as transfers to state-owned enterprises, contingent liabilities, or exchange rate fluctuations can also offset debt reduction efforts. Second, when a country is in debt distress, a comprehensive approach that combines significant debt restructuring—renegotiation of terms of servicing of existing debt—fiscal consolidation, and policies to support economic growth can have a significant and long-lasting impact on reducing debt ratios. Coordination among creditors is essential. Finally, economic growth and inflation have historically contributed to reducing debt ratios.

Introduction

Public debt as a ratio to GDP (“debt ratios” henceforth) has soared across the world during COVID-19. In 2020, the global average of this

ratio approached 100 percent, and it is expected to remain above pre-pandemic levels for about half of the world (Figure 3.1). High public debt ratios are a significant concern for policymakers, particularly in light of tightening global financial conditions, weak economic growth prospects, and a stronger US dollar. The recent rise in sovereign debt holdings of domestic financial institutions, particularly in emerging markets, has further exacerbated the costs of high public debt, including by limiting the resources available for domestic institutions to lend to the private sector and by aggravating the risk of adverse sovereign-bank feedback loops (Chapter 2 of the April 2022 *Global Financial Stability Report*).

This chapter examines policy options for reducing debt ratios, including the effects of fiscal consolidation (increases in primary balances), growth, and inflation. While fiscal consolidation can serve several objectives, the chapter focuses on its impact on debt ratios. The chapter also draws on historical events of debt restructuring, which is typically a last-resort option, and analyzes the factors that made them effective in reducing debt. At the outset, it is important to keep in mind that debt restructuring is often not a policy choice by countries. It involves a complex process of negotiations between debtors and creditors, and it can entail significant economic costs, coordination challenges, and reputational risks.

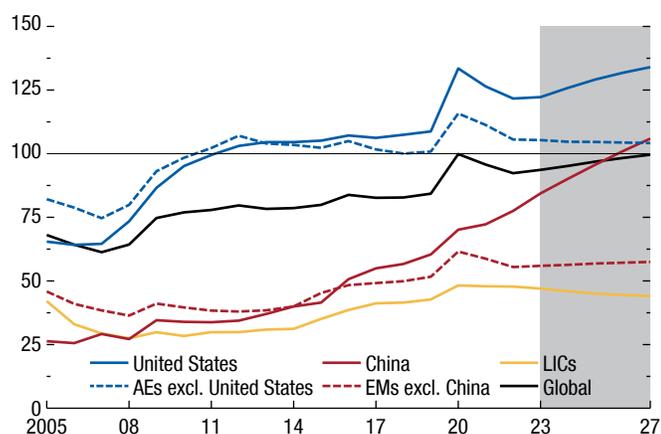
A vast literature studies the effects of fiscal consolidation on GDP, but far less work has been done on understanding the impact of fiscal policies on debt ratios, particularly in emerging market economies and low-income countries.¹ Since fiscal consolidation can be expected to reduce both debt and GDP, the net effect of fiscal policies on debt ratios is far from obvious. The empirical literature on the effects of restructuring on debt ratios is relatively limited, and the

The authors of this chapter are Sakai Ando, Tamon Asonuma, Alexandre Balduino Sollaci, Giovanni Ganelli, Prachi Mishra (co-lead), Nikhil Patel, Adrian Peralta Alva (co-lead), and Andrea Presbitero, with support from Carlos Angulo, Zhuo Chen, Sergio Garcia, and Youyou Huang. The authors thank Olivier Blanchard, Filippo Ferroni, Ivan Petrella, Juan Rubio-Ramirez, Alan Taylor, Jeromin Zettelmeyer, and IMF colleagues for helpful discussions.

¹See, for example, Chapter 3 of the October 2010 *World Economic Outlook*, Jordà and Taylor (2016), and Alesina, Favero, and Giavazzi (2019) for selected studies that examine the effects of fiscal consolidations on public debt in advanced economies. Balasundharam and others (2023) document that fiscal consolidation achieves its ex ante objectives (including improving primary balances in a durable manner and reducing debt) with a probability ranging between 21 and 65 percent.

Figure 3.1. Public Debt Trends
(Percent of GDP)

Public debt remains elevated.



Source: IMF staff calculations.

Note: Figure reports averages weighted by nominal GDP. Shaded area denotes forecast period. Sample comprises a balanced panel of 32 advanced economies, 45 emerging market economies, and 12 low-income countries. AEs = advanced economies; EMs = emerging market economies; LICs = low-income countries.

overall effects of debt restructuring and its interaction with fiscal policies have rarely been explored.²

Against this backdrop, the chapter attempts to answer the following questions:

- How have countries reduced public debt ratios in the past? What was the contribution of different factors, including growth and inflation?
- How effective are different policy approaches in durably reducing public debt ratios over a horizon of five years and beyond? What are the short- and medium-term (one to five years) effects of fiscal consolidation and debt restructuring on debt ratios, and how do fiscal consolidation and restructuring interact? Under which conditions are fiscal consolidation and debt restructuring more likely to durably reduce debt ratios?
- What does historical experience suggest for countries dealing with high debt today?

The chapter presents new evidence on these important issues using an up-to-date data set of fiscal aggregates and a comprehensive set of restructuring events for advanced economies and emerging market economies over the past two decades. Where information

²Asonuma and others (2021) estimate that GDP declines by 1–5 percent relative to the precrisis trend following external private debt restructurings.

is available, low-income countries are also included in the analysis. The chapter also uses updated data on historical episodes of fiscal consolidation during 1978–2019 that identify fiscal policy actions aimed at reducing deficits.³

The main findings of the chapter are as follows:

- First, adequately timed and appropriately designed fiscal consolidations have a high probability of durably reducing debt ratios. The average size of primary balance consolidations that reduced debt ratios in the past is about 0.4 percentage point of GDP, lowering the average debt ratio by 0.7 percentage point in the first year and up to 2.1 percentage points after five years. About half of the observed decreases in debt ratios are driven by suitably tailored consolidations.
- The effectiveness of fiscal consolidation in reducing public debt ratios is influenced by various factors. The probability of success in reducing debt ratios improves from the baseline (average) of about 50 percent to more than 75 percent when (1) there is a domestic or global expansion and global risk aversion and financial volatility are low, (2) the scope for “crowding out” effects is high (cases with initial high public debt and low private credit such that the benefits of reducing public debt can outweigh its costs), and (3) the consolidation is driven more by expenditure reductions than by revenue increases (in advanced economies).
- At the same time, because such conditions may not always hold, and partly because fiscal consolidation tends to slow GDP growth, the average fiscal consolidation has a negligible effect on debt ratios. Unanticipated transfers to state-owned enterprises (SOEs) and other contingent liabilities that get realized on government balance sheets, as well as unexpected exchange rate depreciations, which can increase the domestic value of foreign-exchange-denominated debt, can further offset debt reduction efforts.
- Debt restructuring is typically used as a last resort when other efforts to reduce debt have failed and requires careful consideration of risks and potential consequences. However, in emerging market economies and low-income countries, where most restructurings occur, restructuring can significantly reduce debt ratios by an average of 3.4 percentage

³See Carrière-Swallow, David, and Leigh (2021) and Guajardo, Leigh, and Pescatori (2014) for earlier versions of the data set on episodes of consolidation.

points in the first year and 8 percentage points after five years.

- Restructurings have historically had larger effects on debt ratios, especially in the short term, when they were (1) executed through face value reduction and (2) part of coordinated and large-scale initiatives for debt reductions (for example, the Heavily Indebted Poor Countries [HIPC] Initiative and Multilateral Debt Relief Initiative [MDRI]).⁴
- Case studies highlight that, in practice, debt restructuring is always a very complex process that involves burden sharing among residents, domestic creditors, and foreign creditors. Restructuring can also have reputational costs, affect interest rates and future market access, and have internal distributional consequences. Therefore, debt restructurings are typically used as part of a broader policy package—often as a last resort after other efforts have failed and there is some urgency to reduce debt (or to provide clear signals that a reduction will come). It is by no means a free lunch for countries undergoing this process.
- Economic growth and inflation play an important role in reducing debt ratios. Growth reduces debt ratios not only through its effects on nominal GDP, but also because countries on average consolidate (run higher primary balances) during good times.
- In terms of policy lessons, countries aiming for a moderate and gradual reduction in debt ratios should implement well-designed fiscal consolidations, particularly when economies are growing faster and when external conditions are favorable. The debt reduction effects of fiscal adjustments are often reinforced when accompanied by growth-enhancing structural reforms and strong institutional frameworks.
- For countries aiming for more substantial or more rapid debt reduction, bold policy actions that do not preclude debt restructuring may be necessary. Fiscal consolidation may still be necessary to regain market confidence and recover macroeconomic stability. Regardless of the type of restructuring, lower debt

⁴The HIPC and MDRI programs were initiated by official creditors to help reduce the debt of poor countries through a coordinated set of negotiations involving public debt. To participate, countries must meet certain criteria, commit to poverty reduction through policy changes, and demonstrate a good track record over time. Chuku and others (2023) compare debt vulnerabilities in low-income countries today versus on the eve of the HIPC Initiative and examine challenges to a similarly designed debt relief framework.

- ratios are achieved when restructuring is deep enough and is implemented together with comprehensive policy packages including IMF-supported programs.
- To ensure success of restructuring in reducing debt ratios, mechanisms promoting coordination and confidence among creditors and debtors are necessary. Improving the Group of Twenty (G20) Common Framework with greater predictability, earlier engagement, a payment standstill, and further clarification on comparability of treatment can help.⁵ Most importantly, prioritizing debt management and transparency in advance can reduce the need for restructuring and help manage debt distress, which would be in the interest both of debtor countries and of their creditors.
- Although high inflation can reduce debt ratios, the chapter's findings do not suggest that it is a desirable policy tool. High inflation can lead to losses on the balance sheets of sovereign debt holders such as banks and other financial institutions and, more crucially, damage the credibility of institutions such as central banks.
- Ultimately, reducing debt ratios in a durable manner depends on strong institutional frameworks, which prevent “below the line” operations that undermine debt reduction efforts and ensure that countries indeed build buffers and reduce debt during good times.⁶ In the end, countries' choices will depend on a complex set of factors, including domestic and external conditions, as well as on the fact that not all alternatives may always be available.

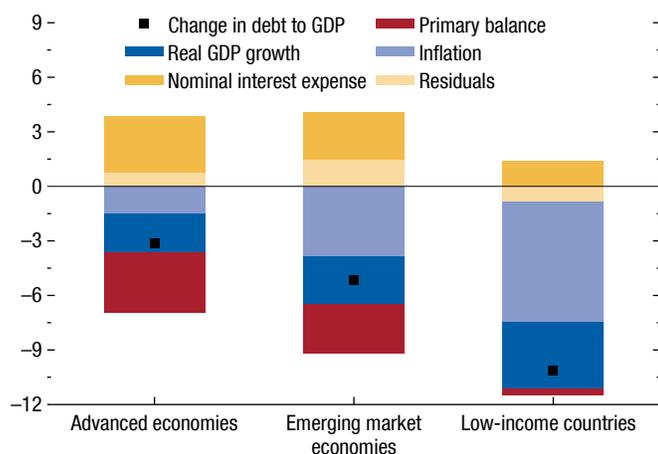
The remainder of the chapter is organized as follows. The first section documents stylized facts on debt reduction episodes and then evaluates the roles of fiscal consolidation, growth, and inflation. The second section looks into debt restructuring and analyzes its effectiveness in reducing debt ratios. The third section exploits the unique vantage point of the IMF and considers case studies of countries that succeeded (or did not succeed) in reducing debt. The chapter concludes by drawing lessons for countries aiming to reduce debt ratios in the current environment.

⁵For details on the G20 Common Framework, see https://clubdeparis.org/sites/default/files/annex_common_framework_for_debt_treatments_beyond_the_dssi.pdf.

⁶According to the *Government Finance Statistics Manual 2014*, below-the-line operations are defined as transactions in financial assets and liabilities, also referred to as financing transactions (IMF 2014).

Figure 3.2. Contribution to Change in Debt to GDP during Reduction Episodes
(Percent)

Primary balance is more important in advanced economies, but growth and inflation play a bigger role in emerging market economies and low-income countries.



Sources: IMF, Global Debt Database; Mauro and others (2013); and IMF staff calculations.

Note: Contribution of real exchange rate to debt to GDP is reflected in the residual because the share of foreign-currency-denominated debt is not available for all countries. Sample covers 28 advanced economies from 1979 to 2021, 83 emerging market economies from 1991 to 2021, and 55 low-income countries from 1985 to 2021.

Macroeconomic Drivers of the Debt-to-GDP Ratio

This section uses a standard debt decomposition technique to quantify the contributions of real GDP growth, nominal interest expenses, the primary balance, and inflation to debt reduction episodes.

Primary Surplus, Growth, and Inflation Are Important Drivers of Debt Reductions

On average, a debt ratio reduction episode lasts five years.⁷ The magnitude of the decline in the debt ratio is, on average, 3, 5, and 10 percentage points a year in

⁷The reduction episodes are identified in two steps. The first step involves identifying turning points in the time series for each country based on the business cycle dating methodology of Harding and Pagan (2002). A minimum of two years between successive peaks and troughs and a minimum length of four years for a complete cycle are imposed. This step decomposes the entire time series into nonoverlapping periods of surges and reductions. Second, stable periods with minimum length of three years are identified within these episodes if the cumulative change in the debt-to-GDP ratio is either less than 5 percentage points in levels or less than 10 percentage points of the country-specific standard deviation.

advanced economies, emerging market economies, and low-income countries, respectively (black squares in Figure 3.2).

The main insights from the decompositions are threefold (Figure 3.2). First, primary balance surpluses (red bars) followed by real GDP growth (dark blue bars) are the most important drivers of debt ratio reductions in advanced economies. Second, nominal interest expense (dark yellow bars) always contributes positively to the change in debt ratios. Third, real GDP growth and, notably, inflation (dark and light blue bars, respectively) play a relatively bigger role in reducing debt ratios in emerging market economies and low-income countries.⁸

In theory, high inflation can influence debt ratios through at least two channels: (1) higher nominal GDP and (2) higher nominal interest rates. The second mechanism, in turn, depends on whether inflation is anticipated or comes as a surprise. In principle, higher expected inflation (evaluated at the point when debt is issued) can translate into higher nominal interest expenses and can cancel out the favorable effect of inflation on the debt ratio. Unanticipated inflation jumps, on the other hand, affect debt ratios only through the channel of higher nominal GDP. The April 2023 *Fiscal Monitor* establishes that positive inflation surprises significantly reduce debt ratios.

The standard debt decomposition, however, cannot separate inflation into its expected and unexpected components, both of which are likely at play. A relevant question to ask is: Could expected inflation, in practice, also be associated with lower debt ratios, as suggested by the light blue bars in Figure 3.2? Two pieces of evidence may be consistent with such a mechanism. First, on average, nominal effective interest rates (defined as nominal interest expense divided by the stock of the previous year's debt) in emerging market economies and low-income countries remain low relative to inflation (Table 3.1). This may be attributed to the preponderance of concessional borrowing in low-income countries or to financial repression in emerging market economies. Moreover,

⁸Canada, Iceland, New Zealand, and Norway are examples of countries with large primary surpluses. See Box 3.1 on the role of growth-friendly market reforms and Box 3.2 on the role of interest rates in the context of fiscal and monetary interactions. While Figure 3.2 focuses on debt reduction episodes, high inflation could also lead to higher debt, including through unexpected devaluations.

inflation surprises, including some hyperinflationary periods, may have occurred frequently in these samples. Second, the evidence presented in Box 3.2 demonstrates that higher expected inflation and higher policy and market rates feed rather slowly into effective interest costs of debt, likely because of high average maturity of sovereign debt (seven years). A caveat to note is that the relationship between inflation and debt could be more complex and is extensively discussed in the April 2023 *Fiscal Monitor*. For example, high inflation could affect tax revenues and primary balances, lead to misallocation of resources and increased uncertainty, and in turn affect debt ratios through additional channels.

The subsections that follow will dig deeper into the effects of growth and fiscal consolidation shocks on debt ratios and also track the evolution of inflation and its implications for debt.

Role of Fiscal Consolidation, Growth, and Inflation

This subsection seeks to answer three questions. First, how important is growth in reducing debt ratios, and how does inflation behave during debt reductions? Second, what are the characteristics of fiscal consolidations that durably reduce debt ratios? Third, under what conditions is it more likely that fiscal consolidation translates into lower debt ratios? While the chapter focuses on the ex post effects of fiscal consolidation on public debt ratios, fiscal adjustments may not be intended to reduce debt and could happen for different reasons, for example, in response to shocks such as tightening financing conditions, to offset spending in public sector entities, or to combat inflation.

The analysis uses annual data on fiscal and macroeconomic aggregates for a sample of 33 emerging market economies starting in 1990 and 21 advanced economies starting in 1980. An updated version of the narrative fiscal consolidations data developed by Devries and others (2011) and Carrière-Swallow, David, and Leigh (2021) is also used in the analysis.

The Average Consolidation: Does It Reduce the Debt-to-GDP Ratio?

A stylized fact is that simultaneous consolidations and debt ratio reductions are infrequent: Only 52 percent of increases in primary balance are accompanied by a decrease in debt ratios. This aligns with analysis by Balasundharam and others (2023) documenting

Table 3.1. Average Nominal Effective Interest Rate and Inflation during Reduction Episodes

	Nominal Effective Interest Rate	Inflation
Advanced Economies	5.6	3.0
Emerging Market Economies	5.2	9.0
Low-Income Countries	2.6	10.0

Sources: IMF, Global Debt Database; Mauro and others (2013); and IMF staff calculations.

Note: Sample covers 28 advanced economies from 1979 to 2021, 83 emerging market economies from 1991 to 2021, and 55 low-income countries from 1985 to 2021.

that only about half of fiscal consolidations achieve their fiscal targets, including debt reduction.

A broad range of econometric methods, based on well-established methods in the empirical literature, confirm that fiscal consolidations do not reduce debt ratios, on average.⁹ These methods draw from a large literature to account for biases that arise when both consolidations and debt are driven by other factors, including the macroeconomic environment. For example, the aforementioned “narrative shocks” are used to select cases in which governments implemented tax hikes or spending cuts with the explicit intention of reducing the public deficit and putting public finances on a more sustainable footing, irrespective of current and prospective macroeconomic conditions. Results suggest that, on average, consolidations do not lead to a statistically significant effect on the debt ratio. An alternative approach employs an augmented inverse-probability-weighted (AIPW) estimator (Jordà and Taylor 2016) to account for the fact that consolidations do not happen randomly. This estimator first predicts the probability of experiencing a narrative shock, using indicators such as GDP growth and debt levels. It then estimates the impact of narrative shocks on the debt ratio using local-projection methods, while reweighting observations using the predicted probabilities. As shown in Figure 3.3, those adjustments do not change the finding that the average narrative fiscal consolidation does not have a statistically significant impact on the debt ratio.

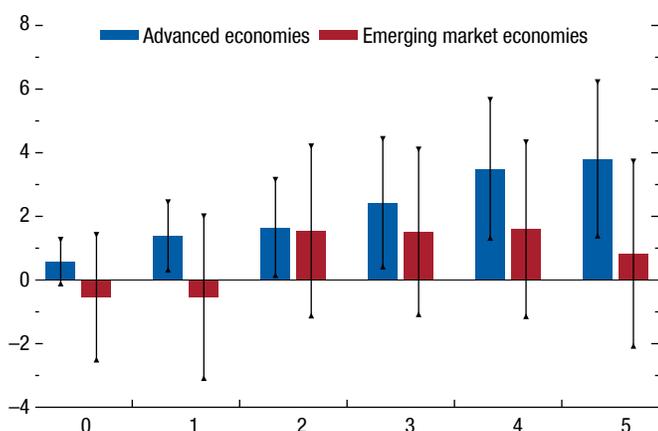
What Conditions Improve the Chances of Consolidation Reducing the Debt-to-GDP Ratio?

Next, the analysis turns to the relevant question: Under which conditions are fiscal consolidations more likely to reduce debt ratios? A structural

⁹For details, see Jordà and Taylor (2016) and Carrière-Swallow, David, and Leigh (2021).

Figure 3.3. Effect of Fiscal Consolidation on Debt to GDP
(Percentage points)

On average, fiscal consolidations do not reduce debt-to-GDP ratios.



Sources: IMF, Global Debt Database; IMF, Historical Public Debt Database; and IMF staff calculations.

Note: Figure shows the average treatment effect of fiscal consolidation on debt to GDP using augmented inverse probability weighted estimation. Vertical lines represent the 90 percent confidence interval. X-axis denotes the number of years from fiscal consolidation. Sample consists of 17 advanced economies from 1978 to 2020 and 14 emerging market economies from 1989 to 2020 with narrative consolidation shocks.

vector autoregression (SVAR) model that considers jointly the well-known drivers of debt ratios, namely, real GDP growth, interest rates, inflation, government revenues, and primary balance, is applied to answer this question. The model uses a sign-restriction-based identification, following the method of Mountford and Uhlig (2009). Consistent with the previous analysis, the SVAR approach also suggests that consolidations do not reduce debt ratios, on average (Online Annex 3.3).¹⁰ The result is robust to estimation through narrative sign restrictions based on the narrative data discussed earlier (as in Antolín-Díaz and Rubio-Ramírez 2018). The flexibility of the SVAR can be used to study the features of consolidations that reduce debt ratios. To do so, the primary balance shock (defined as a change in the primary-balance-to-GDP ratio outside of a business cycle) is split into two different (orthogonal) components: a *successful* shock, after which the debt ratio declines, and one that is *unsuccessful*, after which the debt ratio rises in

¹⁰All online annexes are available at www.imf.org/en/Publications/WEO.

Table 3.2. Structural Vector Autoregression Sign Restrictions

	GDP	Real Revenue	Primary Balance to GDP	Debt to GDP	Interest Rate	Inflation
Demand Shock	+	+				+
Supply Shock	+	+				-
Successful Primary Balance Shock			+	-		
Unsuccessful Primary Balance Shock			+	+		

Source: IMF staff calculations.

Note: Sign restrictions on debt to GDP and GDP growth for consolidation shocks are imposed one period ahead. All other sign restrictions are imposed on impact only.

response to a positive shock or an improvement in the primary-balance-to-GDP ratio (Table 3.2). Note that the method puts restrictions on the sign of the comovement between the variables and does not impose any other constraint, say, on the magnitude of the responses.

The historical decomposition from the SVAR is used to derive the contributions of growth and changes in the primary balance to changes in the debt ratio and highlights two important patterns (Table 3.3). First, higher GDP growth (as captured by positive demand and supply shocks together) is an important force driving debt ratios and explains about one-third of the observed reductions. This is because of the effect on nominal GDP, but importantly also because countries, on average, run primary deficits in bad times and primary surpluses during good times. Indeed, market reforms, complemented with improvements in fiscal frameworks, can increase growth and reduce debt ratios durably and significantly (Box 3.1).¹¹

Second, about 40 percent of the observed debt ratio reductions in both advanced and emerging market economies are explained by primary balance shocks, with a relatively even split between successful and unsuccessful primary balance shocks (Table 3.3). Note that unsuccessful primary balance shocks—identified by a positive *comovement* of primary balance and debt ratio on impact—can also lead to debt reductions. These shocks encompass improvements in the primary balance that result in increasing debt ratios, but they also include symmetric cases in which a worsening of

¹¹The contributions of each shock to the unexpected reductions in the debt-to-GDP ratio are based on a country-by-country historical decomposition from the SVAR. This is akin to a structural debt decomposition.

Table 3.3. Historical Decomposition of Debt Reduction (Percent)

Median Contribution during Debt Reductions	AEs	EMs
Demand Shock	19	12
Supply Shock	21	13
Successful Primary Balance Shock	19	21
Unsuccessful Primary Balance Shock	16	22

Source: IMF staff calculations.

Note: AEs = advanced economies; EMs = emerging market economies.

the primary balance (for example, fiscal expansion) results in debt reductions, partly owing to positive GDP effects.

The question to be considered now is under which conditions primary balance consolidations turn into debt ratio reductions and what the characteristics of such consolidations are.

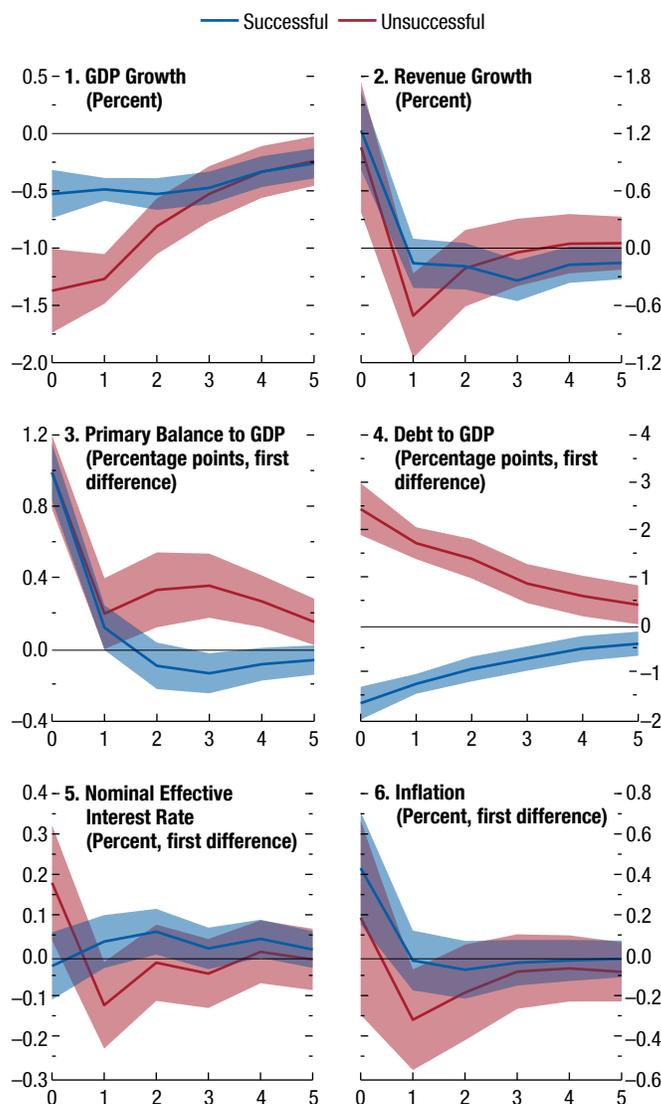
Characteristics of Consolidations That Drive the Debt-to-GDP Ratio

Two characteristics distinguish consolidations that lead to a reduction in debt ratios (successful) versus those that do not (unsuccessful) (Figure 3.4). First, the decline in growth is smaller (0.5 percent reduction on impact) in consolidations that reduce debt ratios compared with those that do not (1.3 percent reduction). As expected, successful consolidations reduce debt ratios because the negative effects on output are mitigated. At the same time, it is important to note that movements in GDP alone are not the most important factor determining the difference between successful and unsuccessful consolidations. This point is evident in a comparison of the response of GDP and the debt-to-GDP ratio (Figure 3.4, panels 1 and 4). In successful cases (blue lines), GDP falls, and the debt-to-GDP ratio also *falls*; in unsuccessful cases (red lines), GDP falls, but the debt-to-GDP ratio increases twice as much as the fall in GDP. That is, the difference between successful and unsuccessful consolidations is driven primarily by movements in debt.

Second, the response of inflation to the consolidation shock is positive (Figure 3.4, panel 6). Several factors could contribute to this positive impact on inflation. For instance, the typical consolidation entails a revenue (tax increase) component that could push prices up. Moreover, any exchange rate depreciation concomitant with the consolidation could also increase

Figure 3.4. Impulse Responses to a 1 Percentage Point of GDP Primary Balance Shock, Advanced Economies

Successful consolidations entail lower GDP losses and higher inflation.



Sources: Canova and Ferroni (2022); IMF, Global Debt Database; IMF, Historical Public Debt Database; and IMF staff calculations.

Note: Primary balance shock is scaled to 1 percentage point of GDP on impact on average. Displayed impulse responses are inverse variance weighted means across countries from a Bayesian vector autoregression estimated country by country with two lags at annual frequency. Shaded areas represent the 16th–84th percentile range of the posterior distribution. X-axis denotes horizon in years. Sample consists of 21 advanced economies from 1981 to 2019.

import prices and contribute to inflation.¹² The differential response of effective interest rates on impact in successful versus unsuccessful consolidations (Figure 3.4, panel 5) suggests that monetary policy remains more accommodative on impact and hence allows higher inflation in the case of successful consolidations. For successful consolidations, however, the impact on nominal effective interest rates is statistically indistinguishable from zero. Thus, the inflation hike contributes mainly to an increase in nominal GDP and results in a decline in the debt ratio. Debt decomposition identities (reported in Online Annex 3.2) suggest that inflation contributes significantly—about half a percentage point—to the reduction in the debt ratio for successful fiscal consolidations.

Furthermore, in advanced economies, successful consolidations tend to be balanced between spending cuts and tax or revenue increases, whereas those that are unsuccessful are biased toward revenue and involve fewer spending cuts (Online Annex 3.3). This pattern is not found in emerging market economies, consistent with studies that find tax increases hurt growth and debt ratios more than equivalent spending cuts in advanced economies but not necessarily in emerging market economies (see, for instance, Guajardo, Leigh, and Pescatori 2014; Carrière-Swallow, David, and Leigh 2021; and Alesina, Favero, and Giavazzi 2019). Indeed, for low-income countries, where the tax-revenue-to-GDP ratio is particularly low, revenue-mobilizing consolidations may be more desirable (October 2022 *Regional Economic Outlook: Sub-Saharan Africa*).¹³

Successful consolidations, in fact, durably reduce debt ratios, even beyond a five-year horizon, as illustrated in Online Annex 3.3. The average consolidation shock in the data implies a sustained improvement

in the primary balance, mostly on impact, of 0.4 percentage point of GDP. It reduces debt ratios persistently, starting with 0.7 percentage point by the first year and stabilizing at a 2.1 percentage point reduction by year five and beyond.

Fiscal consolidation may also fail to reduce debt ratios if countries conduct below-the-line operations that can offset the impact of fiscal consolidation on debt. Examples include transfers to state-owned enterprises in Mexico (2016), clearance of arrears in Greece (2016), and contingent liabilities in Italy (2013).¹⁴

The historical decompositions from the SVAR are further used to isolate periods of successful consolidations and identify the conditions that improve the probability that fiscal consolidation will translate into a lower debt ratio (Figure 3.5). Consolidations are more likely to reduce debt ratios during good times (for example, domestic and global booms, as well as periods of less financial tightening and less volatility and uncertainty captured by the Chicago Board Options Exchange Volatility Index [VIX]) and when the initial public-debt-to-GDP ratio is high and the initial private-credit-to-GDP ratio is low. Note that, in theory, the direction of the effect of initial debt levels on the likelihood of successful consolidations could go either way. When initial debt is high, the direct effect of fiscal consolidation (or the numerator) on the value of debt is small; at the same time, consolidations hurt output (or the denominator) less when initial debt is high, likely because of greater crowding out of investment (Ilzetzki, Mendoza, and Vegh 2013; Kirchner, Cimadomo, and Hauptmeier 2010). The results reported in Figure 3.5 suggest that the latter effect dominates. (See Online Annex 3.3 for a mathematical illustration of these points.) The magnitudes of the estimates suggest that consolidations undertaken during domestic and global booms and when financial volatility is low can increase the probability of durably reducing debt ratios from the baseline of close to 50 percent to about 75 percent and even more if, in addition, crowding-out effects are high.¹⁵

¹²Consolidations may boost the economic outlook and investor sentiment, leading to an appreciation of exchange rates, but evidence for such effects is weak (Beetsma and others 2015). The exchange rate implications are vital for low-income countries where foreign-currency-denominated debt forms a significant share of public debt. Exchange rate depreciation has been a major contributor to the increase in debt ratios in sub-Saharan Africa (April 2023 *Regional Economic Outlook: Sub-Saharan Africa*). In addition, Chapter 3 of the October 2010 *World Economic Outlook* finds that policy interest rate cuts can support output during fiscal consolidations, which would also be consistent with a positive inflation response, but the analysis in this chapter does not identify a substantial response of effective interest rates to fiscal consolidations.

¹³Peralta Alva and others (2018) study the welfare implications of fiscal consolidation in low-income countries and compare the trade-off between efficiency and distributional effects for different tax schemes.

¹⁴See IMF (2016), IMF (2017) and IMF (2013), respectively. The phenomenon is not limited to advanced and emerging market economies. The contribution of such below-the-line operations to rising debt ratios has been persistently high in recent times in sub-Saharan Africa (April 2023 *Regional Economic Outlook: Sub-Saharan Africa*).

¹⁵The numbers are computed by adding the coefficients from a multivariate standardized logit regression plotted in Figure 3.5. For instance, when global and domestic output gaps are one standard deviation above mean and the VIX is one standard deviation below, the probability increases from a baseline of 51 to 75 percent

Debt Restructuring and Its Effects

While fiscal consolidation, growth, and inflation can help reduce debt ratios, they may not be sufficient for countries facing disruptive levels of debt. In such cases, debt restructuring may be necessary. Debt restructuring is often not a policy choice and is used as a last resort after other efforts have failed and there is an urgent need to reduce debt or provide clear signals of a reduction. It is a complex process involving negotiations between debtors and creditors and can come with large costs, reputational risks, and negative impacts on the economy overall.¹⁶ In addition, it can adversely affect creditors, reduce their ability to provide concessional financing, and lead to spillovers in global markets. This section first defines key concepts related to debt restructuring and documents stylized facts. Next it addresses the question: How effective have past restructuring events been in reducing debt and under what conditions?

Definition and Characteristics of Restructuring

Public debt restructuring is broadly defined as a “debt distress” event in which the terms of contractual payments of some outstanding government instruments are renegotiated, typically with a net present value loss for the creditor.¹⁷

Restructurings can differ along at least three dimensions. First, the types of creditors can be official or private. Official creditors include Paris Club countries, non-Paris Club G20 creditors (for example, China, India, and South Africa), and other official creditors.¹⁸ Private creditors can be external or domestic residents. Second, the timing of restructuring can be preemptive (that is, before any payments are missed) or after default.

($=51+6.1+9.1+9.9$), based on the numbers above and below the blue bars in Figure 3.5.

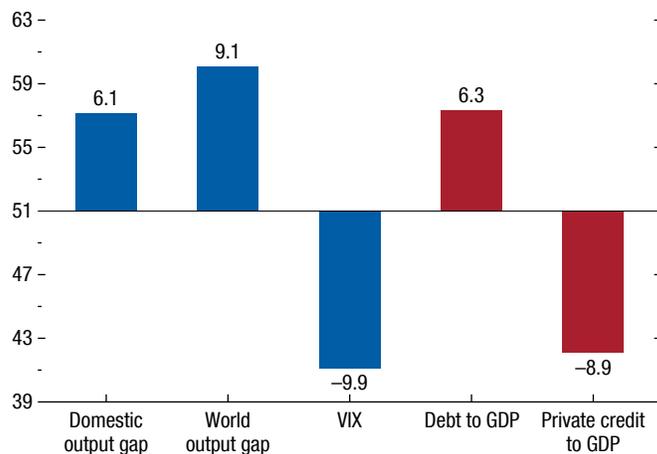
¹⁶Preemptive restructurings can be associated with smaller costs and relatively muted impact on the overall economy compared with postdefault restructurings (Asonuma and Trebesch 2016; Asonuma and others 2021), though historically preemptive restructurings have also been less deep.

¹⁷An external debt restructuring refers to a formal renegotiation process of outstanding debt instruments issued under foreign jurisdiction and held by external creditors, which may involve a net present value loss for creditors (Asonuma and Papaioannou, forthcoming; Das, Papaioannou, and Trebesch 2012). A domestic sovereign debt restructuring has a similar definition, but the debt instruments are issued under domestic jurisdiction and held mainly by domestic creditors. There are also legal considerations unique to domestic debt restructuring (IMF 2021).

¹⁸Note that information on debt restructurings by non-Paris Club creditors is available only for China.

Figure 3.5. Factors Affecting the Probability of Consolidations Reducing Debt Ratios
(Percent change)

Economic expansions, favorable financial conditions, and high crowding-out effects boost the probability of consolidations reducing debt ratios.



Sources: Canova and Ferroni (2022); IMF, Global Debt Database; IMF, Historical Public Debt Database; and IMF staff calculations.

Note: Figure shows estimates of a multivariate standardized logit regression with the dependent variable being a dummy equal to 1 for a successful consolidation (in which debt to GDP declines and the successful shock from the vector autoregression contributes at least 10 percent to the decline) and equal to 0 for an unsuccessful consolidation (for example, if debt to GDP increases and the unsuccessful consolidation shock from the vector autoregression contributes at least 10 percent to the increase). The baseline of 51 percent on the y-axis represents the unconditional success probability using this definition. All coefficients are significant at the 10 percent level based on bootstrap standard errors. World output gap variable is orthogonalized with respect to domestic output gap to recover the exogenous component. Sample consists of 21 advanced economies from 1981 to 2019 and 37 emerging market economies from 1994 to 2019. VIX = Chicago Board Options Exchange Volatility Index.

Third, the implementation of debt restructuring can take different forms. For example, restructuring can take place through a reduction in the face value of debt (which reduces the debt stock immediately) or through cash flow relief with no face value reduction (for example, an extension of maturity or a reduction in coupon payments). Cash flow relief with no face value reduction reduces the present value of debt through changes in the schedule of payments.

Following the introduction of key concepts, the next subsection presents a summary of essential stylized facts pertaining to debt restructuring.

Drawing from a compilation of databases, 709 restructuring events were reported from 1950 to 2021, across 115 countries. Almost all events were in emerging market economies and low-income countries. Debt restructurings often involve cash flow relief with no face value reduction, tend to happen preemptively (rather than postdefault),

Table 3.4. Summary Statistics of Restructuring (Percent)

		Emerging Market Economies	Low-Income Countries
Treatment	Cash flow relief without face value reduction	85.8	73.5
	Face value reduction	14.2	26.5
Timing	Preemptive	58.4	54.3
	Postdefault	21.6	31.1
	Both + unidentified	20.0	14.6
Creditor Type	Paris Club	48.1	73.5
	China	8.4	5.6
	Private external	24.8	10.1
	Private domestic	6.8	4.5
	Joint	11.9	6.3

Sources: Asonuma, Niepelt, and Ranciere (2023); Asonuma and Trebesch (2016); Asonuma and Wright (2022); Cheng, Diaz-Cassou, and Erce (2018); Cruces and Trebesch (2013); Horn, Reinhart, and Trebesch (2022); IMF (2021); and IMF staff calculations.

Note: Data are based on the number of restructuring events, which can last for several years. The sample includes 310 restructuring events in emerging market economies and 396 in low-income countries from 1950 to 2021.

and most frequently involve official creditors, especially in low-income countries (Table 3.4). Restructurings with domestic creditors are rare and may reflect intentions to avoid risks in the domestic financial sector; these are also less likely to involve face value reduction, and even when they do, the reduction tends to be shallower compared with restructurings with external creditors (see, for example, the cases of Cyprus and Jamaica in “Going Granular: Case Studies of Debt Restructuring”).¹⁹

Fiscal consolidations, measured by an increase in the primary-balance-to-GDP ratio, are commonly implemented prior to debt restructuring. Figure 3.6 shows that, in the sample with available data on primary balances, 60 percent of debt restructuring events are preceded by an increase in the primary-balance-to-GDP ratio, indicating that countries often undertake fiscal measures before resorting to debt restructuring.

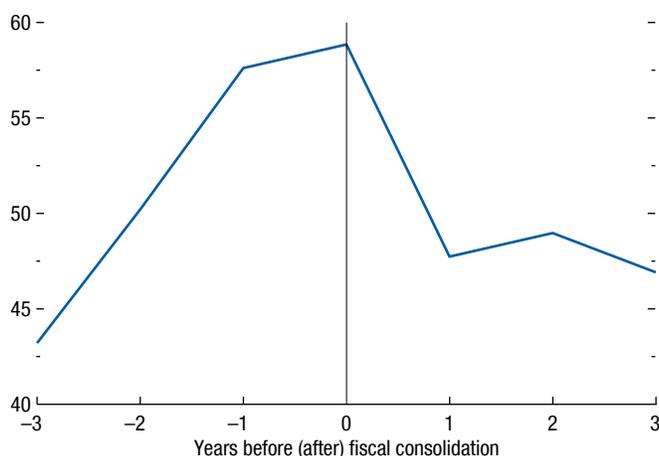
Debt-to-GDP Ratio Reduction Is Large during Restructuring

To give a sense of the magnitude of the role restructuring plays in the reduction of debt ratios, Figure 3.7 distinguishes between reduction episodes that involve

¹⁹In each country, a year is counted as a restructuring event if restructuring starts in that year. Restructurings could involve multiple creditors, in which case the count of events is still 1 if they happen in the same year. A restructuring event can last multiple years. Details on the sources on the episodes of restructurings are in Online Annex 3.6. See IMF (2021) for further discussion on restructuring of domestic debt.

Figure 3.6. Share of Observations with Positive Change in Primary Balance to GDP (Percent)

Consolidation tends to precede a resort to restructuring.



Sources: Asonuma and Trebesch (2016); Asonuma and Wright (2022); Horn, Reinhart, and Trebesch (2022); IMF (2021); and IMF staff calculations.

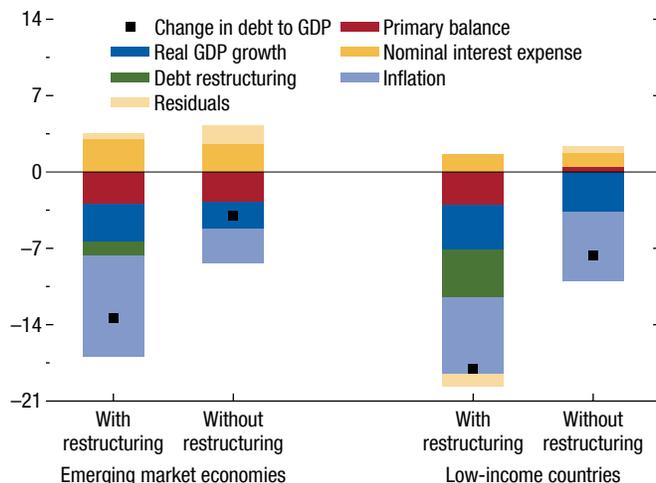
restructuring and those that do not. Not surprisingly, the decline in debt ratios during restructuring events is larger, 13 percentage points in emerging market economies and 18 percentage points in low-income countries, as shown by the black squares in Figure 3.7. Without restructuring, the average reduction is about 4 percentage points and 8 percentage points, respectively. Inflation plays an even larger role in debt reduction episodes with restructurings. This may reflect that restructuring often coincides with economic crises and is accompanied by capital outflows, exchange rate depreciations, and higher inflation.

High Chances of Restructuring

An important question to ask in the current environment is: How likely will debt restructuring be in the future? One way to gauge chances of future restructuring is to look at the past and note that restructurings have followed surges in debt ratios. In fact, waves of restructurings followed debt ratio surges in both the 1980s and early 2000s (Figure 3.8). The share of countries with surging debt ratios has also been on the rise since the global financial crisis. This may suggest that, if history repeats itself, there could be a good chance of more restructurings in the near future. So far—possibly because of low interest rates and ease of financing conditions—a wave of restructurings has not occurred.

Figure 3.7. Contribution to Change in Debt-to-GDP Ratio during Reduction Episodes with and without Restructuring (Percent)

Debt reduction is larger during restructuring events.



Sources: Asonuma, Niepelt, and Ranciere (2023); Asonuma and Trebesch (2016); Asonuma and Wright (2022); Cheng, Díaz-Cassou, and Erce (2018); Cruces and Trebesch (2013); Horn, Reinhart, and Trebesch (2022); IMF (2021); IMF, Global Debt Database; Mauro and others (2013); and IMF staff calculations.

Note: The unbalanced panel data cover 84 emerging market economies and 54 low-income countries. Debt restructuring in the figure corresponds only to contributions of face value reduction. Contribution of cash flow relief (for example, maturity extension and coupon rate reduction) would be included in contributions of primary balance and interest expense. The sample of face value reductions consists of restructurings by private external creditors, domestic private creditors (1999–2020), and official Paris Club creditors.

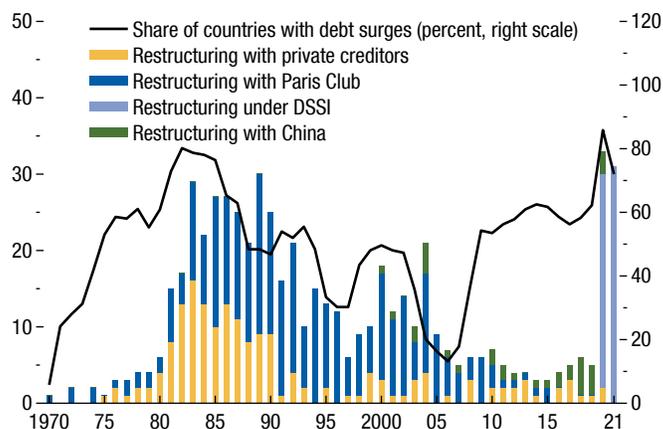
An exception is those in 2020 and 2021 under the G20 Debt Service Suspension Initiative, designed to mitigate the economic costs of the pandemic in developing economies. However, the changing global environment (for example, low growth, tightening financing conditions, strong dollar) could raise these risks. That said, the process could differ significantly from that in the past, given the changing composition of creditors, the enhanced use of collective action clauses in sovereign bonds, and the G20 Common Framework initiative.

Estimated Effects of Debt Restructuring

To estimate the impact of debt restructuring, this section employs the AIPW estimator, which takes into account the nonrandom nature of restructuring events. As discussed earlier, the procedure first estimates the probability that a country will begin debt restructuring negotiations based on macroeconomic factors and uses this information to reweight observations in an outcome model, as detailed in Online Annex 3.5.

Figure 3.8. Risk of Restructuring (Number of restructuring episodes, unless noted otherwise)

Restructuring has followed debt surges.



Sources: Asonuma and Trebesch (2016); Asonuma and Wright (2022); Horn, Reinhart, and Trebesch (2022); IMF (2021); IMF, Global Debt Database; Mauro and others (2013); World Bank, International Debt Statistics; and IMF staff calculations.

Note: Unbalanced sample of 123 economies over 1970–2021. DSSI = Debt Service Suspension Initiative.

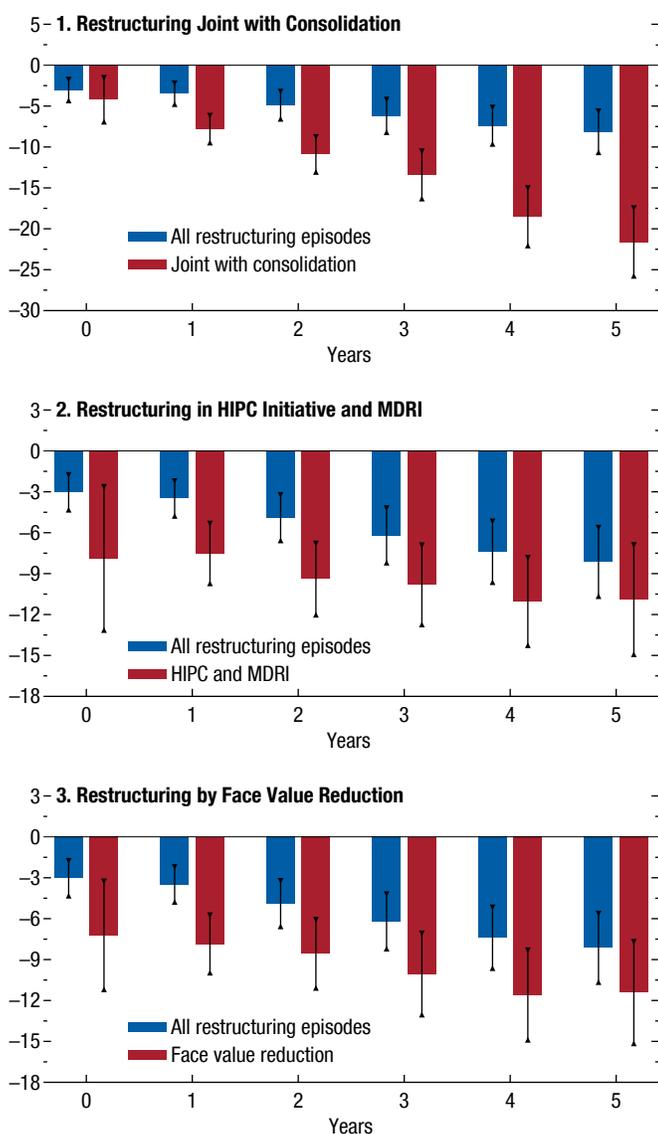
The findings suggest that the debt restructuring process in emerging market economies and low-income countries can have a significant and long-lasting impact on debt ratios (Figure 3.9, panel 1). On average, debt ratios decrease by 3.4 percentage points in the first year and 8 percentage points within five years of restructuring, and this effect is heightened when accompanied by fiscal consolidation. This is in line with the fact that two-thirds of restructuring events in the sample were accompanied by fiscal consolidation. In addition, the joint effect of restructuring and fiscal consolidation grows over time, indicating that the two policies are complementary.

The identity and composition of creditors, the nature of negotiations, and the context in which restructuring takes place can greatly affect its outcome as well. Figure 3.9 (panel 2) shows that restructuring under the HIPC or MDRI programs more successfully reduced debt ratios than the typical restructuring, both on impact and over longer horizons.²⁰ The results are as expected,

²⁰Treatment in this case is identified as a restructuring event that (1) involved an official creditor (Paris Club or multilateral institution) and (2) happened in a country that benefited from either the HIPC Initiative or MDRI. A similar analysis was conducted to uncover differences between domestic and external restructurings. As noted also in Table 3.4, there are very few cases of restructuring that involved domestic creditors only—fewer than 40 across the whole sample. With this caveat, the results suggest that external restructuring has a larger (negative) effect on the debt ratio.

Figure 3.9. Impact of Restructuring on Debt to GDP
(Percentage point change)

Debt restructuring has a large and long-lasting impact on the debt ratio and is more effective when combined with fiscal consolidation.



Sources: Asonuma, Niepelt, and Ranciere (2023); Asonuma and Trebesch (2016); Asonuma and Wright (2022); Cheng, Díaz-Cassou, and Erce (2018); Cruces and Trebesch (2013); Horn, Reinhart, and Trebesch (2022); IMF (2021); and IMF staff calculations.

Note: Figure shows the average treatment effect of restructuring on debt to GDP using augmented inverse probability weighted estimation. Vertical lines indicate the 90 percent confidence interval. X-axis shows the number of years since the restructuring event starts. Sample consists of 111 emerging market and developing economies from 1987 to 2021. See Online Annex 3.5 for details on the estimation of the average treatment effect of restructuring with face value reduction. HIPC = Heavily Indebted Poor Countries Initiative; MDRI = Multilateral Debt Relief Initiative.

Table 3.5. Restructurings with Face Value Reduction

Observations with Positive Face Value Reduction and Nonmissing Debt to GDP	
Restructuring event with FVR	116
By official Paris Club creditors	83
HIPC events	59
Non-HIPC events	24
Of which, did not enter HIPC within three years	16
Ultimately became eligible for HIPC	9
Never became eligible for HIPC	7
By private external creditors	33

Sources: Asonuma, Niepelt, and Ranciere (2023); Asonuma and Trebesch (2016); Asonuma and Wright (2022); Cheng, Díaz-Cassou, and Erce (2018); Cruces and Trebesch (2013); Horn, Reinhart, and Trebesch (2022); IMF (2021); and IMF staff compilation.

Note: Information on Multilateral Debt Relief Initiative is not included. Because of lack of data, none of the episodes in this chapter's sample have face value reductions from non-Paris Club official bilateral creditors (China). FVR = face value reduction; HIPC = Heavily Indebted Poor Countries Initiative.

as the HIPC and MDRI programs were (1) characterized by coordination among creditors, (2) involved deep face value reductions, and (3) included IMF-supported programs. Figure 3.9 (panel 3) illustrates that restructuring events with face value reductions have a greater impact on the debt-to-GDP ratio, with much of the effect visible in the first year.

Three caveats need to be considered when interpreting the results. First, the HIPC Initiative and MDRI were one-off initiatives. Second, face value reductions happen more frequently when the initial debt ratio is high.²¹ Third, about half of restructuring events with face value reduction happened under the HIPC Initiative (Table 3.5), although the stronger effect of face value reductions on debt ratios is robust to excluding HIPC events from the sample.²²

To summarize, debt restructuring in emerging market economies and low-income countries can have a large, negative, and long-lasting effect on debt ratios (see Online Annex 3.5 for similar effects of restructuring beyond five years). This effect is heightened when

²¹The average debt ratios one year preceding the event with and without face value reductions are 90 and 75 percent, respectively.

²²The results are qualitatively similar to those reported in Figure 3.9, panel 3, if the treatment includes (1) all non-HIPC events (24 events); (2) events that did not include entry into the HIPC program within three years of the start of restructuring, excluding borderline cases (16 events); or (3) the latter, including private external creditors (33 + 16 = 49 events). Notably, an alternative definition of HIPC treatment based on eligibility at the time of the HIPC decision points rather than completion of restructuring (20 non-HIPC events instead of 24, or 7 non-HIPC if based on an "ever-eligible" HIPC decision point criteria) gives a qualitatively similar finding of bigger effects of restructuring events with face value reductions on debt ratios. Note that information on face value reductions in MDRI programs is not available; hence, the analysis includes only non-HIPC treatment.

the restructuring is combined with fiscal consolidation, and is implemented through large-scale initiatives with coordination mechanisms across creditors.

Comparing Magnitudes

How does the impact of fiscal consolidation on the debt ratio compare with that of debt restructuring? The previous section and Table 3.6 (last two columns: “ATE”) suggest that average restructuring can have a much larger effect than fiscal consolidation. But the two may not be exactly comparable because their “size” is also very different. The average face value reduction in the debt ratio is about 4.2 percent of GDP per year that the restructuring event lasts, while the average successful fiscal consolidation reduces the primary balance by only 0.4 percent of GDP (Table 3.6). A back-of-the-envelope calculation performed by dividing the estimated average treatment effect by the treatment size reveals that, after one year, the impact of a successful fiscal consolidation is comparable to that of debt restructuring with face value reduction, *per “unit” of treatment*.²³ After five years, fiscal consolidations are on average more effective according to this metric.

An important caveat from this comparison exercise is that fiscal consolidations and restructurings can happen under very different circumstances. Even different types of restructuring can reflect disparate contexts depending on the macroeconomic conditions, type of debt to be restructured, creditor preferences, creditor structure, and other factors. Ultimate policy choices by countries could manifest complex combinations of these factors and importantly also reflect the fact that alternatives may not be available in practice. However, these issues are difficult to capture through econometric analysis because of the presence of unobserved variables that can affect both policy choices and outcomes. Moreover, the results of econometric analysis are based on typical historical events and may not capture the subtleties of specific cases, which could provide valuable insights for the future. For example, debt restructurings conducted preemptively (before a default) in the past have typically been based on cash flow (but not face value) reductions and have rarely been deep (Asonuma, Chamon, and

²³A 1 percentage point face value reduction can decrease the debt ratio by, on average, 1.9 percentage points, exceeding the “mechanical” impact on the debt ratio. This is possible when the restructuring event has a limited (negative) or positive impact on GDP growth and when it is supported by macro policies. In many cases, higher inflation and depreciation in exchange rates also contribute.

Table 3.6. Impact of Restructuring and Consolidation (Percentage points)

	Size (FVR/Consolidation)	ATE	
		1st Year	5th Year
Restructuring (with FVR)	4.2	-7.9	-11.4
Successful Consolidations	0.4	-0.8	-2.5

Sources: Asonuma, Niepelt, and Ranciere (2023); Asonuma and Trebesch (2016); Asonuma and Wright (2022); Cheng, Díaz-Cassou, and Erce (2018); Cruces and Trebesch (2013); Horn, Reinhart, and Trebesch (2022); IMF (2021); and IMF staff calculations.

Note: For better comparison across estimates, size is calculated as the total face value reduction in debt divided by the duration of the restructuring event in years, then normalized by GDP in the year restructuring negotiations start. This value is then averaged across all restructuring events. In successful consolidations, size refers to the average reduction in primary balance over GDP after a fiscal consolidation. ATE = average treatment effect; FVR = face value reduction.

He 2023). This makes it hard to quantify the impact of “deep enough” preemptive restructuring, as events of that type have been rare in the past. Therefore, the next section complements the analysis by reviewing historical experiences of successful and unsuccessful debt reductions to draw lessons for the future.

Going Granular: Case Studies of Debt Restructuring

This section draws on historical policy documents, including IMF staff reports, to derive granular policy lessons from the experience of countries that experienced a debt restructuring. It considers five specific cases: (1) Cyprus, 2014–19; (2) Jamaica, 2010–18; (3) Seychelles, 2009–15; (4) Belize, 2012–19; and (5) Mozambique, 2016–19. The case studies are divided into those in which the debt restructuring managed to reduce the debt-to-GDP ratio and those in which it did not (Table 3.7).²⁴ A key insight from the episodes is that public debt restructuring is a complex process that involves burden sharing among domestic residents, domestic creditors, and foreign creditors. In external debt restructurings, the burden is primarily shared between residents and foreign creditors (for example, Seychelles), while in domestic debt restructurings, it is mostly shared between residents and domestic creditors (mainly banks; for

²⁴The selection of cases was based on inputs from the Debt Division of the IMF’s Strategy, Policy, and Review Department. These are recent experiences of countries that could offer interesting, but also relatively general, insights. Discussions with the corresponding teams assigned to work on each of the countries also provided additional insights.

Table 3.7. Case Study Summary

	Success in Reducing Public Debt to GDP			Debt Remained Elevated or Increased	
	Seychelles, 2009–15	Jamaica, 2010–18	Cyprus, 2014–19	Belize, 2012–19	Mozambique, 2016–19
Types of Creditors	External private/official	Domestic	Domestic	External private	External private
Types of Restructuring	Postdefault	Preemptive	Preemptive	(1) Preemptive (2) Preemptive	(1) Preemptive (2) Postdefault
Debt Treatment	Face value reduction	(1) Cash flow relief with no face value reduction ¹ (2) Cash flow relief with no face value reduction ¹	Cash flow relief with no face value reduction ¹	(1) Small face value reduction (2) Cash flow relief with no face value reduction ¹	(1) Cash flow relief with no face value reduction ¹ (2) Cash flow relief with no face value reduction ¹
Main Drivers of Debt Reduction	(1) Fiscal consolidation (2) GDP growth (3) Debt restructuring (face value reduction) (4) Inflation (5) Exchange rate depreciation	(1) Fiscal consolidation (2) Inflation ²	(1) Fiscal consolidation (2) GDP growth	GDP growth	(1) GDP growth (2) Inflation ²
IMF-Supported Program	Yes	Yes	Yes	No	No (offtrack immediately)

Source: IMF staff compilation.

¹Cash flow relief with no face value reduction corresponds to maturity extension, reduction in coupon payments, or both.

²Inflation contributed to reduce public debt to GDP by 40 percentage points and 30 percentage points in Jamaica and Mozambique, respectively, though the positive contribution of nominal interest expenses by 40 percentage points and 30 percentage points completely offset the impacts.

example, Cyprus and Jamaica). Restructurings with external creditors often occur postdefault and may involve face value reductions (possibly for both official and private creditors as, for example, in the case of Seychelles), which immediately lower debt ratios. In restructurings with domestic creditors, financial stability concerns play a role, and they are typically implemented through cash flow relief with no face value reduction. Therefore, reductions in debt ratios tend to be gradual. Regardless of the type, one key lesson for the future is that restructuring needs to be deep to improve its chances of success.

Success in Reducing Public-Debt-to-GDP Ratios

Debt ratios declined substantially in Jamaica and Seychelles and modestly in Cyprus, as shown by the black squares in Figure 3.10. In Seychelles, the debt ratio had reached 180 percent in 2008, concomitant with twin balance of payments and debt crises, and a sharp exchange rate depreciation. Debt ratios in Jamaica and Cyprus also reached above 140 and 100 percent, respectively. A sharp exchange rate depreciation combined with low growth during the global financial crisis played an important role in the increase in the debt ratio in Jamaica. In turn, a deterioration in the fiscal stance and financial assistance to the banking

sector were key factors affecting increases in the debt ratio in Cyprus.²⁵

In Seychelles, the ratio declined rapidly and sharply to 84 percent in 2010. This happened immediately after debt restructurings with both official Paris Club and private external creditors that involved a large reduction in face value of debt.²⁶ Prudent fiscal policy combined with high inflation helped in sustaining the reduction in debt ratios (Figure 3.10). In Cyprus and Jamaica, debt ratios did not fall immediately after domestic debt restructurings (2013 for Cyprus and 2010 and 2013 for Jamaica), which did not involve face value reductions. Yet in the case of Jamaica, the cash flow relief from restructuring was deep and was saved, with the debt-to-GDP ratio declining significantly to 100 percent by 2018. In contrast, the cash flow relief from restructuring was only modest in Cyprus, and the debt-to-GDP ratio declined by less, to about 90 percent by 2019. Fiscal consolidation (red bars in Figure 3.10) contributed in both cases, as the debt service relief was partly saved. A recovery in GDP

²⁵The evolution of debt and its correlates over time for each of the case studies are reported in Online Annex 3.7.

²⁶Interestingly, Seychelles achieved sizable face value reductions when foreign creditors were experiencing unfavorable business and financial cycles. See Asonuma and Joo (2020) for the role of foreign creditors in sovereign debt restructurings.

growth in Cyprus (dark blue bars) and high inflation in Jamaica (light blue bars) played important roles in debt reduction, though the positive contribution of nominal interest expenses almost offset the impact of inflation in Jamaica.

To summarize, in successful cases, debt restructurings contributed significantly to reducing public debt ratios, either directly (through face value reduction, for example, by 25 percentage points in Seychelles) or indirectly (through debt service relief and fiscal consolidation in Cyprus and Jamaica). The possibility of success of (deep enough) preemptive restructuring executed through cash flow relief, rather than face value reductions, is illustrated by the case of Jamaica.²⁷

Economic growth also contributed to reducing debt ratios in all these experiences—by more than 20 percentage points in both Cyprus and Seychelles and by 7 percentage points in Jamaica (Figure 3.10). Finally, inflation also played an important role, contributing to the reduction by 50 percentage points in Seychelles and by 70 percentage points in Jamaica, though the positive contribution of nominal interest expenses offset the impact on debt—partly in Seychelles and completely in Jamaica (Figure 3.10).

Debt Remaining Elevated or Increased

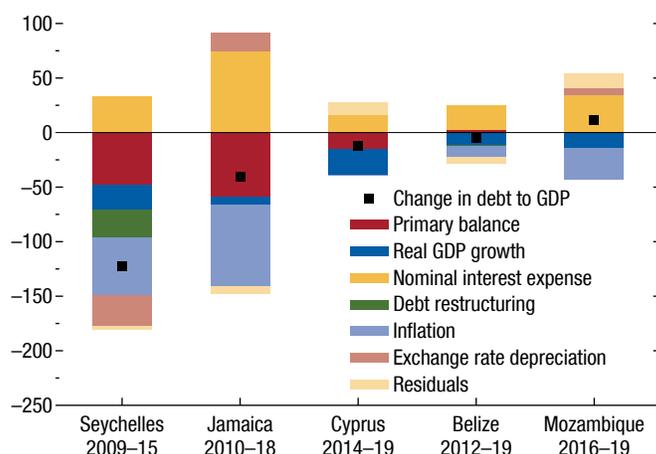
It is also instructive to review experiences of countries that did not succeed in reducing debt, as these may offer a cautionary tale for countries currently struggling with high public debt. Public debt in Belize and Mozambique remained elevated despite two sequential debt restructurings in both (2012–13 and 2016–17 in Belize, 2015–16 and 2016–19 in Mozambique). Debt ratios remained at above 90 percent in both countries as of 2019.²⁸

²⁷This is typically not the case based on historical events, econometric analysis of which finds that restructurings executed postdefault and with face value reductions to be more effective in reducing debt ratios.

²⁸Prior to this, Belize had another debt restructuring in 2006–07 that reduced public debt more durably, with public debt in 2011 being 5 percentage points of GDP lower than in 2006. While the episode is not considered as a case study here, Belize has been successful at reducing public debt more recently following a surge from the COVID-19 crisis. Public debt declined to 64 percent of GDP in 2022 as a result of sizable fiscal consolidation, a debt swap with The Nature Conservancy for marine protection, a discount on debt owed to Venezuela under Petrocaribe, and a strong rebound in economic activity.

Figure 3.10. Decomposition of Cumulative Change in Debt to GDP
(Percent of GDP)

Primary balance and inflation rate are main drivers of public debt reduction in Seychelles and Jamaica.



Source: IMF staff calculations.

Note: The figure reports a decomposition of cumulative change in debt to GDP by conventional debt drivers for each episode. See Online Annex 3.7 for further details.

While restructuring was executed through cash flow relief with no face value reduction in both countries, the resulting debt service relief was, in fact, used to support expansionary public expenditure. Whereas Belize did not request an IMF-supported program, the request from Mozambique was approved in December 2015, but the program was interrupted soon thereafter. Transfers to state-owned enterprises resulted in a substantial increase in the debt ratio in Mozambique, by 13.8 percentage points (Figure 3.10).

Overall, the main lesson that emerges from the review of historical experiences of debt restructurings is that, for a sizable and durable reduction in debt ratios, restructurings need to be deep enough, no matter how they are executed, and need to be combined with a comprehensive set of fiscal and growth-enhancing reforms.

Conclusions and Policy Implications

This section summarizes the main findings of the chapter and outlines key lessons for countries currently facing the challenge of high public debt burdens.

First, adequately timed (for example, during economic expansions) and appropriately designed

(for example, growth friendly—which in advanced economies includes involving more expenditure- than revenue-based measures) fiscal consolidations have a high probability of durably reducing debt ratios. The average successful fiscal consolidation in the data (equal to 0.4 percentage point of GDP) reduces debt ratios by 0.7 percentage point during its first year and, cumulatively, by up to 2.1 percentage points after five years. The debt-reducing effects of fiscal adjustments are reinforced when accompanied by growth-enhancing structural reforms and strong institutional frameworks. At the same time, because these conditions and accompanying policies are not always present, and because fiscal consolidation tends to slow GDP growth, on average, fiscal consolidations have a negligible effect on debt ratios.

Second, the impact of restructuring (which occurs mostly in emerging market economies and low-income countries) on debt ratios can be sizable and long-lasting. The average observed restructuring reduces debt ratios by 3.4 percentage points in the first year and, cumulatively, 8.0 percentage points after five years. The impact is more immediate when the restructuring is implemented through a face value reduction and stronger when combined with fiscal consolidation.

Third, selected case studies of countries that experienced debt restructuring offer both instructive lessons and cautionary guidance. All cases studied emphasized the importance of medium-term fiscal consolidation. Fiscal consolidation played an important role even in cases that involved significant face value reductions. It can also help to persuade external creditors to agree to a reduction in the nominal value of debt. For debt restructurings that were carried out preemptively with domestic creditors and involved debt service relief, fiscal consolidation was vital in gradually reducing debt ratios.

Finally, both economic growth and inflation play an important role in reducing debt ratios. The results from this chapter complement the messages from related work (April 2023 *Fiscal Monitor*), including the importance of inflation and the scope of structural reforms to promote growth, which ultimately reduces debt ratios.

Turning to the policy implications, when a moderate and gradual reduction in debt ratios is viable, well-designed fiscal consolidation, beyond automatic stabilizers or what would be implemented during economic cycles, along with growth-friendly structural reforms, is appropriate. Such fiscal consolidation

should ideally coincide with domestic recovery, favorable external conditions, or both.

Some countries facing high risks of debt distress or increased rollover risks may have no viable alternative other than a substantial or rapid debt reduction. These countries will require sustained and complementary policy actions. Fiscal consolidation will likely be needed to regain market confidence and recover macroeconomic stability. In addition, debt restructuring should also be considered in a timely way, and if pursued, will need to be deep to be successful in reducing debt ratios. Countries typically do not weigh fiscal, structural, and debt restructuring equally in their decisions. Instead, they design a macroeconomic program (fiscal and growth-enhancing structural reforms), and if this does not work convincingly, then restructuring may be considered as a last-resort option. This chapter suggests that all policies that help reduce debt may have to be considered from the outset. Although historical events have not typically included deep-enough restructurings carried out preemptively, Jamaica provides an example in which debt ratios were reduced significantly with early and deep restructurings that were executed through cash flow relief. In contrast, the case of Belize suggests that even when treatment is undertaken early, if it is not deep enough, debt could remain elevated.

Debt restructuring is an altogether different process from other policies to reduce debt. Restructuring is always complex, takes time, requires mutual agreement between creditors and debtors, and involves burden sharing among various parties. Mechanisms that promote coordination and confidence among creditors and debtors are required for debt restructurings to reduce debt ratios. Improving the G20 Common Framework, with greater predictability on steps in the process, earlier engagement with official and private creditors, a debt service payment standstill during negotiations, and further clarification on comparability of treatment, could help. Nevertheless, countries must still put a priority on debt management and transparency to manage risks and reduce the need for restructuring, which is in the interest of both debtors and creditors.

Although the chapter documents the significance of inflation in reducing debt ratios, this does not suggest that high inflation is a desirable tool. High inflation, even if it is unanticipated, can become entrenched in higher expectations of price increases and exchange rate depreciations, raise the burden of future debt issuance,

generate monetary instability, lead to loss of reputation, and in the end affect the credibility of institutions, including central banks.

Ultimately, strong institutions are crucial to durable debt reduction. Robust fiscal and monetary frameworks can prevent operations that undermine debt reduction efforts and help countries benefit from global forces pushing down the natural interest

rate (Box 3.2). Developing a credible medium-term fiscal framework can help countries manage high debt as they undertake fiscal adjustments to rebuild buffers (Gaspar, Obstfeld, and Sahay 2016; Caselli and others 2022). Finally, a medium-term debt management strategy can provide a structured approach for governments to evaluate costs and risks associated with financing options.

Box 3.1. Market Reforms to Promote Growth and Debt Sustainability

Market reforms in emerging market and developing economies may offer a valuable policy tool for promoting growth and debt sustainability. By improving the functioning of product, labor, and financial markets, such reforms have the potential to stimulate growth and reduce debt ratios.¹

Beyond the reduction in debt ratios arising from an increase in GDP, the impact of market reforms on public debt dynamics is not obvious. By improving the business environment, reforms can increase the tax base and generate additional resources. But they can also lead to a loss of revenue through measures such as trade tariff reductions. Similarly, borrowing costs could decline if reforms ease access to international markets and boost external confidence. But costs could also increase if reforms tackle domestic financial repression or require compensatory spending, for example, to alleviate adverse distributional effects.

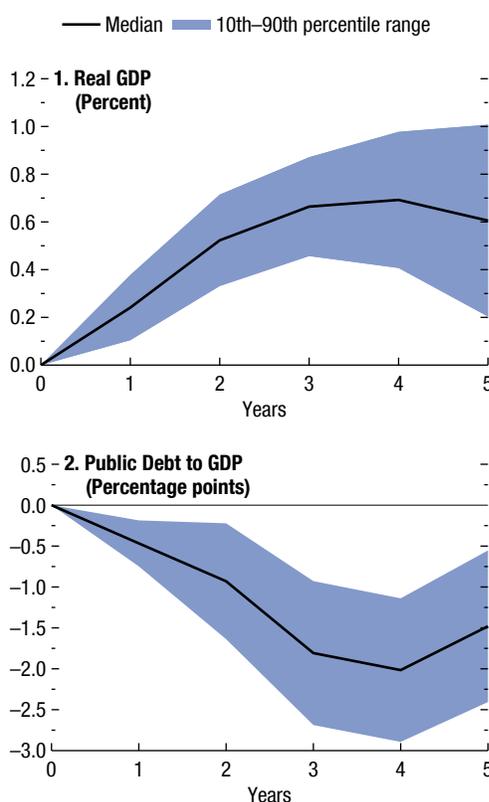
An analysis of 62 emerging market and developing economies during 1970–2014 shows that market reforms have been associated with both increased GDP and reduced debt (Figure 3.1.1). A one-standard-deviation increase in an indicator of reforms is estimated to lead to a 0.6 percent increase in real GDP over five years and a medium-term reduction in the ratio of public debt to GDP of 1.5 percentage points. Importantly, this means the effect of structural reforms on the debt ratio is much more than simply a denominator effect.

The findings also suggest that reforms lead to increased revenues and lower sovereign spreads, but

The authors of this box are Gabriela Cugat, Futoshi Narita, and Carlo Pizzinelli. The box draws from a forthcoming IMF Staff Discussion Note (Aligishiev and others, forthcoming) as part of a project on macroeconomic policy in low-income countries with the UK Foreign, Commonwealth and Development Office (FCDO). The views expressed herein should not be attributed to the FCDO.

¹There are other equally important reform areas that are not considered (such as education, health, infrastructure frameworks), as well as fiscal reforms (for example, tax systems, public financial management, pension systems).

Figure 3.1.1. Empirical Impulse Response upon Structural Reforms



Source: Aligishiev and others (forthcoming).
Note: Cumulative effect after a one-standard-deviation shock.

also higher public consumption, with only a small and temporary improvement in the overall fiscal balance. Countries with a more efficient value-added tax tend to experience greater fiscal gains from reforms.

To protect the fiscal gains from these reforms, it's crucial to direct the additional revenue toward growth-friendly public investments and enhance the tax base through tax collection efficiency.

Box 3.2. Monetary and Fiscal Interactions

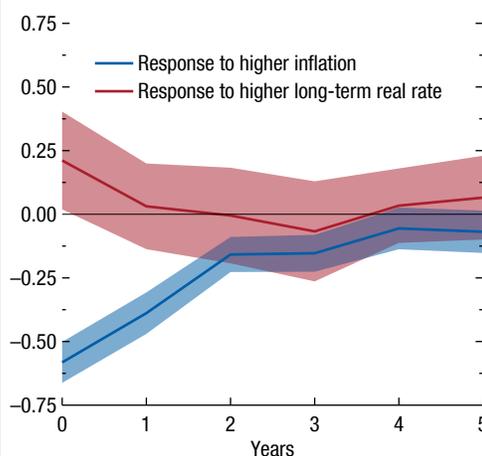
At the current juncture of high inflation and tighter (relative to pre-pandemic) worldwide financial conditions, an increasing number of economies with high debts are facing difficult trade-offs among inflation, debt servicing costs, and monetary and fiscal tightening. This box studies monetary and fiscal interactions and finds that the effects of recent increases in inflation and nominal interest rates on debt service burdens may be somewhat limited for most advanced economies and for emerging market and developing economies with strong institutions. The response of the effective rate (defined as the interest expense divided by the previous period's debt stock)—the rate that is relevant for servicing debt burdens—to changes in the inflation rate is considered first. Estimates show that an increase in consumer price inflation of 1 percentage point lowers the effective real rate by about 0.5 percentage point on impact and does not lead to a higher effective real rate across the horizon (Figure 3.2.1). This is in line with the findings in the April 2023 *Fiscal Monitor*, which goes into greater detail and notes that inflation spikes may durably reduce the debt-to-GDP ratio, but rises in expected inflation do not.

Central banks around the world have lifted policy rates considerably since 2021 and put an end to the era of ultralow nominal rates. What are the implications of the current environment for governments' debt servicing? An increase in the real spot market rate for a 10-year government bond of 100 basis points (bps) is, in fact, associated with an increase in the effective real rate of only about 20 bps, on average, on impact (Figure 3.2.1). Among emerging market and developing economies with weaker institutional frameworks and those without an inflation-targeting central bank, however, the point estimate increases to about 60 bps. Overall, a rise in spot rates therefore feeds into effective rates far less than one to one.

One reason behind these findings could be the increase in average maturity of outstanding debt in recent years. In addition, central bank credibility may

The authors of this box are Josef Platzer and Francisco Roch.

Figure 3.2.1. Estimated Response of Effective Real Interest Rate
(Percentage points)



Source: IMF staff calculations.

Note: Response of effective real rate in percentage points at different horizons to 1 percentage point change in long-term real rate and inflation rate, respectively. Shaded area shows 95 percent confidence interval. X-axis represents number of years after the interest rate change. The sample comprises both advanced economies and emerging market and developing economies and covers annual data from 1970 to 2021. See Online Annex 3.8 for definitions and details on local projections estimated.

help keep inflation expectations anchored. Hence, inflation and higher interest rates permeate debt service costs only slowly. The share of central government debt maturing in 12 months or less, though, has increased over the past five years in both advanced and emerging market and developing economies, which could leave countries more vulnerable to rollover risks.

Persistent inflationary pressures pose the risk of a “high for long” interest rate environment. However, over a longer time frame, and once inflation pressures have subsided, equilibrium real interest rates are expected to remain low on account of structural forces (see Chapter 2), which should also help keep real debt servicing costs in check.

References

- Alesina, Alberto, Carlo Favero, and Francesco Giavazzi. 2019. "Effects of Austerity: Expenditure and Tax-Based Approaches." *Journal of Economic Perspectives* 33 (2): 141–62.
- Aligishiev, Zamid, Gabriela Cugat, Romain Duval, Davide Furceri, João Tovar Jalles, Florence Jaumotte, Margaux MacDonald, and others. Forthcoming. "Market Reforms and Public Debt Sustainability in Emerging Market and Developing Economies." IMF Staff Discussion Note, International Monetary Fund, Washington, DC.
- Antolín-Díaz, Juan, and Juan F. Rubio-Ramírez. 2018. "Narrative Sign Restrictions for SVARs." *American Economic Review* 108 (10): 2802–29.
- Asonuma, Tamon, Marcos Chamon, Aitor Erce, and Akira Sasahara. 2021. "Costs of Sovereign Defaults: Restructuring Strategies and Financial Intermediation." Luiss School of European Political Economy Working Paper 10/2021, Luiss School of European Political Economy, Rome.
- Asonuma, Tamon, Marcos Chamon, and Chang He. 2023. "'Too Little' Sovereign Debt Restructurings." Unpublished, International Monetary Fund, Washington, DC.
- Asonuma, Tamon, and Hyungseok Joo. 2020. "Sovereign Debt Restructurings: Delays in Renegotiations and Risk Averse Creditors." *Journal of the European Economic Association* 18 (5): 2394–440.
- Asonuma, Tamon, Dirk Niepelt, and Romain Ranciere. 2023. "Sovereign Bond Prices, Haircuts and Maturity." *Journal of International Economics* 140: 103689.
- Asonuma, Tamon, and Michael Papaioannou. Forthcoming. "External Sovereign Debt Restructurings and Economic Consequences: What Do We Know?" In *Private Debt*, edited by Moritz Schlarick.
- Asonuma, Tamon, and Christoph Trebesch. 2016. "Sovereign Debt Restructurings: Preemptive or Post-default." *Journal of the European Economic Association* 14 (1): 175–214.
- Asonuma, Tamon, and Mark L. J. Wright. 2022. "Sovereign Borrowing and Debt Restructurings: Multilateral, Bilateral and Private External Debt." Unpublished, Federal Reserve Bank of Minneapolis, Minneapolis, MN, and International Monetary Fund, Washington, DC.
- Balasundharam, Vybhavi, Olivier Basdevant, Dalmacio Benicio, Andrew Ceber, Yujin Kim, Luca Mazzone, Hoda Selim, and Yongzheng Zhang. 2023. "Fiscal Consolidation: Taking Stock of Success Factors, Impact, and Design." IMF Working Paper 23/63, International Monetary Fund, Washington, DC.
- Beetsma, Roel, Jacopo Cimadomo, Oana Furtuna, and Massimo Giuliodori. 2015. "The Confidence Effects of Fiscal Consolidations." *Economic Policy* 30 (83): 439–89.
- Canova, Fabio, and Filippo Ferroni. 2022. "A Hitchhiker's Guide to Empirical Macro Models." Carrière-Swallow, Yan, Antonio C. David, and Daniel Leigh. 2021. "Macroeconomic Effects of Fiscal Consolidation in Emerging Economies: New Narrative Evidence from Latin America and the Caribbean." *Journal of Money, Credit and Banking* 53 (6): 1313–35.
- Caselli, Francesca, Hamid Davoodi, Carlos Goncalves, Gee Hee Hong, Andresa Lagerborg, Paulo Medas, Anh Dinh Minh Nguyen, and Jiae Yoo. 2022. "The Return to Fiscal Rules." IMF Staff Discussion Notes 22/02, International Monetary Fund, Washington, DC.
- Cheng, Gong, Javier Díaz-Cassou, and Aitor Erce. 2018. "Official Debt Restructurings and Development." *World Development* 111: 181–95.
- Chuku, Chuku, Joyce Saito, Prateek Samal, Dalia Hakura, Marcos Chamon, Martin Cerisola, Guillaume Chabert, and Jeromin Zettelmeyer. 2023. "Debt Vulnerabilities in Low-Income Countries: How Do They Compare with the Pre-HIPC Era?" Unpublished, International Monetary Fund, Washington, DC.
- Cruces, Juan, and Christoph Trebesch. 2013. "Sovereign Defaults: The Price of Haircuts." *American Economic Journal: Macroeconomics* 5 (3): 85–117.
- Das, Udaibir S., Michael G. Papaioannou, and Christoph Trebesch. 2012. "Sovereign Debt Restructurings 1950–2010: Literature Survey, Data and Stylized Facts." IMF Working Paper 12/203, International Monetary Fund, Washington, DC.
- Devries, Pete, Jaime Guajardo, Daniel Leigh, and Andrea Pescatori. 2011. "A New Action-Based Dataset of Fiscal Consolidation." IMF Working Paper 11/128, International Monetary Fund, Washington, DC.
- Gaspar, Vitor, Maurice Obstfeld, and Ratna Sahay. 2016. "Macroeconomic Management When Policy Space Is Constrained: A Comprehensive, Consistent, and Coordinated Approach to Economic Policy." IMF Staff Discussion Note 16/09, International Monetary Fund, Washington, DC.
- Guajardo, Jaime, Daniel Leigh, and Andrea Pescatori. 2014. "Expansionary Austerity? International Evidence." *Journal of the European Economic Association* 12 (4): 949–68.
- Harding, Don, and Adrian Pagan. 2002. "Dissecting the Cycle: A Methodological Investigation." *Journal of Monetary Economics* 49 (2): 365–81.
- Horn, Sebastian, Carmen Reinhart, and Christoph Trebesch. 2022. "Hidden Defaults." *AEA Papers and Proceedings* 112: 531–35.
- Ilzetzki, Ethan, Enrique Mendoza, and Carlos Vegh. 2013. "How Big (Small?) Are Fiscal Multipliers?" *Journal of Monetary Economics* 60 (2): 239–54.
- International Monetary Fund (IMF). 2013. "Italy 2013 Article IV Staff Report." International Monetary Fund, Washington, DC.
- International Monetary Fund (IMF). 2014. *Government Finance Statistics Manual 2014*. Washington, DC: International Monetary Fund.

- International Monetary Fund (IMF). 2016. “Mexico 2016 Article IV Staff Report.” International Monetary Fund, Washington, DC.
- International Monetary Fund (IMF). 2017. “Greece 2016 Article IV Staff Report.” International Monetary Fund, Washington, DC.
- International Monetary Fund (IMF). 2021. “Issues in Restructuring of Sovereign Domestic Debt.” Policy Paper, International Monetary Fund, Washington, DC.
- Jordà, Òscar, and Alan M. Taylor. 2016. “The Time for Austerity: Estimating the Average Treatment Effect of Fiscal Policy.” *Economic Journal* 126: 219–55.
- Kirchner, Markus, Jacopo Cimadomo, and Sebastian Hauptmeier. 2010. “Transmission of Government Spending Shocks in the Euro Area: Time Variation and Driving Forces.” ECB Working Paper Series 1219, European Central Bank, Frankfurt.
- Mauro, Paolo, Rafael Romeu, Ariel Binder, and Asad Zaman. 2013. “A Modern History of Fiscal Prudence and Profligacy.” IMF Working Paper 13/5, International Monetary Fund, Washington, DC.
- Mountford, Andrew, and Harald Uhlig. 2009. “What Are the Effects of Fiscal Policy Shocks?” *Journal of Applied Econometrics* 24 (6): 960–92.
- Peralta Alva, Adrian, Xuan Song Tam, Xin Tang, and Marina Mendes Tavares. 2018. “The Welfare Implications of Fiscal Consolidations in Low-Income Countries.” IMF Working Paper 18/146, International Monetary Fund, Washington, DC.

