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# Debt Reduction in Latin America and the Caribbean

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## Abstract<sup>1</sup>

During the pandemic, public debt in Latin America and the Caribbean rose to more than 70 percent of GDP, and countries are now attempting to lower debt ratios. We analyze past debt reduction episodes and find inflation and the real interest rate were the most frequent main drivers, while higher growth, fiscal consolidation and debt restructuring were relatively rare. Interestingly, inflation episodes tended to be with independent central banks and low real interest rates, highlighting the value of monetary credibility. We find debt reduction is not associated with a rise in inequality nor in unemployment, and growth or fiscal consolidation may improve these indicators.

**JEL classifications:** E62, F34, H63

**Keywords:** Debt, Fiscal policy, Inflation, Debt restructuring

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## 1. Introduction

Public debt has been on the rise in advanced, emerging and developing economies, the increase fueled in part by the global financial crisis and then by the COVID pandemic. In the case of Latin America and the Caribbean, average public debt soared to over 70 percent of GDP during the pandemic.<sup>2</sup> High levels of public debt are worrisome because they may decrease the effectiveness of macroeconomic policy, increase the likelihood of costly crises and reduce investment and growth.<sup>3</sup> Moreover, the recent hikes in interest rates in advanced economies may well magnify the negative impacts of higher debt levels in emerging and developing economies.<sup>4</sup>

An old Irish joke is that a tourist in a countryside village asks a local the way to Dublin. The local responds, “Ah, it’s very complicated, I wouldn’t start from here if I were you.” In a similar vein, if the objective is to maintain low debt levels it is surely best not to start when debt is high. Reducing debt invariably poses serious dilemmas for policymakers, underlining the importance of good fiscal frameworks and responsible fiscal policies, that may support poorer households and economic activity during bad times, allowing necessary increases in debt, but that also allow for fiscal surpluses and debt reduction in good times.<sup>5</sup>

This paper focuses on how countries have actually reduced debt ratios, seeking to draw lessons from those experiences. We focus on Latin America and the Caribbean but draw on data from across a wider set of emerging and developing economies. Debt reduction episodes are decomposed into whether they were driven by growth, prudent fiscal policy, low interest rates, inflation, or other factors summarized by a term known as the stock-flow reconciliation.<sup>6</sup>

The good news is that there have been many episodes during which debt has been substantially reduced, including in Latin America and the Caribbean. However, a first finding is that the most common driver of such reductions has been inflation. While this is not a new result, a closer inspection of these inflation episodes reveals new and intriguing findings. The debt reduction episodes driven by inflation appear to be frequently in economies with independent

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<sup>2</sup> See Powell and Valencia (2023) and Galindo and Nuguer (2023)

<sup>3</sup> See for example the discussion in Kose et al. (2021).

<sup>4</sup> See the discussion in World Bank (2023).

<sup>5</sup> See Powell (2015) for a discussion on the lack of counter cyclicality in fiscal policy in Latin America and the Caribbean and Cavallo et al. (2022) for a more recent discussion.

<sup>6</sup> The stock flow reconciliation term encapsulates changes in debt due to factors outside of the fiscal budget. This may include the impact of currency movements, bail-outs of public enterprises and other institutions, or debt restructuring.

central banks and relatively low interest rates, and so driven by a combination of more moderate inflation and low real interest rates.

Some countries have been able to reduce debt through a combination of growth and fiscal probity. Higher growth is perhaps the most attractive route to reduce debt to GDP ratios. There are several cases where growth was a main driver in Latin America, especially during the 2000s with commodity prices buoyant due to high growth in China and elsewhere, but unfortunately such cases are less common in Latin America and the Caribbean than in Asia. Reducing debt in a period of low growth through fiscal consolidation is rare. There is only one case since the Global Financial Crisis where debt has been reduced substantially solely through fiscal consolidation, namely the exceptional case of Jamaica.

It is fairly common for debt reductions to overlap with debt restructurings, although it is less common for the debt restructuring to be a main driver of the reduction in debt ratios. The debt restructurings that are important drivers of debt reduction are mostly in the late 1980s and early 1990s, as a result of the Brady deals, and in the case of some low-income countries due to the HIPIC/MDRI initiative. The majority of debt restructurings consist of pushing out maturities with no reduction in face value (sometimes referred to as a reprofiling), so this result suggests that in general reprofilings may not boost sustained underlying growth.<sup>7</sup>

In addition, we analyze the rich heterogeneity in debt reduction episodes and explore complementarities between economic and institutional variables that then suggest a set of potential policy conclusions. We also analyze the association of debt reduction and changes in inequality and unemployment, finding somewhat surprising results.

The next section provides a short empirical review of debt reduction episodes in Latin America and the Caribbean. Section 3 compares episodes in the region with episodes across the world. Section 4 considers the composition of debt reduction episodes, detailing what have been the main drivers. In Section 5, the impacts of a set of economic and institutional factors are analyzed, while Section 6 focuses on the social side, considering the potential impacts on inequality and unemployment. Section 7 provides the conclusions.

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<sup>7</sup> This view is consistent with evidence presented in Chapter 10 of Powell and Valencia (2023).

## **2. A Review of Debt Reduction Episodes in Latin America and the Caribbean**

For the purposes of this paper, a debt reduction episode is defined as a multi-year period during which the debt-to-GDP ratio decreases by at least 15 percentage points. Over the last 40 years, there are 43 such debt reduction episodes in Latin America and the Caribbean, 18 countries experienced two episodes and 7 countries one episode.<sup>8</sup> Debt reduction episodes tend to be clustered in time. A wave of such debt reductions occurred in the late 1980s and early 1990s. As mentioned, this wave was associated with the debt restructuring exercises within the context of the Brady plan that followed the Latin American debt crisis of the 1980s. A second wave took place in the period 2002-2007, assisted by the commodity price boom spurred by high growth in China.

Only two debt reduction episodes started after the global financial crisis. One was driven by high inflation and was soon followed by a large jump in the debt-to-GDP ratio and default. The second was the case of Jamaica which managed to reduce its public debt through high fiscal surpluses in the aftermath of the global financial crisis.

The average debt level at the beginning of a debt reduction episode was about 100 percent of GDP (see Table 1). This high average value is influenced by a small number of countries. The median debt ratio at the beginning of the episode was close to 85 percent of GDP. The median episode reduced debt by nearly 50 percent of GDP and lasted approximately seven years.<sup>9</sup> The median annual reduction of the debt-to-GDP ratio was 7 percentage points of GDP (12 percentage points for the average).

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<sup>8</sup> Latin America and the Caribbean here includes the 26 IDB borrowing countries, we do not analyze Cuba or the smaller independent nations of the Organization of Eastern Caribbean States, nor dependent or foreign territories.

<sup>9</sup> Twelve episodes lasted 10 years or more; the longest episode was Trinidad and Tobago between 1993 and 2008, lasting 15 years.

**Table 1. Debt Reduction Episodes in Latin America and the Caribbean**

|   | Debt-to-GDP (%)          |                    |        | Length | $\frac{\Delta Debt}{Length}$ | GDP Growth | Inflation | Prim. Bal. |
|---|--------------------------|--------------------|--------|--------|------------------------------|------------|-----------|------------|
|   | Beginning of the episode | End of the episode | Change |        |                              |            |           |            |
| Average   | 110.1                    | 37.8               | -72.4  | 7.6    | 12.3                         | 3.8        | 98.9      | 1.5        |
| Median  | 84.3                     | 32.1               | -49.7  | 7.0    | 7.3                          | 3.9        | 16.2      | 1.9        |
| St. Dev.  | 92.0                     | 23.3               | 77.8   | 3.4    | 20                           | 2.7        | 290.6     | 3.0        |
| Share of episodes   |                          |                    |        |        |                              | 0.44       | 0.43      | 0.34       |
| Share of episodes that do not overlap with a debt restructuring |                          |                    |        |        |                              | 0.57       | 0.46      | 0.46       |

*Source:* IDB staff calculations based on IMF WEO Data.

*Note:* There are 43 episodes in total; 65 percent of these episodes overlapped with a debt restructuring. The last two rows of the table show the number of episodes for which GDP growth, inflation, and/or the primary surplus was a primary or secondary driver of the episode (i.e., that the factor in question accounted for the largest or second largest drop in the debt to GDP ratio across all factors).

About 44 percent of debt reduction episodes were associated with real GDP growth above 4 percent, and one-third of these were characterized by an average primary surplus above 2 percent of GDP. The median inflation rate was about 16 percent, while the average was almost 100 percent, heavily influenced by a small number of high inflation cases. Almost two-thirds of debt reduction episodes were associated with a debt restructuring exercise. Still, debt restructuring was not a main driver of the debt reduction in the majority of debt reduction episodes, as discussed further below.

Debt reduction episodes are not all created equal, and in general the literature suggests that episodes driven by growth, or a combination of growth and fiscal consolidation, tend to be less painful and the debt reduction tends to be more persistent.<sup>10</sup> In this context, Table 1 paints a somewhat somber picture and echoes results in the literature that indicates that growth and fiscal prudence alone are relatively rare main drivers for debt reduction.<sup>11</sup> Still, there are some notable cases of such successful debt reduction episodes in Latin America and the Caribbean. A selection of such cases is reviewed in Appendix 1.

<sup>10</sup> See Kose et al (2021) for a discussion.

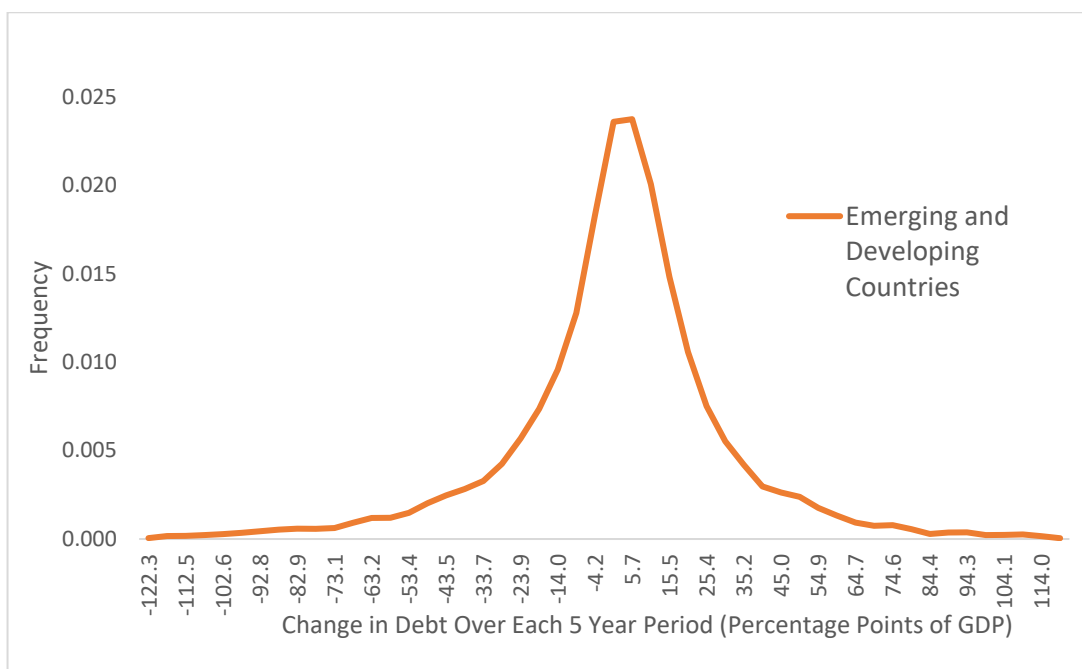
<sup>11</sup> In a study of 118 countries over 1990-2020, Kose et al. (2021) find that in about 50 percent of observations, growth was higher than the real interest rate, but in about one-quarter of these cases debt was still growing because the growth-interest rate differential was more than compensated by the presence of a primary deficit. Similarly, it is difficult to run large and sustained primary surpluses in the presence of low growth (Eichengreen and Panizza, 2016).



### 3. Comparing Debt Reduction Episodes Across the World

This section looks beyond Latin America and the Caribbean and compares experiences across world regions. Figure 1 plots the distribution of five-year changes in the debt-to-GDP ratio for Emerging and Developing Countries. Debt reduction episodes are defined as country-years that are to the left of the 10<sup>th</sup> and 20<sup>th</sup> percentile of the distribution (-29.5 percentage points of GDP and -14 percentage points of GDP, respectively).<sup>12</sup> In the remainder of the chapter, country-periods with five-year debt changes to the left of these thresholds are referred to as 10P episodes and 20P episodes, respectively. By construction, 20 percent of five-year episodes in the sample consist of 20P episodes and 10 percent consist of 10P episodes. However, there are differences across countries and regions.

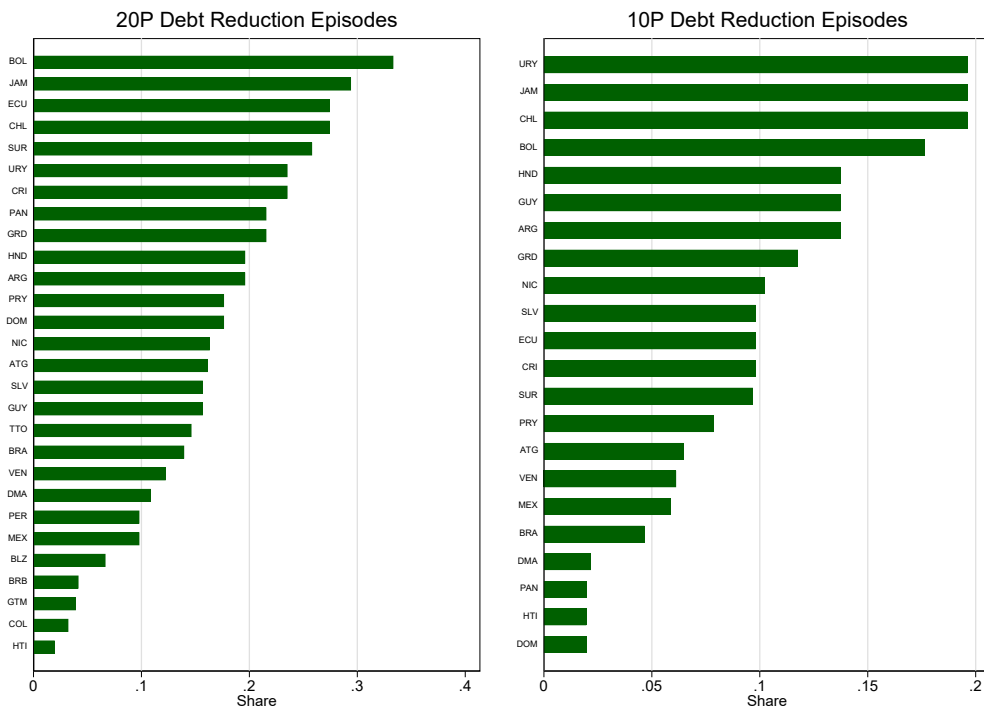
**Figure 1. Distribution of 5 Year Changes in Debt**



<sup>12</sup> Note that the debt reduction episodes described in this section are not strictly comparable with the debt reduction episodes described in the previous section. First, while the debt reduction episodes discussed in the previous section vary in length, this section focuses on a constant length (five years). Second, while the episodes described in the previous section are, by construction, non-overlapping, this section also considers overlapping episodes. For instance, consider a country that for a period of ten years consistently reduces its debt-to-GDP ratio by 3 percentage points per year and then stabilizes its debt level. In the previous section, this country would have been classified as having one debt reduction episode that lasted 30 years and led to a 30-percentage point reduction in the debt-to-GDP ratio. In this section, instead, this country would be classified as having six overlapping 20P debt reduction episodes, each of them associated with a 15-percentage point debt reduction.

Figure 2 focuses on Latin America and the Caribbean and shows the share of five-year periods that coincided with a 20P (Panel A) or 10P (Panel B) debt reduction episode. Bolivia, Chile, Costa Rica, Ecuador, Grenada, Jamaica, Panama, Suriname, and Uruguay are over-represented in the sample of 20P episodes (in other words their share of 20P episodes is greater than 20 percent), and Argentina, Bolivia, Chile, Grenada, Guyana, Honduras, Jamaica, Nicaragua, and Uruguay are over-represented in the sample of 10P episodes.

**Figure 2. Share of Debt Reduction Episodes**  
**Panel A: 20<sup>th</sup> percentile debt reduction episodes**  
**Panel B: 10<sup>th</sup> percentile debt reduction episodes**



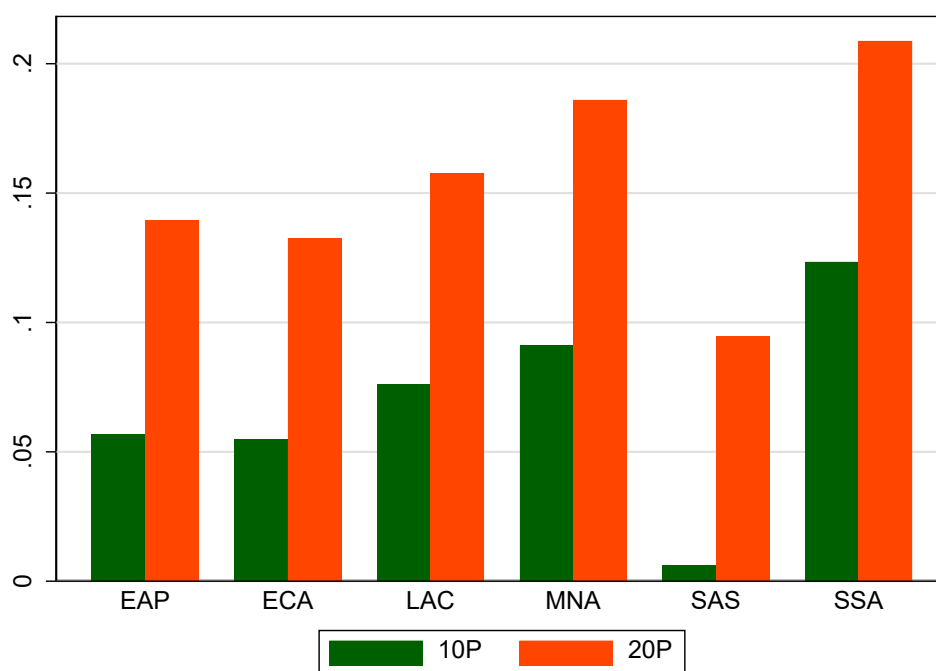
*Source:* IDB staff calculations based on IMF WEO data.

Note: This figure plots the share of 10P and 20P debt reduction episodes for Latin American and Caribbean countries. Countries not included in the table either do not have at least 30 years of data or do not have an episode of debt reduction.

Considering global regions, Latin American and the Caribbean is under-represented in both 10P and 20P episodes (the regional shares are 7 percent and 15 percent, respectively; see Figure 3). Largely due to debt relief associated with the Heavily Indebted Poor Countries (HIPC) and Multilateral Debt Relief (MDRI) initiatives, countries in Sub-Saharan Africa are instead over-represented in the samples of both 10P and 20P episodes.

The share of debt reduction episodes is also relatively low in East Asia, East Europe, and central Asia. However, in contrast to Latin America and the Caribbean, these regions have relatively low debt levels. Hence, debt reduction episodes are less frequent because they are less needed. There is a statistically significant relationship between initial debt levels and the likelihood of observing a debt reduction episode.

**Figure 3. Share of Debt Reduction Episodes by Region**



*Source:* Authors' calculations based on IMF WEO data.

*Note:* This figure plots the share of 10P and 20P debt reduction episodes by region. This is the share of debt changes to the left of the dashed lines in Figure 8.1. By construction the overall share of 10P episodes is 10 percent and the overall share of 20P episodes is 20 percent.

Two possible factors drive the positive correlation between the initial level of debt and the probability of a debt reduction episode. On the one hand, this correlation may be driven by the fact that high levels of debt lead to prudent fiscal policy. This interpretation is consistent with the finding in Powell and Valencia (2023) that since the 1990s higher debt has led to fiscal consolidation in Latin America and the Caribbean such that on average debt has been sustainable.<sup>13</sup> On the other hand, inflation has been a key driver of debt reductions when debt levels are high,

<sup>13</sup> This does not imply that debt has been sustainable for every country in every time period, rather it is an average result.

and the higher the debt level then the less likely a subsequent debt reduction episode is driven by fiscal consolidation; debt is more likely reduced through higher inflation.

#### 4. The Composition of Debt Reduction Episodes

The debt-to-GDP ratio changes over time as a result of both economic conditions and policy choices. The standard equation for debt dynamics breaks down the change in the debt-to-GDP ratio ( $\Delta d$ ) as follows:

$$\Delta d = -pb + (i - g - \pi)d + sf$$

where  $pb$  is the primary balance over GDP,  $i$  is the nominal interest rate,  $g$  is real GDP growth,  $\pi$  is inflation and  $sf$  is the so-called stock-flow reconciliation term.<sup>14</sup> The stock flow reconciliation may be driven by measurement error but also by events that affect the debt-to-GDP ratio without going through the budget. Negative values for this term, during a period of debt reduction, may be provoked by a debt restructuring that includes a nominal haircut or a large privatization where the revenues are not included in the budget, but the proceeds are used to retire public debt. Note that the effect of privatizations on debt sustainability is ambiguous. While privatization can address liquidity problems, it may also decrease future revenues unless it involves efficiency gains.

Applying the debt dynamic equation described above to actual data shows that the main contributors to debt reductions are inflation, which is especially important in Latin America and the Caribbean, and real GDP growth, which is especially important in East Asia. The primary balance is important in several regions, including Latin America and the Caribbean, when the analysis is restricted to periods with negative debt growth (Figure 4, Panel B). In Latin America and the Caribbean, high nominal interest rates and high interest payments appear as key obstacles to debt reduction.

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<sup>14</sup> For a more detailed discussion of the stock-flow adjustment and its drivers see Appendix B and Campos et al. (2006).

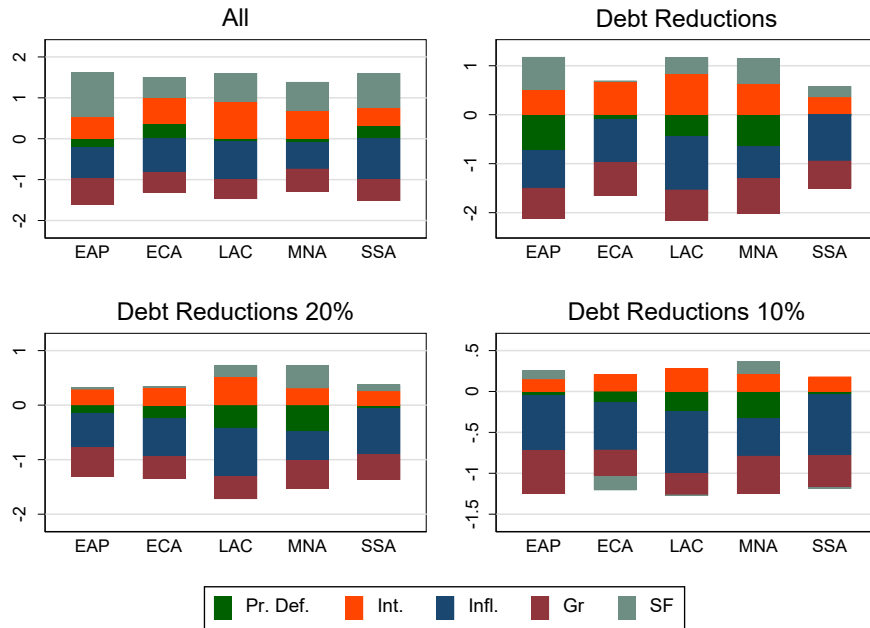
**Figure 4. Composition of Debt Changes by Region**

**Panel A: Whole sample**

**Panel B: Debt reduction episodes**

**Panel C: 20<sup>th</sup> percentile debt reduction episodes**

**Panel D: 10<sup>th</sup> percentile debt reduction episodes**



*Source:* IDB staff calculations based on IMF WEO data.

*Note:* This figure shows the composition of debt changes by region; bars above the zero-line show factors that contribute to debt growth and bars below the zero show factors that contribute to debt reductions. The scale indicates the percentage point of GDP change in debt for each factor. Panel A uses all available data, Panel B uses all five-year periods with negative debt growth, Panel C uses data from debt reductions in the 10<sup>th</sup> percentile of all reductions, and Panel D uses data from debt reductions in the 10<sup>th</sup> percentile of all debt reduction episodes.

This section defines an episode as being driven by a given factor (e.g., the primary surplus) if that specific factor accounts for at least 40 percent of the debt reduction in the episode.<sup>15</sup> This allocation rule can yield episodes that are not driven by a specific factor, which would be the case if no component of the debt dynamic equation accounts for at least 40 percent of the change in

<sup>15</sup> It is worth noting that this definition based on the debt-dynamic equation described above does not keep track of the complex interactions among the various components of debt dynamic. For instance, a fiscal contraction could affect both interest rates and GDP growth. These interactions are not considered by the accounting framework adopted in this chapter.

debt, and for episodes driven by multiple factors.<sup>16</sup> The set of drivers studied here includes the primary surplus, real growth, inflation, the real interest rate, and the stock flow reconciliation.<sup>17</sup>

Inflation (often accompanied by negative real interest rates), is by far the most important driver of debt reduction episodes in Latin America and the Caribbean, followed by tight fiscal policy. Growth, on the other hand, is less important. East Asia is the only region for which growth is a key driver in more than 50 percent of episodes.

While the stock flow reconciliation term is often associated with episodes of debt reductions, it is much less associated with the more significant (10th or 20th percentile) debt reduction cases. As debt restructuring appears within this term, we can conclude that debt restructurings are not a frequent driver of debt reductions. Only about 10 percent of 20th percentile debt reductions and about 12 percent of 10th percentile debt reductions are associated with a debt restructuring.<sup>18</sup> In addition, for the 20th percentile debt reductions, in only 2.4 percent of cases was the debt restructuring potentially a main driver (either by itself or with another driver) of the reduction, and for the 10th percentile debt reductions that was the case in only 0.8 percent of cases. As the majority of recent debt restructurings are reprofiling, with no change in principal, perhaps these results are not particularly surprising, although this suggests that such reprofiling are not very successful in boosting growth.

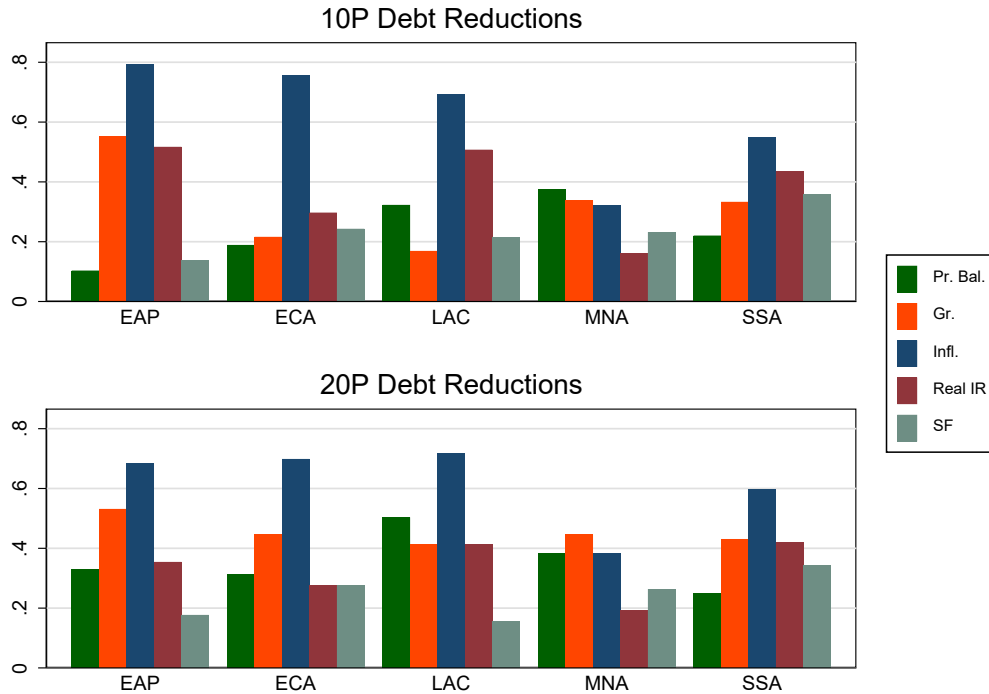
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<sup>16</sup> This is trivially the case if two factors account for 40 percent of debt reduction each. However, in some individual cases, the two factors can add up to more than 100 percent because certain elements of the debt decomposition are negative, and others are positive.

<sup>17</sup> While nominal interest rates are rarely negative (especially in the sample of developing and emerging economies considered here), real interest rates can be negative if inflation is higher than the nominal interest rate. Hence, the share of episodes driven by the presence of a negative interest rate is a strict subset of the share of episodes driven by inflation.

<sup>18</sup> The debt restructuring here is proxied by the stock-flow adjustment, which may reflect the impact of the debt restructuring, but it could be reflecting other factors as well.

**Figure 5. Main Contributors to Debt Reduction Episodes**  
**Panel A: 10<sup>th</sup> percentile debt reduction episodes**  
**Panel B: 20<sup>th</sup> percentile debt reduction episodes**



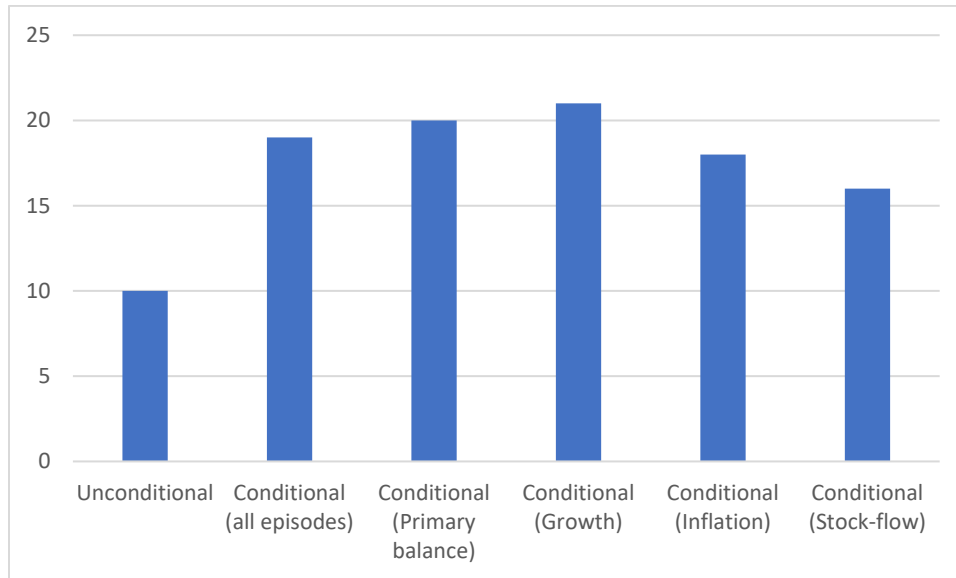
Source: IDB staff calculations based on IMF WEO data.

Note: This figure shows the share of 10P (Panel A) and 20P (Panel B) debt reduction episodes that can be attributed to different factors. Note that a given debt reduction episode can be attributed to more than one factor or to no specific factor. Therefore, the shares do not add up to one.

Debt reduction episodes appear to be persistent. While the unconditional probability of observing a 10P episode is, by definition, 10 percent, the probability of observing a 10P episode conditional on having observed a similar episode in previous periods is 19 percent. “Good” debt reduction episodes (meaning those where the main drivers are growth and/or fiscal consolidation) are even more persistent than the average overall debt reduction episode. The likelihood that a country experiences a 10P debt reduction episode conditional on having observed a growth-driven debt reduction episode in previous periods is 21 percent (Figure 6). The probability of observing a 10P episode conditional on previous primary-balance-driven episodes is 20 percent. The corresponding conditional probabilities for inflation-driven and stock-flow adjustment-driven episodes are instead 18 percent and 16 percent, respectively.<sup>19</sup>

<sup>19</sup> There is less persistence for 20<sup>th</sup> percentile debt reduction episodes, with the conditional probability increasing to 27 percent and no difference in the probability of observing a new episode conditional on the previous type of episode.

**Figure 6. The Conditional and Unconditional Probability of a 10<sup>th</sup> Percentile Debt Reduction Episode**



*Source:* IDB staff calculations based on IMF WEO data.

*Note:* This figure plots the probability of observing a 10P episode. The first bar plots the unconditional probability, which is, by definition, 10 percent. The second bar plots the probability that a country observes such a 10P episode conditional on having had such an episode in previous periods (this probability is 19 percent). The remaining four bars plot the probability that a country observes a 10P episode conditional on: having observed a primary balance-driven debt reduction episode in previous periods (third bar), a growth-driven debt reduction episode in previous periods (fourth bar), an inflation-driven debt reduction episode in previous periods (fifth bar), and a stock-flow-driven debt reduction episode in previous periods (sixth bar).

## 5. Economic and Institutional Factors

What types of economic and institutional factors are associated with different types of debt reduction episodes? Identifying these elements is especially important for policy. Policy advice will depend on initial conditions and on current institutions. Interactions between variables may make debt reduction more likely or not. Understanding these complementary conditions can assist in providing policy advice and helping policymakers to decide which policies are likely to be more effective.

Initial debt levels are strong predictors of debt reduction episodes, but there is heterogeneity across types of episodes. Higher debt levels are positively associated with the probability of an inflation- (or real interest rate) driven debt reduction episode (including a smooth inflation-driven debt reduction episode) and negatively correlated with the likelihood of a primary balance-driven debt reduction episode. Initial debt levels are, instead, irrelevant for other types of debt reduction episodes.



Given the lack of evidence that growth-driven debt reductions are more likely when debt levels are high indicates that the most desirable type of debt reduction is unlikely, precisely when it is most needed.<sup>20</sup> Similarly, while it would be desirable for countries to respond to high debt levels with prudent fiscal policy, the data suggest this is not always the case. Countries are more likely to respond to high debt levels with high inflation rather than by running large fiscal surpluses.

**Figure 7. Different Types of Debt Reduction Episodes and Debt Levels**

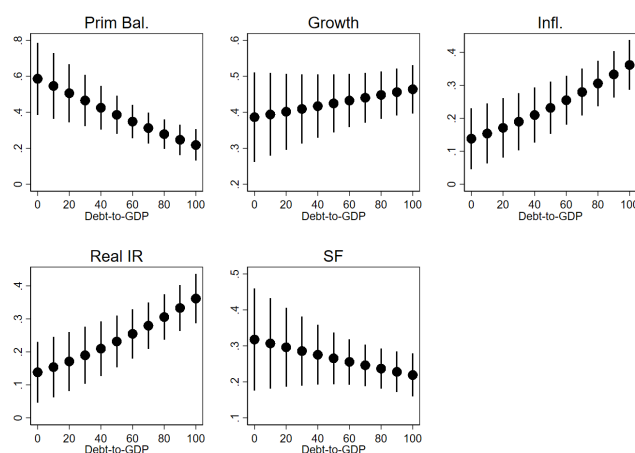
**Panel A: Primary balance**

**Panel B: Growth**

**Panel C: Inflation**

**Panel D: Interest rate**

**Panel E: Stock flow adjustment**



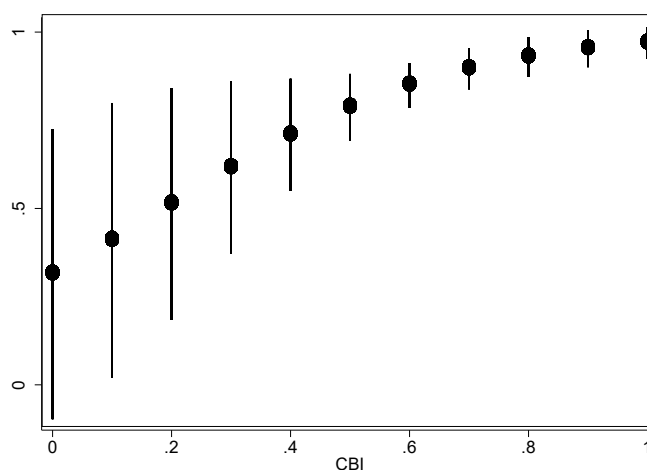
*Source:* IDB staff calculations based on IMF WEO data and World Development Indicators.

*Note:* This figure plots how the likelihood of different types of 20P debt reduction episodes varies with the level of initial debt, while all other variables are kept at their mean value. The dots are point estimates and the spikes 95% confidence intervals.

<sup>20</sup> This result is consistent with the presence of a public debt overhang as discussed in Powell and Valencia (2023), Chapter 8.

There is also heterogeneity associated with initial income per capita. Higher income is associated with a higher probability of a primary balance-driven debt reduction episode but negatively associated with the likelihood of a growth-driven debt reduction episode.

**Figure 8. Central Bank Independence and the Likelihood of an Inflation-Driven Debt Reduction Episode**



*Source:* IDB staff calculations based on IMF WEO data and World Development Indicators.

*Note:* This figure plots how the likelihood of an inflation-driven 20<sup>th</sup> percentile debt reduction episode (Y axis) varies with the index of central bank independence (X axis), while all other variables are kept at their mean value. The dots are point estimates and the lines represent 95% confidence intervals.

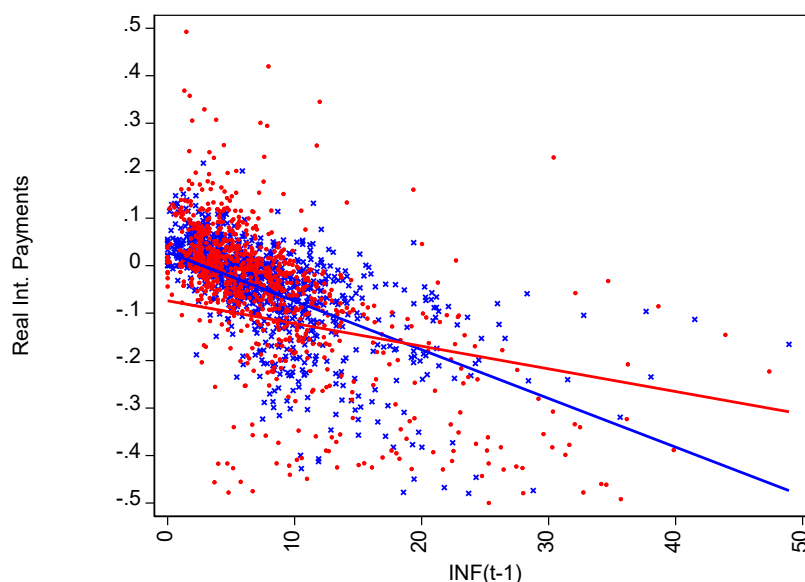
An intriguing result is that the presence of an independent central bank increases the likelihood of an inflation-driven debt reduction. This is illustrated in Figure 8. After all, inflation should be lower in the presence of a more independent central bank. This is indeed the case: during debt reduction episodes in countries with high central bank independence, average inflation is 18 percentage points lower than in countries with lower central bank independence (12 percent versus 30 percent).

Focusing exclusively on inflation-driven debt reduction episodes, average inflation in countries with an independent central bank is one percentage point lower (8.5 percent versus 9.5 percent) than in countries with lower central bank independence. Therefore, the result described in Figure 8 is not driven by the fact that central bank independence leads to higher inflation, but by the fact that a more independent central bank anchors expectations and allows for periods of above average inflation without an immediate increase in nominal interest rates. Monetary credibility is also positively correlated with the maturity of government debt and, hence, allows

for a slower response of overall interest payments to inflationary shocks (Andreolli, 2021; Willems and Zettelmeyer, 2022).

Figure 9 plots the correlation between lagged inflation and real interest payments as a share of GDP (this is the  $(i - \pi)d$  component of the debt dynamic equation described above) for countries with low levels of central bank independence (the red dots) and countries with a high level of central bank independence (the blue crosses). The negative correlation between real interest payments and lagged inflation is stronger in country-years characterized by higher levels of central bank independence.<sup>21</sup>

**Figure 9. Inflation, Real Interest Payments, and Central Bank Independence**



*Source:* IDB staff calculations based on IMF WEO data and World Development Indicators.

*Note:* This figure plots the correlation between lagged inflation and real interest payments (as a share of GDP) in countries with high (blue crosses) and low (red dots) levels of central bank independence.

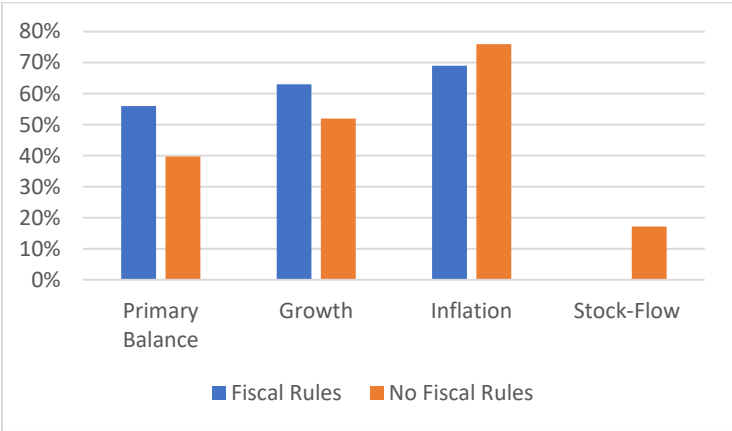
Debt reduction episodes are persistent and “good” debt reduction episodes (i.e., episodes driven by GDP growth and prudent fiscal policy) tend to be more persistent than those driven by inflation and stock-flow reconciliation. What drives this persistence? If countries pay the fixed costs needed to put in place budgetary rules and fiscal institutions that allow for debt reduction, then implementing future debt reductions may become easier. Regression analysis provides some

<sup>21</sup> Financial repression can also keep real rates low (Reinhart and Sbrancia, 2015; Mauro and Zhu, 2020) but this strategy is associated with large distortions (Jafarov, Maino, and Pani, 2019)

evidence in this direction: indicators that measure the presence and quality of fiscal institutions are positively correlated with the likelihood of primary balance-driven or growth-driven debt reduction episodes. However, the results are not generally statistically significant, possibly because data on both fiscal institutions and debt reduction episodes cover a limited sample of country-years.<sup>22</sup>

Another way to explore the role of fiscal institutions is to let the data speak for themselves through cluster analysis. Employing such a technique allows all 20<sup>th</sup> percentile debt reduction episodes that have a fiscal rule in place at the beginning of the debt reduction period to be placed in one group and the remaining episodes in another two groups (the difference between these other two groups is whether there is an IMF program or not).<sup>23</sup> Countries with fiscal rules in place have a higher probability of either a primary balance-driven debt reduction episode (56 percent versus 40 percent) or a growth-driven debt reduction episode (63 percent versus 52 percent) and a lower probability of an inflation-driven or stock-flow reconciliation-driven debt reduction episode (see Figure 10).

**Figure 10. The Probability of Different Types of Debt Reduction Episodes**



*Source:* IDB staff calculations based on IMF WEO data and World Development Indicators.  
*Note:* This figure shows the probability of observing different types of 20<sup>th</sup> percentile debt reduction episodes with and without fiscal rules.

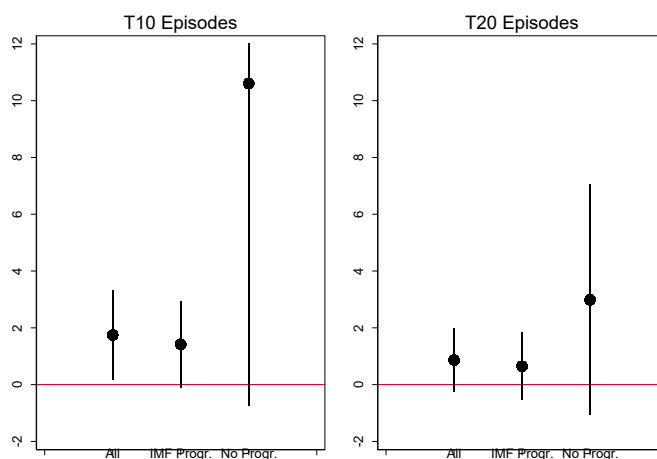
<sup>22</sup> Good fiscal institutions significantly reduce the likelihood of debt spikes (see Powell and Valencia, 2023, Chapter 3). If such institutions prevent debt spikes, they are likely needed to reduce debt.

## 6. The Social Side

Are there social costs linked to debt reduction episodes? Specifically, do debt reduction policies affect unemployment and income inequality? This is an important question for at least two reasons. First, a policymaker who must decide whether to adopt a given set of policies aimed at reducing public debt needs to evaluate the costs and benefits of such policies, including their effects on income inequality and unemployment, and may need to consider complementary policies to soften or eliminate the impacts. Second, policies with large negative social spillovers are more likely to be reversed and less likely to produce long-lasting debt reductions.

An econometric exercise suggests that 10P debt reduction episodes are associated with an increase in the Gini index of nearly 2 points (Figure 11, Panel A). In Latin America and the Caribbean, the Gini index ranges between 40 (Uruguay) and 57 (Suriname). A 2-point change in the Gini index is then quantitatively important but it's not dramatically so. Interestingly, the presence of an IMF program appears to mitigate the inequality effects of 10P debt reduction episodes.<sup>24</sup> Smaller (20P) debt reduction episodes are not significantly correlated with changes in the Gini index.

**Figure 11. Debt Reduction Episodes and Inequality**  
**Panel A: 10<sup>th</sup> percentile debt reduction episodes**  
**Panel B: 20<sup>th</sup> percentile debt reduction episodes**



*Source:* IDB staff estimates based on IMF WEO data, World Development Indicators.

*Note:* This figure shows the correlation between debt reduction episodes and changes in the Gini index in the presence and absence of IMF programs. The dots are point estimates and the spikes 95 percent confidence intervals.

<sup>24</sup> Note, however, that in the full sample, 80 percent of 10P debt reduction episodes coincide with an IMF program; in the sample with data on inequality, 95 percent of 10P episodes overlap with an IMF program.

The type of debt reduction episode also matters for inequality. Fiscal contractions are often associated with tax increases and cuts in expenditure. These policies need to be carefully designed and focused on removing subsidies to the non-poor and eliminating inefficient tax expenditures or other regressive expenditures. If this is not the case, they may lead to an increase in inequality.

There is some evidence that fiscal contractions are not regressive: primary surplus-driven debt reductions are associated with a reduction in the Gini index. While the coefficient is not statistically significant, this finding contradicts the hypothesis that fiscally driven debt reductions have negative distributional consequences.<sup>25</sup>

Given that inflation tends to be regressive, inflation-driven debt reduction episodes may increase inequality. Regression results support this intuition; inequality increases with inflation-driven debt reductions. In contrast, debt reduction episodes associated with GDP growth tend to reduce inequality in line with growth being pro-poor, although the results were not significant.<sup>26</sup>

## 7. Conclusions

A key message of this paper is that prevention is better than cure. Reducing debt is not easy, so avoiding a significant build-up of debt, especially during periods of normal or high growth, should be avoided. Reducing debt ratios through growth is difficult (because it is not easy to achieve and maintain high rates of real GDP growth) and lowering debt through fiscal consolidation may be costly politically.<sup>27</sup> Interestingly, however, we find little evidence that such debt reductions increase inequality or increase unemployment. Unfortunately, it has been more common to resort to high inflation or debt restructuring in an attempt to bring debt down, both of which may bring significant and persistent economic costs.

Some countries in Latin America and the Caribbean have managed to reduce debt through a combination of growth and/or fiscal probity. Jamaica is an exceptional case where very significant primary fiscal surpluses were maintained for a decade or so. This is extremely rare and few countries in the world have been able to pursue such sustained policy actions. However, prudent fiscal policy that accompanies periods of good economic growth is more common and can

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<sup>25</sup> While it would be interesting to also study the composition (revenue-driven versus expenditure-driven adjustment), data are insufficient to conduct this exercise. For a discussion of the effects of the composition of fiscal adjustments, see Alesina, Favero, and Giavazzi (2021).

<sup>26</sup> Growth does not usually increase inequality (Dollar and Kraay, 2002).

<sup>27</sup> See Filippini and Sandleris (2022) for a discussion of austerity intolerance and a new index focused on Latin America,

do the trick; see Appendix 1 for a short description of selected cases in Latin America and the Caribbean. A key element is not to be tempted to engage in procyclical policy and maintain a prudent fiscal stance when the economy is growing.

A longer period of steady and moderate primary surpluses is very likely preferable to shock therapy (Cottarelli, 2012). This suggests that high quality fiscal institutions are critically important to lend credibility to a gradual adjustment plan that may take several years to complete. A more gradual adjustment, all things being equal, implies a higher path for interest payments. But if fiscal institutions can be improved to boost credibility, interest rates may be lower along the adjustment path with significant benefits, implying less total adjustment is required.

Better fiscal institutions may help to keep debt levels from rising in the first place. For example, they may reduce the problem of poorly conceived infrastructure projects, wasteful transfers to politically connected segments of the population that do not reduce inequality, and a large positive stock flow reconciliation term reflecting the discovery of skeletons in the closet, arising from loss-making public sector enterprises or bailouts of one sort or another or other types of below-the-line and poorly monitored expenditures (Powell and Valencia, 2023).

Transparent fiscal and budgetary institutions and debt reporting systems can help to reduce the risks of debt exploding due to these considerations. Fiscal rules and budgetary institutions help along two lines. First, by limiting debt accumulation they reduce the need for a debt reduction episode. Second, if a debt reduction episode does become necessary it is more likely to be growth- or fiscal policy-driven than inflation- or default-driven.

An independent and credible central bank can also help; if inflationary expectations are well anchored, temporary increases in inflation can help reduce the debt-to-GDP ratio without leading to high nominal interest rates. Countries, however, may need to be careful in using this tool. Hard-won credibility can be easily lost. If inflation becomes entrenched and expectations de-anchored, inflation will no longer be effective in reducing debt and the disinflationary process can then be costly in terms of both growth and debt levels. However, if expectations remain anchored, signaling credibility in the central bank and the inflation target over the medium term, then an increase in inflation while maintaining lower nominal interest rates can drive debt reduction.

## Appendix: Successful Debt Reductions in Latin America and the Caribbean

This appendix provides a short description of debt reduction episodes in Latin America and the Caribbean driven by growth and/or fiscal consolidation.

**From 2002 to 2013, Brazil reduced its debt-to-GDP ratio by 18 percentage points (Figure A1, Panel A).** This was achieved through economic growth, moderate real interest rates and sustained primary surpluses. GDP growth was positive during most years of the debt reduction episode (the exception is 2009) and, on average, it was higher than the ex post real interest rate by about one percentage point. Real interest rates were kept below the growth rates thanks to a combination of moderate inflation which partly compensated for high nominal rates but also allowed inflationary expectations to remain anchored throughout the period (the average ex post real interest rate was 3.7 percent). The debt reduction brought about by the fact that the real interest rate ( $r$ ) was higher than GDP growth ( $g$ ) (what economists call  $r - g$ ) was amplified by Brazil's ability to keep a primary surplus for 11 years in a row, with a surplus above 3 percent of GDP for the first six years of the debt reduction episode and above 1.5 percent for the last five years.<sup>28</sup> This persistent fiscal surplus likely played an important role in boosting the credibility of monetary and fiscal policy and supporting the favorable growth-interest rate differential. As the real interest rate (and real interest payments) started decreasing in the second half of the episode, so did the primary surplus. This is not unusual. When debt goes down and credibility improves, often the temptation is to run a laxer fiscal policy and thus miss an opportunity to further reduce debt. However, note that Brazil decreased its primary surpluses when the economy slowed down in response to the global financial crisis. A more accommodative fiscal stance might thus have been justified by this large exogenous shock. In fact, Brazil is one of the few countries that kept running primary surpluses in the aftermath of the global financial crisis. These primary surpluses played a key role in bolstering market confidence. Only in 2014 did the primary balance turn negative. Low commodity prices were a key factor in determining the end of Brazil's debt reduction episode.

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<sup>28</sup> Note that, from 2007, there was a significant expansion of public expenditure, channeled through state-owned corporations and thus not included in the standard fiscal measures, and after 2012, Ayres et al. (2021) suggest there was a greater use of creative accounting to limit the stated fiscal imbalances.



**During the 2002-2008 period, Colombia reduced its public debt by 15 percentage points (Figure A1, Panel B).** The debt reduction was partly driven by steady and moderate primary surpluses, relatively high growth (favored by high commodity prices), and moderate real interest rates. During the period, the average value of the differential between the interest rate and the growth rate ( $r - g$ ) was near -3.5 percent, yielding a substantial reduction in debt. Real interest payments remained low (under 2 percent) thanks to a combination of moderate inflation and low nominal rates. The situation changed in the aftermath of the global financial crisis: nominal growth contracted (both inflation and real GDP growth fell) and primary surpluses turned into deficits.

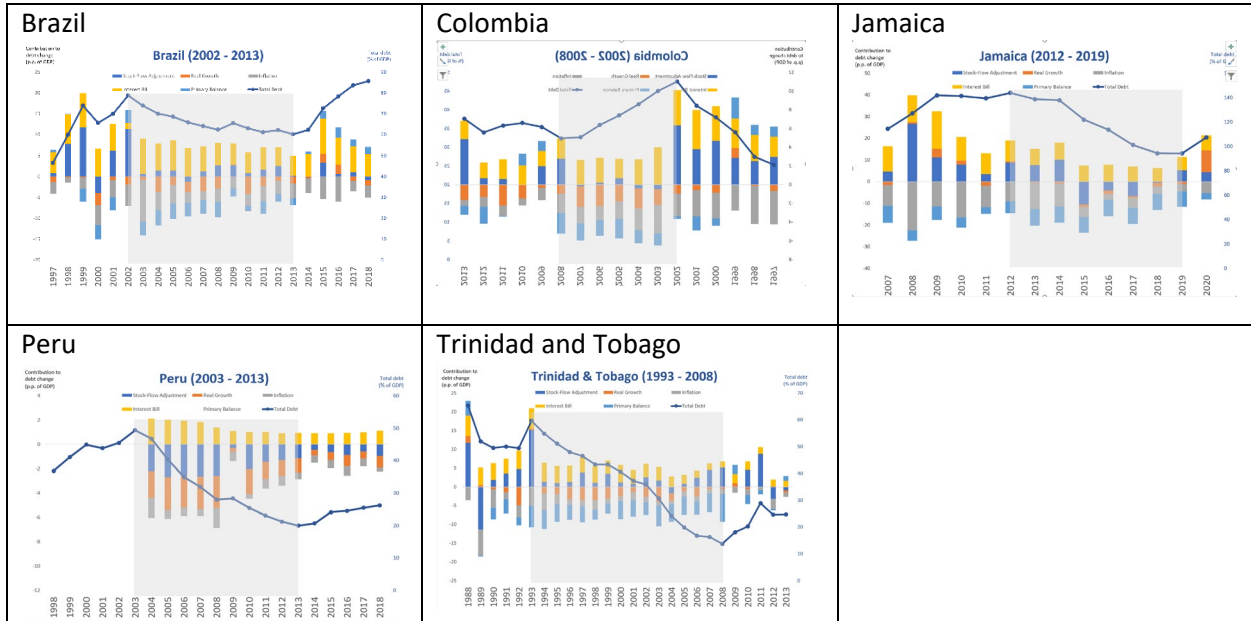
**During 2012-2019, Jamaica reduced its debt-to-GDP ratio by 50 percentage points (Figure A1, Panel C).** Jamaica is a rare example of a country that reduced its debt thanks to an extraordinary fiscal effort (for details see Cavallo et al., 2022). During 1990-2020, Jamaica ran a primary surplus in every year—and a large surplus in most years. Over this period, the average (and median) primary balance was above 7 percent of GDP. This 30-year period includes 10 years during which Jamaica had primary surpluses above 10 percent of GDP and only three years in which the primary surplus was below 4 percent of GDP. Even with this impressive fiscal performance, debt remained high until 2012; in fact, it increased in 2007-2008. Higher debt was driven by positive stock-flow adjustments and high interest rates. As soon as these impeding factors disappeared (around 2012), the fiscal effort started paying off and debt began to decrease rapidly. The situation was then reversed by the Covid-19 crisis, which led to a serious recession. It is extraordinary that Jamaica ran a primary surplus when GDP contracted by 9 percent.

**From 2003 to 2013, Peru reduced its public debt by 30 percent of GDP (Figure A1, Panel D).** This was driven by a mix of growth above the real interest rate (the average difference over the period was around 1 percent) and sustained primary surpluses of about 2.5 percent per year. The country ran a primary deficit in 2009, but primary surpluses went back to 2-3 percent starting in 2010. Peru is a good example of smooth fiscal adjustment, with moderate but steady surpluses that led to a debt reduction during a period of sustained growth. As in the case of Brazil, low commodity prices were a key factor in ending Peru's debt reduction episode.

**During 1993-2008, Trinidad and Tobago reduced its debt by 46 percent of GDP (Figure A1, Panel E).** This is the longest debt reduction episode in the region. Throughout the period, Trinidad and Tobago faced high real interest rates and high GDP growth. On average GDP growth was only 0.5 percent higher than the ex-post real interest rate. Debt went down thanks to steady and persistent primary surpluses. Over this 15-year period, the average primary surplus was 4.6 percent of GDP and was never lower than 2.7 percent of GDP. The debt reduction episode ended with the global financial crisis.

**Figure A1. Debt Reduction Episodes in Latin America and the Caribbean**

**Panel A: Brazil**  
**Panel B: Colombia**  
**Panel C: Jamaica**  
**Panel D: Peru**  
**Panel E: Trinidad and Tobago**



## References

- Alesina, A., C. Favero, and F. Giavazzi. 2019. "Effects of Austerity: Expenditure- and Tax-based Approaches." *Journal of Economic Perspectives* 33(2): 141–162.
- Andreolli, M. 2021. "Monetary Policy and the Maturity Structure of Public Debt." London, United Kingdom: London Business School. Mimeographed document.
- Ayres, J., D. Guillen, and P. Kehoe. 2021 "The History of Brazil." In: T. Kehoe and J.P. Nicolini, editors. *A Monetary and Fiscal History of Latin America: 1960-2017*. Minneapolis, United States: University of Minnesota Press.
- Bitar, N., A. Chakrabarti, and H. Zeaiter. 2018. "Were Reinhart and Rogoff Right?" *International Review of Economics & Finance* 58: 614-620.
- Campos, C.F.S., D. Jaimovich, and U. Panizza. 2006. "The Unexplained Part of Public Debt." *Emerging Markets Review* 7(3): 228-243.
- Castellani, F., M.Olarreaga, U. Panizza and Y. Zhou. 2019. "Investment Gaps in Latin America and the Caribbean." *International Development Policy / Revue internationale de politique de développement* 11.1. Available at: <https://doi.org/10.4000/poldev.2894>
- Cavallo, E., A. Galindo, V. Nuguer, and A. Powell. 2022. "From Recovery to Renaissance: Turning Crisis into Opportunity." Latin American and Caribbean Macroeconomic Report. Washington, DC, United States: Inter-American Development Bank.
- Cerra, V., and S. Saxena. 2008. "Growth Dynamics: The Myth of Economic Recovery." *American Economic Review* 98(1): 439-57.
- Cottarelli, C. 2012 "The Austerity Debate: Festina Lente!" VoxEU, 20 April 2012. Available at: <https://cepr.org/voxeu/columns/austerity-debate-festina-lente>
- Dollar, D., and A. Kraay. 2002. "Growth Is Good for the Poor." *Journal of Economic Growth* 7(3): 195–225.
- Eichengreen, B., and U. Panizza. 2016. "A Surplus of Ambition: Can Europe Rely on Large Primary Surpluses to Solve Its Debt Problem?" *Economic Policy* 31(85): 5-49.
- Eichengreen, B., R. Feldman, J. Liebman and C. Wyplosz. 2011. *Public Debts: Nuts, Bolts and Worries*. Geneva Report on the World Economy 13. London, United Kingdom: Centre for Economic Policy Research.
- Erosa, A., and G. Ventura. 2002 "On Inflation as a Regressive Consumption Tax." *Journal of Monetary Economics* 49(4): 761-795

- Filippini, F., and G. Sandleris. 2022. "Austerity Intolerance." Buenos Aires, Argentina: Universidad Torcuato di Tella. Mimeographed document.
- Gelpern, A., and U. Panizza. 2022. "Enough Potential Repudiation: Economic and Legal Aspects of Sovereign Debt in the Pandemic Era." *Annual Review of Economics* 14: 545–570.
- Gennaioli, N., A. Martin, and Stefano Rossi. 2014. "Sovereign Default, Domestic Banks, and Financial Institutions." *Journal of Finance* 69: 819-866.
- Goldfajn, I., and R.O. Valdés. 1999. "The Aftermath of Appreciations." *Quarterly Journal of Economics* 114(1): 229-262.
- Halac, M., and S. Schmukler. 2004. "Distributional Effects of Crises: The Financial Channel." *Economía* 5(1): 1-67.
- Jafarov, E. R. Maino, and M. Pani. 2019. "Financial Repression Is Knocking at the Door, Again." IMF Working Paper 19/211. Washington, DC, United States: International Monetary Fund.
- Kose, A. F. Ohnsorge, C. Reinhart, and K. Rogoff. 2022. "The Aftermath of Debt Surges." *Annual Review of Economics* 14: 637-663
- Kose, M.A., F. Ohnsorge, and N. Sugawara. 2021. "Benefits and Costs of Debt: The Dose Makes the Poison." In: A. Kose, P. Nagle, F. Ohnsorge, and N. Sugawara, editors. *Global Waves of Debt: Causes and Consequences*. Washington, DC, United States: World Bank.
- Mauro, P. and J. Zhou. 2020. "r-g<0: Can We Sleep More Soundly?" IMF Working Paper 20/52. Washington, DC, United States: International Monetary Fund.
- Mitchener, K.J. and C. Trebesch. 2022. "Sovereign Debt in the 21st Century: Looking Backward, Looking Forward." *Journal of Economic Literature* (forthcoming).
- Nagle, P. 2022. "Lessons from Past Coordinated Debt Relief Initiatives." In: *Global Economic Prospects*. Washington, United States: World Bank.
- Powell, A., and O. Valencia. 2023. *Dealing with Debt: Lower Risk for Higher Growth in Latin America and the Caribbean*. Development in the Americas Report. Washington, DC, United States: Inter-American Development Bank.
- Reinhart, C., and K. Rogoff. 2014. "Financial and Sovereign Debt Crisis: Some Lessons Learned and Those Forgotten." In: S. Claessens, M.A. Kose, L. Laeven, and F. Valencia, editors. *Financial Crises: Causes, Consequences, and Policy Responses*. Washington, DC, United States: International Monetary Fund.

- Reinhart, C., and B. Sbrancia. 2015. "The Liquidation of Government Debt." *Economic Policy* 30(82): 291- 333.
- Rodrik, D. 2008. "The Real Exchange Rate and Economic Growth." *Brooking Papers on Economic Activity* Fall: 365-412
- Roubini, N., and X. Sala-i-Martin. 1992. "Financial Repression and Economic Growth." *Journal of Development Economics* 39(1): 5-30.
- Willems, T., and J. Zettelmeyer. 2022. "Sovereign Debt Sustainability and Central Bank Credibility." IMF Working Paper 2022/016. Washington, DC, United States: International Monetary Fund.
- World Bank. 2021. *Debt Transparency in Developing Economies*. Washington DC, United States: World Bank.
- World Bank. 2023. "Financial Spillovers of Rising US Interest Rates." In: *Global Economic Prospects*. Washington, DC, United States: World Bank.