

Public Debt Management and Private Financial Development*

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Abstract

In several developing countries, high and rising public debt is an important source of vulnerability. Strengthening debt management is a priority, but its effects on domestic economies have been hardly analyzed. This paper asks whether better public debt management could have spillover effects on the private sector, leading to more (and more stable) private capital flows and domestic credit. This is a relevant question in a context of financial deepening and increasing private capital inflows, which could be prone to episodes of bonanza, sudden stops and crises. Our results, based on a sample of developing countries, show positive spillover effects from better public debt management to private capital inflows and domestic financial deepening.

JEL Codes: H63, F34, O40

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1 Introduction

Sovereign debt has been on the rise in developing countries even before the pandemic. In response to the Covid-19 shock countries expanded public expenditures to mitigate the social and economic effects of the crisis. As a result, budget deficit widened and public debt increased substantially. On average, public debt in low income developing countries is expected to increase from 44.2 in 2019 to 50.2 percent of GDP in 2021 (IMF, 2021a). Public debt has not only increased, but its structure started changing in the 2000s along two major dimensions. First, the average share of public debt held by domestic banks and domestic non-bank investors increased over time, exceeding 40% in recent years (Figure 1, panel a). Second, the volume (and the share) of external public debt due to emerging donors (mostly China) and private creditors increased substantially over the last decade (Figure 1, panel b). These trends, which are accompanied a reduction of official concessional debt, imply an increasing risk profile of public debt and could crowd out private sector lending (Calderón and Zeufack, 2020; Huang, Pagano and Panizza, 2020; IMF, 2020; Horn, Reinhart and Trebesch, 2021).

Within this changing landscape, with new creditors and a lower reliance on the official sector and concessional lending, public debt management is becoming increasingly important to ensure debt sustainability and mitigate risks. History tells that poorly structured debt in terms of maturity, currency, or interest rate composition and large and unfunded contingent liabilities have been important factors in inducing or propagating economic crises in many countries. Even in presence of sound macroeconomic policy settings, risky debt management increases the vulnerability to economic and financial shocks. Public debt management is the process of establishing and executing a strategy for managing the government's debt in order to raise the required amount of funding, and achieve its risk and cost objectives (IMF, 2001). Debt management encompasses different policies and choices aimed at preserving debt sustainability and minimizing borrowing costs, including the maturity structure of debt, the composition between external and domestic debt, the currency denomination of debt securities, the use of contingent instruments, and the relative supply of different securities.¹

¹See Jonasson, Papaioannou and Williams (2020) for an extensive discussion of debt management objectives and risks and an overview of the operational and institutional framework.

Notwithstanding the importance of debt management for macroeconomic and financial stability, the existing literature provides limited empirical evidence on the potential effects of better debt management strategies (or, more generally, institutional quality), other than its direct effects on growth and debt sustainability (Kraay and Nehru, 2006; Cordella, Ricci and Ruiz-Arranz, 2010; Megersa and Cassimon, 2015; Debrun, Ostry, Willems and Wyplosz, 2020). This scant evidence is possibly the result of the difficulty of measuring the quality of debt management policies. In this paper we overcome this limitation using a specific measure of the extent to which a debt management strategy is conducive to minimizing budgetary risks and ensuring long-term debt sustainability. We can then look at the evolution of public debt management in developing countries and analyze the potential positive spillover effects that sound public debt management policies could have on attracting private capital inflows and stimulating financial deepening.

The focus on private financial development is relevant since several frontier markets are becoming more financially integrated and are experiencing episodes of financial deepening (Lane, 2015; Araujo, David, van Hombecck and Papageorgiou, 2017; Horn and Narita, 2021). While the dynamics of capital inflows and credit growth in low income countries so far has not been particularly prone to the boom and bust cycles that have characterized emerging economies, these risks could materialize in the medium term with an acceleration of financial integration (Eberhardt and Presbitero, 2021). The capacity to attract private capital flows matters for consumption, investment and growth and is likely to become even more important in the near future to meet development spending needs and finance large infrastructure gap, especially in the current environment characterized by high debt levels and limited fiscal space. Recent estimates by the World Bank indicate that developing countries will need to spend about 4.5% of GDP to achieve the infrastructure-related Sustainable Development Goals (Rozenberg and Fay, 2019). Since these large investment needs cannot be filled in entirely with public resources and official aid, it will become essential to mobilize more financing from the private sector (IMF, 2021b). Since attracting private capital requires sound macroeconomic policies and institutional quality (Agénor, 2003; Alfaro, Kalemli-Ozcan and Volosovych, 2007; Mercado and Park, 2011), developing a sound debt management strategy could contribute to developing countries' capacity to mobilize private finance.

Sound debt management policies are a necessary condition for fiscal sustainability and macroe-

conomic and financial stability and, in this respect, they can reduce borrowing costs and financial risks, affect investors' country risk perception, and promote financial development (Missale, 1999; Montiel, 2005; Das, Papaioannou, Pedras, Surti and Ahmed, 2010; Melecky, 2012).² Private capital could flow to countries with better debt management policies, given that the latter lower fiscal vulnerability and the exposure to macroeconomic shocks, making foreign investors more willing lend and invest in private entities. Debt strategies aimed at diversifying the investor base of sovereign debt by attracting foreign investors and/or developing new financial products could also lead to more capital inflows if those investors diversify into private markets. In this respect, sounder policies and institutions are often identified as important drivers for the development of local currency bond markets, which are a necessary step to reduce developing countries' exposure to currency mismatches and global shocks and attract foreign private capital (Berensmann, Dafe and Volz, 2015; Essers, Blommestein, Cassimon and Flores, 2015; Dafe, Essers and Volz, 2018; Panizza and Taddei, 2020).

In addition, debt management could be associated with capital inflows through its effect on financial deepening, which makes a country more attractive to foreign investors. Debt management strategies could be directed at increasing liquidity in the secondary market—helping liquidity management for financial intermediaries—and building a yield curve, which facilitates the pricing of risk by the private sector. Sounder policies could also reduce the need to rely on financial repression (e.g., ceilings on deposit and lending rates, capital controls, liquidity and reserve requirements on banks) to finance the budget deficit and expand the investor base, limiting large exposures of domestic banks to domestic sovereign debt (which could trigger destabilizing effects and crowd out credit to the private sector). Thus, sound public debt management can promote financial sector development and, in turn, lead to capital inflows.

Based on these premises, our analysis is organized as follows. In Section 2 we discuss how we measure public debt management with a specific component of the Country Policy and Institutional Assessments (CPIA) compiled by the World Bank. The Debt Policy Ratings are available at a yearly frequency since 2005 and measure the degree of appropriateness of the country's debt management strategy for ensuring medium-term debt sustainability and minimizing budgetary risks.

²For a more operation overview of public debt management and the institutional framework, see IMF (2014).

While this assessment is subject to the use of judgment as it is the result of a discussion between country authorities and World Bank staff, it has the advantage of measuring policies under the government's control. Moreover, we show that this rating is correlated with two other measures of the quality of debt management and debt transparency, which are available only in the cross section. Taking the CPIA Debt Policy Rating as a measure of the quality of debt management policies, we document: i) a significant variation of the ratings across low and lower middle income countries; and ii) a lack of a robust upward trend between 2005 and 2018, which suggests that, especially for some countries, significant gaps persist.

In Section 3 we look at the relationship with capital flows. We first use aggregate data on capital flows and show that better debt management is associated with larger inflows, stronger growth over time, lower volatility and a counter-cyclical pattern. Zooming in on syndicated bank lending, we also observe that loan terms (i.e., amount, maturity and price) are better in countries with stronger debt management (Section 3.1). The positive association between debt management and capital flows holds in a multivariate panel setting, is driven by the bank lending component, and is economically meaningful—a one point increase in the score (which ranges between 1 and 6) is associated with a 2.1-2.5 percentage point increase in the ratio of capital flows over GDP. We also show that better debt management is associated with a lower probability of episodes of capital flight and sharp contractions of inflows. The COVID-19 pandemic crisis represents an opportunity to test whether sound debt management could help mitigate the effect of an external shock. We look at the dynamics of sovereign bond spreads during the unfolding of the pandemic and we show that borrowing costs increased relatively less in countries with stronger debt management policies (Section 3.2).

In Section 4 we look at the relationship between public debt management and financial development. With the same approach used in the analysis on capital flows we document a positive association between the debt policy score and the change in credit to the private sector. This result suggests that sounder debt management policies, by reducing financial repression and the need for domestic banks to finance government spending, could promote the development of local credit markets.

Finally, in Section 5 we summarize our results in the context of the current discussion about the

development of local currency bond markets as a way to improve debt management practices and limit currency risk and the vulnerability to external shocks.

2 Data and Measurement

2.1 Main Data Sources

The main data set includes 65 low and lower middle income countries (as defined by the World Bank classification) and covers the period 2005-2018.³ Data on public debt management are from the World Bank's CPIA and their availability across countries and over time constraints our sample. Data on capital inflows (to the non-official sector) are from the IMF. Capital flows are split into: i) FDI, ii) portfolio inflows, and iii) other inflows (e.g., banking flows). We complement these data with more granular loan level data on syndicated bank lending from Dealogic Loan Analytics. Data on domestic bank credit and other macroeconomic data are collected from standard sources (e.g., IMF, World Bank). Finally, we collect daily data on sovereign borrowing spreads from Bloomberg.

2.2 Measuring Public Debt Management

We measure public debt management using the “Debt Policy and Management” component of the Country Policy and Institutional Assessments compiled by the World Bank, which assesses whether the debt management strategy is conducive to minimizing budgetary risks and ensuring long-term debt sustainability.

As stated by the World Bank, “*the CPIA assess the quality of a country’s present policy and institutional framework. “Quality” refers to how conducive that framework is to fostering poverty reduction, sustainable growth, and the effective use of development assistance.*”⁴ The CPIA ratings are used to determine the allocation of the World Bank’s concessional lending as well as in

³The actual sample used in different exercises changes depending on data availability, as specified in the notes to the Figures and Tables. Tables A1 and A2 present the sample, variables and summary statistics used in the main empirical analysis.

⁴The definition is taken from this official document: <https://thedocs.worldbank.org/en/doc/597681562869817624-0290022019/original/CPIACriteria2017newversion.pdf>. The data are available here: <https://datacatalog.worldbank.org/search/dataset/0038988>. Last accessed: October 2021.

the assessment of public debt sustainability in low income countries. While early on the ratings were confidential, a review completed in 2004 argued in favor of a disclosure of the data starting in 2005 for IDA-eligible countries, and “*broadly supported the CPIA practice of rating implemented rather than intended policy actions*”. In the current version, the overall rating are based on 16 ratings covering 4 main areas: i) economic management, ii) structural policies, iii) policies for social inclusion/equity, and iv) public sector management and institutions. The ratings are proposed by staff and discussed with country authorities in a consultation process which leaves the final accountability to the World Bank staff.

The assessment of the debt policy and management (*debt policy score*, from herein) covers: i) the extent to which external and domestic public debt is contracted with a view to achieving/maintaining debt sustainability; and ii) the effectiveness of debt management functions, including the degree of coordination between debt management and other macroeconomic policies, the effectiveness of the debt management unit, the existence of a debt management strategy and of a legal framework for borrowing. The assessment of debt/fiscal sustainability is informed by the latest debt sustainability analysis, as well as other public sector debt/fiscal indicators. The effectiveness of debt management can be informed by available reports and other technical assistance reports. The debt policy score, which is part of the economic management cluster, ranges between 1 (low) and 6 (high), with half-grades also allowed. The score is based on criteria that focus on actual policies (not on promises and intentions) and institutional arrangements—which are within a country’s control—rather than on outcomes. While we are not aware of existing academic studies using the debt policy component of the CPIA, the overall index have been widely used, not only as a measure of institutional quality (e.g., [Kraay and Nehru, 2006](#); [Cordella et al., 2010](#); [Knack et al., 2011](#); [Presbitero, 2012](#)), but also as a proxy of public sector management ([Megersa and Cassimon, 2015](#)).

Validating the debt policy score. We recognize that such a measure rests on the degree of subjectivity involved in the staff’s assessment of debt policies. To mitigate this concern, we validate the use of the debt policy score showing its correlation with two other indicators related to debt management. First, we consider the Debt Management Performance Assessment (DeMPA), produced by the World Bank and available for a large set of countries. The DeMPA is a diagnos-

tic tool used to analyze the strengths and weaknesses of debt management practices. It examines government debt management activities through a comprehensive set of performance indicators spanning the full range of government debt management.⁵ With the caveat that the DeMPA score is only in the cross section (and available for different years in different countries), Figure A1 shows a significant and positive association between the DeMPA score and the average CPIA debt policy score over the sample period 2005-2018. Second, we look at the World Bank assessment of debt transparency (Rivetti, 2021). While this indicator covers only one aspect of debt management, it is reasonable to assume that the availability, completeness, and timeliness of public debt statistics and debt management documents could be a proxy for sound debt management practices. For instance, inaccurate debt records may hinder effective debt management and may lead to debt mispricing and/or significant fiscal and debt roll-over risks (Rivetti, 2022). Debt transparency is evaluated across nine indicators and addresses three main areas: (i) public debt statistics dissemination practices; (ii) publication of key debt management documents; and (iii) reporting on risks stemming from contingent liabilities. In particular, the assessment evaluates two key debt management documents: the medium-term debt management strategy and the annual borrowing plan. We use the latest assessments available for a large set of countries to show that there is indeed a positive and significant correlation between debt transparency and the debt policy score on a sample of 58 IDA-eligible countries Figure A2.⁶

Stylized facts on the debt policy score. A first look at the data on debt management for the entire sample of 65 developing countries shows a quite large dispersion of the index, ranging from the lowest score of Sudan and Zimbabwe to values close to 5 in Senegal, Uganda and Uzbekistan. But more importantly, the scatterplot reported in Figure 2 does not show any clear improvement of the debt policy score over time, with countries almost equally split between those where the score increased (23 countries), those where it declined (25 countries), and those (17 countries) which

⁵ For more details, see the background document, available [here](#). For countries with publicly available DeMPA reports (see <https://www.worldbank.org/en/programs/debt-toolkit/dempa>, last accessed in October 2021), we convert the categorical score in a numerical one and we plot it against the CPIA debt policy rating.

⁶ The debt transparency assessments are available at: <https://www.worldbank.org/en/topic/debt/brief/debt-transparency-report>. We convert the categorical score in a numerical one (from 1 to 4) and then compute the average score across the 9 dimensions, which we plot against the CPIA debt policy rating. The correlation is 0.28 (p-value = 0.02).

have seen no change in the index between 2005 and 2018.⁷ Even looking within the samples of low income and lower middle income countries does not show any trend. More specifically, it is important to note that, although there is a positive (and significant) association between the CPIA debt policy score and per capita GDP, the elasticity is around 0.1 and the variation in per capita GDP explains only 7% of the variation on the policy score across countries (Figure A3). This evidence mitigates concerns that the debt policy score could somehow pick up differences in income per capita.

At the same time, the debt policy score shows a more visible correlation with public debt levels (measured as a share of GDP), both in the time series and in the cross section (Figure A4). On average, the CPIA debt policy score improved in the first part of the sample, when debt was on a declining path, but worsened in most recent years, following the increase debt ratios (panel a). In the cross section, the correlation between the debt policy scores and the public debt-to-GDP ratios (all averaged between 2005 and 2018) is positive and significant (panel b). As the variation in debt ratios explains about one fourth of the variation in the debt policy score across countries, our analysis will also control for public debt to minimize any omitted variable bias.

3 Public Debt Management and Capital Flows

Having defined a measure of public debt management, in this section we look at its relationship with private capital inflows. We start by presenting a set of stylized facts, based on aggregate capital flows variables and also on loan-level data on syndicated bank lending, to look at loan terms. Then, we exploit the panel dimension of the dataset to study the relationship between debt management and the aggregate measures of capital flows controlling for other potential drivers of capital inflows. Finally, we zoom in on the COVID-19 pandemic to assess the role of debt management is shaping the reaction of external shocks on sovereign bond spreads.

⁷A recent World Bank's report (2019) shows a declining trend of the debt policy score (as well as for the whole indicators in the economic management cluster) for Sub-Saharan African countries.

3.1 Stylized Facts

Loan volume. As a first exercise we look at the association between debt management and capital inflows simply splitting the sample in three groups depending on the average CPIA debt policy score over the period 2005-2018 being low, medium, or high. The top panel of Figure 3 illustrates that countries which receive larger inflows tend to have stronger debt management policies. As this simple correlation in levels could be affected by several factors (e.g., country size), in the bottom panel we look at the variation in capital inflows between the first three and the last three years of the sample. In this case, while we see a common pattern of financial integration across all countries, the chart clearly shows that the increase in capital inflows has been more pronounced for countries with better policies.

Volatility. Next, given the positive association between stable capital inflows and economic growth (Ramey and Ramey, 1995), we turn to the relationship between the volatility of capital inflows and public debt management. For each country, we first compute the coefficient of variation of private capital inflows over GDP over the period 2005-2018 and then plot it against the debt policy score in Figure 4. The chart shows a negative correlation which indicates that stronger debt management is associated with more stable (e.g., less volatile) capital inflows and could therefore be more conducive to growth.

Cyclicalities. Then, we look at the cyclicalities of capital flows which we measure, for each country, with the estimated coefficient of a country-specific regression of total private capital flows (measured in percent of GDP) against real GDP growth over the period 2005-2018. Figure 5 plots the average coefficients for the three groups of countries based on the CPIA debt policy score. The chart shows that, on average, capital inflows are pro-cyclical in countries with a low debt policy score, with the potential adverse effect of magnifying supply-driven external shocks, like terms of trade ones, which are common in developing countries (Agénor, 2003). By contrast, capital inflows are counter-cyclical in countries with medium and (even more) high scores.

Loan terms. The aggregate analysis shows an association between the volume of capital flows and debt management, but is silent on the cost and maturity of these flows. To provide some more granular evidence, we zoom in on syndicated bank lending using loan-level data from Dealogic Loan Analytics. The sample covers 5,235 loan deals originated between 2005 and 2019 in 60 developing countries for which we can measure the CPIA debt policy score. For all loan deals we have information on the value (in USD) and for a subset of them we also observe the maturity (for 4,537 deals) and the all-in interest rate spread, which includes the contract spread over LIBOR plus any annual fee and any upfront fee (for 1,130 deals).⁸ Comparing the median number of loan deals and their characteristics (amount, maturity and price) across countries with low, medium and high CPIA debt policy score shows that stronger debt management is not only associated with more deals and larger lending volumes, but also with longer loan maturities and lower loan prices (Figure 6). In particular, the median loan maturity increases from 5 to 7 years moving from countries with a low score to those with medium and high scores (panel c), while the median price declines from 300 basis points for low-score countries to 200 bps for the high-score ones (panel d).

3.2 Empirical Analysis

To better investigate the relationship between public debt management and private capital flows we exploit the panel dimension of the dataset and estimate the following standard model on a balanced sample of 49 countries observed between 2005 and 2018:

$$CF_{c,t} = \alpha Debt\ policy\ score_{c,t-1} + Macro_{c,t-1}\beta + \tau_t + \gamma_c + \epsilon_{ct}, \quad (1)$$

where the dependent variable ($CF_{c,t}$) is either total net capital inflows of country c in year t , expressed as a share of GDP, or their components, split between foreign direct investment (FDI), portfolio inflows, and other non-official private inflows. The key explanatory variable is the lagged value of the CPIA debt policy score. The vector of macroeconomic characteristics ($Macro_{c,t-1}$) includes: i) real GDP growth; ii) the logarithm of real GDP per capita; iii) a dummy equal to 1 if

⁸For a more detailed description of the data in the context of measuring private capital flows and loan terms to developing countries, see [Broccolini, Lotti, Maffioli, Presbitero and Stucchi \(2020\)](#).

the country had a banking, sovereign or currency crisis in any of the previous 3 years; iv) a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years; v) the ratio of public debt over GDP; and vi) the value of the rule of law indicator from the World Governance Indicators. Table A2 reports the summary statistics and the definitions of all variables used in the analysis. All regressions are estimated with OLS with robust standard errors and include country and year fixed effects to control for unobservable differences across countries which could drive differences in the degree of financial integration and for the effect of common shocks on capital inflows (e.g., the global financial cycle).

Table 1 reports the results. The first four columns look at total net capital flows and show a positive and significant association between the debt policy score and capital inflows, which is robust to controlling for the set of macro variables. The point estimate indicates that a half point increase in the score is associated with a 1.1 percentage point (pp) higher capital flows to GDP ratio (column 1). This is an economically meaningful correlation, as net capital inflows are equal, on average, to 4.9% of GDP (Table A2). The last three columns look separately at the three components of total inflows and show that the average positive correlation is driven by other non-official flows (column 7), which are mostly bank loans, while no significant correlation is visible when looking at FDI (column 5) and portfolio flows (column 6). The correlation is economically meaningful, as a half point increase in the score is associated with a 1 pp increase in the ratio of other flows to GDP, whose average value in the sample is 0.6%. These findings are consistent with the higher stability of FDI flows (Sarno and Taylor, 1999) and with a recent review of the literature on the drivers of capital flows to emerging markets showing robust evidence supporting for the role of country risk indicators in driving banking flows, while the evidence is less robust for other flows (Koepke, 2019).

Capital flights and capital flow busts. Given the importance of boom-bust cycles in capital flows (Agénor, 2003; Kaminsky, 2019), we look specifically at episodes of capital flights and capital flow bust, as they may have adverse negative real and financial effects (Caballero, 2016; Reinhart and Rogoff, 2013). The former are simply measured by a dummy equal to one for observations for which net capital inflows is negative and zero otherwise. Capital flow busts are defined by a dummy which is equal to one if the ratio of net capital flows over GDP is at least one standard

deviation (SD) below the country-specific average (where by the mean and SD are computed at the country level over the period 2005-2018). In both cases, we find that a higher debt policy score is associated with a lower probability of capital flights (Table 2, column 1) and a lower probability of busts (column 2). The economic magnitude is again relevant as a half point increase in the score is associated with almost 4 and 5 pps reduction in the probability of capital outflows and busts, respectively (the average probability of these events is 17 and 10%, respectively, see Table A2).

Heterogeneity. We then look at a potential different role played by public debt management across different countries. We first isolate Sub-Saharan African (SSA) countries from the rest of the sample, but we find that the positive correlation with capital inflows is not statistically different across the two samples, although the point estimate is smaller for SSA countries than for other countries (Table 2, column 3). When splitting the sample across income levels we find instead that the average positive coefficient estimated over the whole sample is driven by lower middle income countries (column 4). Finally, we observe that the association between debt management and capital inflows depends on the level of public debt (column 5) and it is positive and significant only in low-debt countries, while it is smaller and not significant in high debt ones (those in the top quartile of the public debt-to-GDP distribution).

Robustness. A key concern about the validity of our results is that the CPIA debt policy score could be a noisy measure of debt management and captures some more general degree of institutional quality and state capacity. When introducing our main variable, we have shown that it is not significantly correlated with per capita GDP, while it is significantly associated with other measures of debt management (see Section 2.2). To address the concern about measurement, we replicate our baseline analysis adding other components of the overall CPIA score together with the debt policy one. A set of horse race regressions, reported in Table 3, confirm that our measure of public debt management is what matters for capital inflows. In particular, we control for the two other components of the economic management cluster (fiscal policy and macroeconomic policies) and for the three other clusters (structural policies, public sector management and institutions, and policies for social inclusion and equity) and find that the coefficient on the debt policy score remains stable and statistically significant, while the coefficients of the other CPIA scores are

not significantly different from zero.

Then, to mitigate any lingering concern that our results could be driven by an omitted variable bias, we replicate our main results on total capital inflows by expanding the set of control variables to include a broad set of macroeconomic variables which could drive capital inflows and financial deepening, and at the same time be correlated with debt management policies. In practice, we control for remittances, foreign aid, international reserves and trade openness (all expressed as a share of GDP) and for an index of globalization (Gygli *et al.*, 2019). In all cases the coefficient of the debt policy score remains statistically significant and stable in size, while we only find evidence of a negative correlation between remittances and private capital inflows (Table 4).

Finally, we also test the robustness of our main findings to alternative approaches. First, we estimate equation 1 taking as dependent variable the change in the capital flow over GDP ratios between t and $t - 1$ and controlling for the lagged value of dependent variable in level, as in a standard dynamic setting. Table A3 shows that the correlation between the debt policy score and capital inflows is confirmed also in this setting. Moreover, while it is clearly driven by the other non-official flows component, we detect a modest association also with portfolio flows. Second, when looking at episodes of capital flights and capital flow bust, we use a probit model, which is better suited than the linear probability model to treat a 0/1 outcome variable. However, in our context the use of country fixed effects implies that the sample is limited to countries which experienced at least an event (capital flow bust, or episodes of negative capital inflows) during the sample period. Notwithstanding a significant decline in the sample size (the number of countries drops from 49 to 34 or 38), results shown in Table A4 confirm that stronger debt management policies are associated with a significantly lower probability of capital flow bust (the association with episodes of negative inflows is still negative but no more significant).

3.3 Borrowing costs after COVID-19

Building on the evidence collected so far about a positive association between sound debt management and higher, less volatile and cheaper capital flows, it is interesting to exploit the shock on international financial markets during the unfolding of the COVID-19 pandemic to analyze whether

countries which had in place sounder debt management policies have been able to mitigate the negative effect of the shock on sovereign bond spreads. We collect daily data on sovereign bond spreads from Bloomberg for 21 countries in our sample with market access and outstanding international bonds. The top panel of Figure 7 plots the change in sovereign bond spreads between February 4 (when the WHO asked the UN Secretary-General to activate the UN crisis management policy following the COVID-19 outbreak in China) and May 4 2020 (when spreads started declining) against the CPIA debt policy score in 2019. The charts shows a negative correlation which indicates that countries with stronger debt management experienced a lower increase in bond spreads during the first wave of the pandemic.

To further corroborate this evidence, we trace the dynamic response of sovereign spreads after the COVID-19 shock across countries with weak and strong debt management policies using the standard local projection method (Jordà, 2005). A similar approach has been used to show how the effect of global shocks (including the pandemic one) is mediated by the level of country’s public debt (Presbitero and Wiriadinata, 2022).

The bottom panel of Figure 7 plots the differential effect of countries with weak policies (compared to those with strong policies) on the daily change in sovereign bond spreads over 30 trading days since February 4, 2020. The impulse response function is obtained by estimating the following model on daily sovereign bond spreads data from January 3 to March 6, 2020:

$$\Delta Spread_{c,t+h} = \beta_h Low\ Debt\ policy\ score_c \times Post_t + \alpha_1 Spread_{c,t-1} + \tau_t + \gamma_c + \epsilon_{c,t}, \quad (2)$$

where the dependent variable is the change in sovereign bond spreads of country c from day t to $t+h$ (with $h = 1, \dots, 30$) and the key explanatory variable is the interaction between the Low CPIA debt policy score indicator (equal to 1 for countries with a score < 3.5) and the $Post$ indicator, which is equal to 1 since February 4, and 0 before. The model includes the lagged value of sovereign bond spreads and day (τ_t) and country (γ_c) fixed effects, which capture the effect of global shocks and unobservable (time-constant) differences across countries on bond spreads. The results show a sharp and significantly larger increase in spreads for countries with weak debt management policies, where spreads increased by more than 500 bps more than in countries with sound policies in

the first few weeks of the pandemic.

4 Public Debt Management and Private Credit

The evidence discussed so far shows that sounder public debt management could spill over to the private sector, as countries with better debt management, on average, attract more, less volatile and less cyclical capital inflows (and are able to borrow from banks at better terms). This is consistent with the idea that sounder debt management policies signal macroeconomic and financial stability and make a country more attractive to foreign investors. Not only this translates into a lower vulnerability to domestic and external shocks, but a heightened trust in local policies and public finances would also reduce the reliance on financial repression (Montiel, 2005). Moreover, better debt management could be associated with a lower the crowding out effect of public borrowing on bank domestic credit, leading to a deepening of local credit markets, which in turn would increase the country's attractiveness to foreign investors.

Since the potential positive effect of sound debt management policies on the development of domestic credit markets could be a channel through which public debt management can attract foreign capital, in this section we look at the extent to which differences in debt policy managements are reflected in the dynamics of private credit across countries. This is a relevant question *per se*, given the key role played by financial deepening for economic development and also the risks of excessive credit growth for financial stability (Arcand, Berkes and Panizza, 2015; Rousseau and Wachtel, 2011).

We replicate the same type of descriptive analysis done for capital flows and we find consistent patterns. Countries with stronger debt management policies have deeper credit markets (Figure 8, panel a). Also, financial deepening increased across the board over the sample period, but it has been stronger in countries with higher CPIA debt policy scores (Figure 8, panel b). Sounder policies are also associated with less volatile credit dynamics (Figure 9). Finally, while domestic credit is somewhat pro-cyclical in countries with low CPIA debt policy scores, this is not the case in countries with medium and high policy scores (Figure 10).

Then, we move to a regression setting similar to the one discussed above for capital flows and

estimate the following equation:

$$\Delta Credit_{c,t} = \alpha Debt\ policy\ score_{c,t-1} + Macro_{c,t-1}\beta + \tau_t + \gamma_c + \epsilon_{ct}, \quad (3)$$

where the dependent variable is the change in domestic bank credit over GDP in country c between year t and $t - 1$ and the vector of macro controls include the same variables used in equation 1, plus the lagged value of the credit-to-GDP ratio and capital inflows (as a share of GDP). The results, reported in Table 5, show a positive association between the debt policy score and the credit over GDP ratio, controlling or not for the set of macroeconomic variables.⁹ The point estimate of the coefficient α means that a half point increase in the score is associated with almost a 0.5 pp increase in the credit-to-GDP ratio (column 2). As in the capital flows exercise, to mitigate concerns about the omitted variable bias, we test the robustness of our main findings including other components of the overall CPIA score (Table 6) and a set of macroeconomic variables (Table 7). The coefficient of the debt policy score remains significant and stable across all specifications.

As a second step we look at private credit deleveraging, considering episodes in which the credit-to-GDP ratio declines (e.g., using a dummy equal to one if $\Delta Credit_{c,t} < 0$) and more extreme episodes of credit busts (defined by a dummy which is equal to one if the ratio of private credit over GDP is at least one SD below the country-specific average), which are often associated with large output losses (Jordà, Schularick and Taylor, 2013). We do observe that a higher score is associated with a lower likelihood of a decline in the credit-to-GDP ratio (Table 5, column 3) and of a credit bust (column 4). These findings are confirmed also when using a probit model (Table A4, columns 3-4). Finally, we consider possible heterogeneous effects across countries and find that the association between debt management and private credit growth is weaker (but still statistically significant) in SSA than elsewhere (Table 5, column 5), while it is almost identical across low income and lower middle income countries (column 6).

⁹Compared to the analysis on capital flows, the sample does not include Kiribati because of lack of data on private credit ($N = 48$). Also, the sample is not fully balanced because of a few missing observations. The average number of countries per year is 46.5. Results are basically unaffected if the lagged variable of the credit-to-GDP ratio is dropped from the set of controls, see Table A5.

5 Discussion

The quality of public debt management policies is heterogeneous across developing countries and the time series between 2005 and 2018 does not show any significant and robust improvement. This trend strengthens the need for policymakers to reinforce their fiscal frameworks and improve the management of public debt and contingent liabilities, especially because of a shift in public debt towards non-concessional debt. The lack of improvements in debt management is worrisome also in light of our analysis, which shows that there are spillover effects from better public debt management to private capital inflows and domestic financial deepening. Also at the onset of the pandemic crisis, countries with weaker debt management policies have experienced a significantly larger increase in borrowing costs compared to those with sounder policies. In a context of increasing financial integration in frontier economies, countries should strengthen domestic institutions to better manage capital ebbs and flows and the associated credit booms and busts.

International financial institutions could help improving public debt management, especially in the areas of currency risk and the development of local currency bond markets. Graduating from the *original sin* (Eichengreen, Hausmann and Panizza, 2007; Hausmann and Panizza, 2011) and being able to issue internationally in local currency is critical for low income countries to mitigate capital flows volatility, develop domestic financial markets, attract long-term financing, and improve debt sustainability by providing a better hedge against external shocks (Berensmann, Dafe and Volz, 2015; Dafe, Essers and Volz, 2018; Panizza and Taddei, 2020; Beirne, Renzhi and Volz, 2021). In this respect, multilateral development banks and development financial institutions could directly reduce low income countries' exposure to currency risk by lending also in local currency, rather than exclusively in hard currency. A key resistance to such a shift is that prudential practices in many multilateral institutions basically prohibit retaining currency risk (Perry, 2009). However, recent proposals stress the role that market players could play in hedging currency risk so that these mechanisms would be viable also for the development lenders. For instance, one proposal is based on the creation of a multilateral International Currency Fund (ICF), which would act as a market maker for developing countries' currency risk on a global scale. The ICF could provide transparent two-way markets in currencies, allowing international borrowers and lenders

to understand, price, quantify and mitigate currency risk.¹⁰ In addition, The Currency Exchange (TCX), launched in September 2007 by a group of development finance institutions, is designed to allow lenders to share the benefits of global currency risk diversification. TCX works as a local currency hedge fund: it accepts foreign exchange exposures in hard currencies and offers swaps and forwards to convert them into domestic currencies. The originating customers—which could be multilateral development banks—would retain the credit risk, while the fund would retain only the currency risk (Perry, 2009; IMF, 2021b).¹¹

¹⁰See https://niftys.org/wp-content/uploads/2021/07/NIFTYS_The_International_Currency_Fund.pdf, last accessed: October 2021.

¹¹See <https://www.oecd.org/dac/peer-reviews/Currency-Exchange-Fund.pdf>, last accessed: October 2021.

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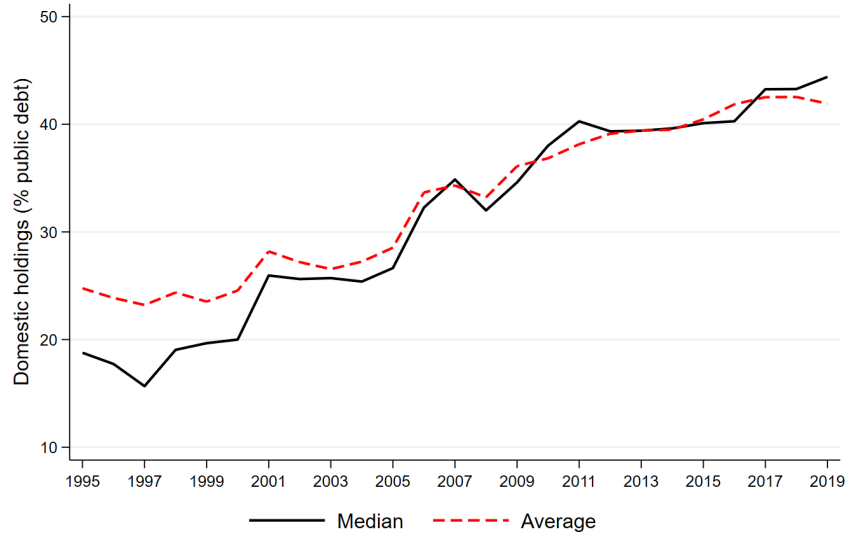
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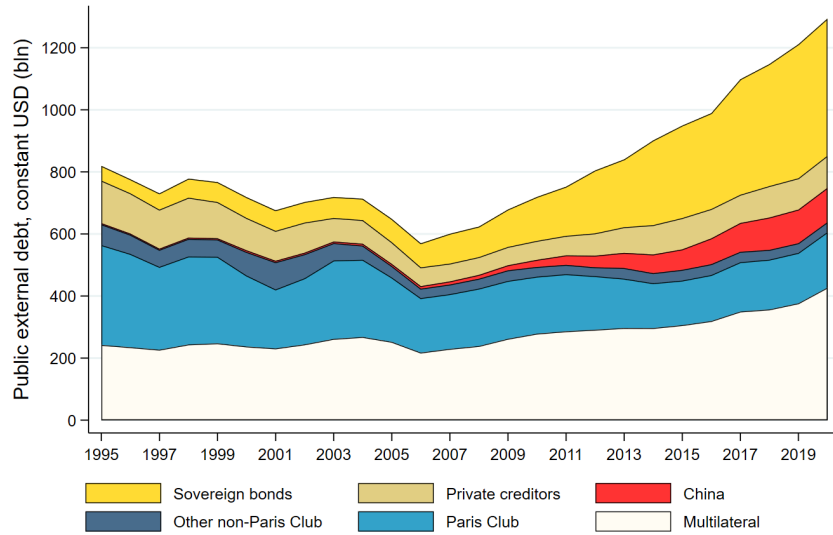
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Figures and Tables

Figure 1: The changing landscape of public debt in developing countries



(a) Domestic holdings of public debt



(b) External public debt, creditor composition

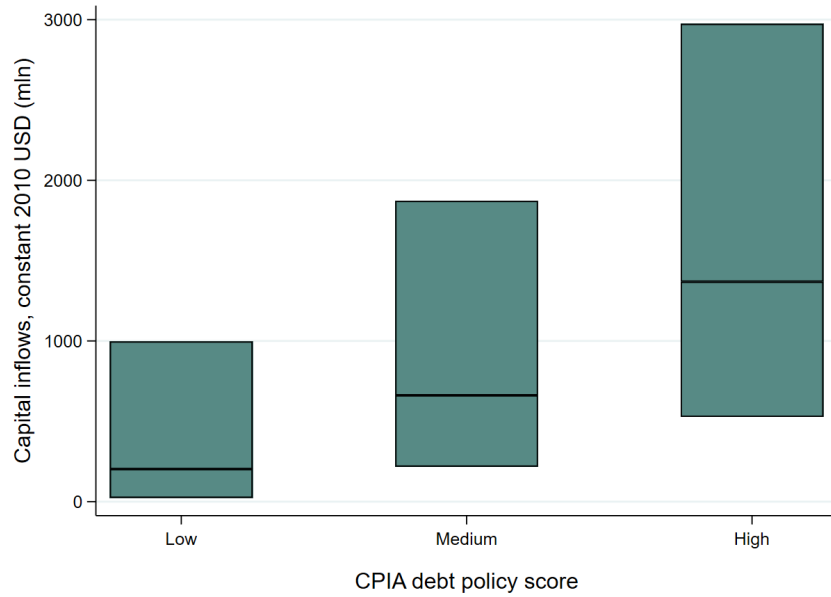
The chart in the top panel plots the average and median shares of domestic holding of total public debt, which is the sum of the holdings of: the central bank, the domestic banking system and domestic non-bank holders. The (balanced) sample includes 60 low income countries from 1995 to 2019. The chart in the bottom panel plots the total stock of public external debt by creditor type, in constant USD (billions), for a balanced sample of 75 low income and lower middle income countries from 1995 to 2020. Sources: The World Bank International Debt Statistics 2021 and the sovereign investor base estimates by [Arslanalp and Tsuda \(2014\)](#) (release of April 30, 2021).

Figure 2: Public debt management over time

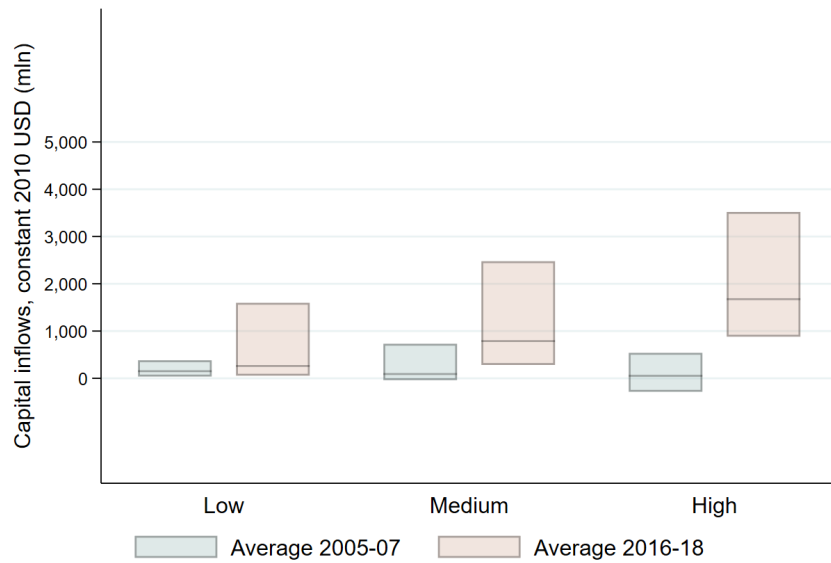


The chart plots the values of the CPIA debt policy score in 2018 (y-axis) versus those in 2005 (x-axis) for a sample of 65 developing countries. Source: The World Bank.

Figure 3: Public debt management and capital inflows



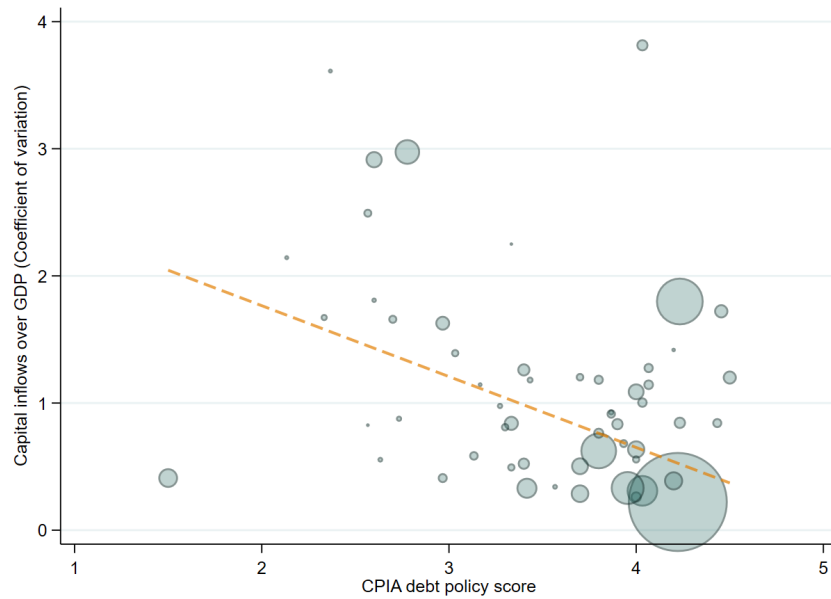
(a) Average over time



(b) 2005-07 vs 2016-18

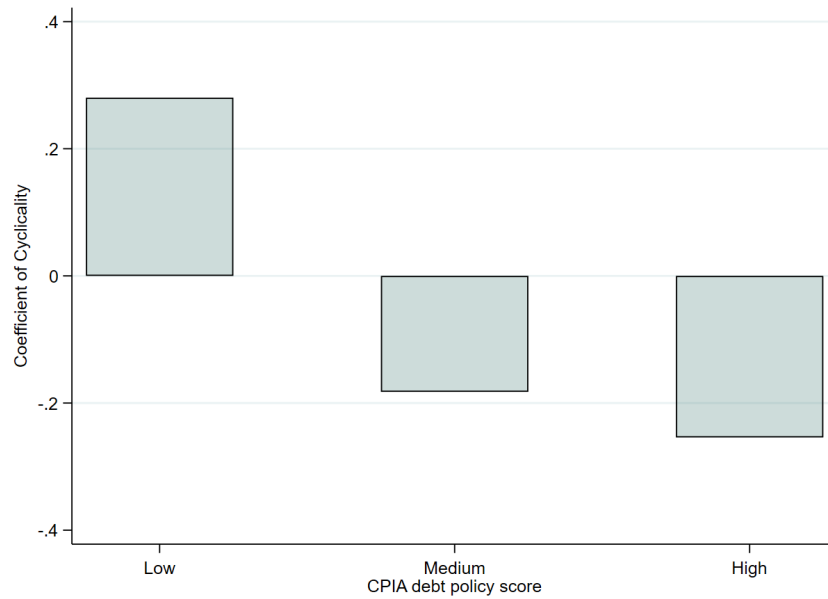
Both panels show the interquartile range and the median (horizontal line) of gross capital inflows by CPIA debt policy score. Capital inflows are measured in million of constant USD. Countries are classified into Low, Medium or High CPIA Debt Policy Score depending on the average score over the period 2005 – 2018, with countries with a score < 3 classified as Low, countries with a score between 3 and 4 classified as Medium, and countries with a score > 4 classified as High. The top panel plots the distribution of the average capital inflows by country over the period 2005 – 2018. The bottom panel plots the distribution of the average capital inflows by country over the periods 2005 – 2007 and 2016 – 2018, measured in million of constant USD. The sample includes 55 developing countries, 14 classified as Low CPIA Debt Policy Score, 24 as Medium and 17 as High. Source: International Monetary Fund and the World Bank.

Figure 4: Public debt management and capital inflows volatility



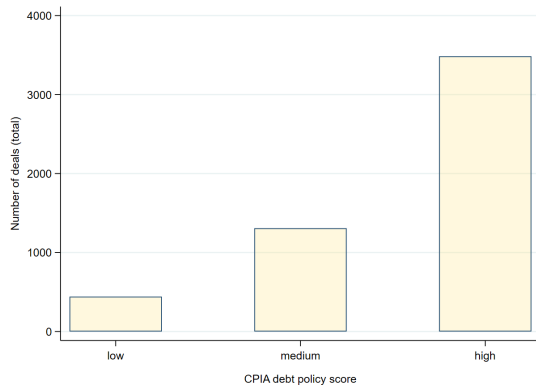
The chart plots the volatility of total private capital flows over GDP, measured by the coefficient of variation computed over the period 2005-2018 (y-axis), against the average value of the CPIA debt policy score over the same period (x-axis) for a sample of 55 developing countries. The size of the bubble is proportional to GDP; the dashed line is the GDP-weighted linear fit. Source: International Monetary Fund and the World Bank.

Figure 5: Public debt management and capital inflows cyclicality

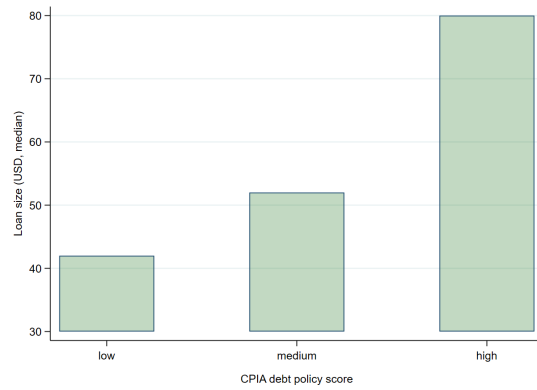


The chart plots the average coefficients of a country-specific regression of total private capital flows over GDP against a constant and real GDP growth over the period 2005-2018 (y-axis) by CPIA debt policy score (x-axis) for a sample of 55 developing countries. Countries are classified into Low, Medium or High CPIA Debt Policy Score depending on the average score over the period 2005 – 2018, with countries with a score < 3 classified as Low, countries with a score between 3 and 4 classified as Medium, and countries with a score > 4 classified as High. The country-specific regressions include 14 observations (the period 2005-2018) each and they estimate one coefficient for the real GDP growth variable. Then, these coefficients are averaged across the three CPIA debt policy score groups. Source: International Monetary Fund and the World Bank.

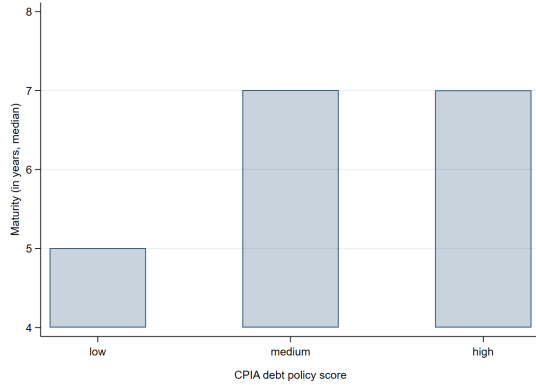
Figure 6: Public debt management and syndicated lending



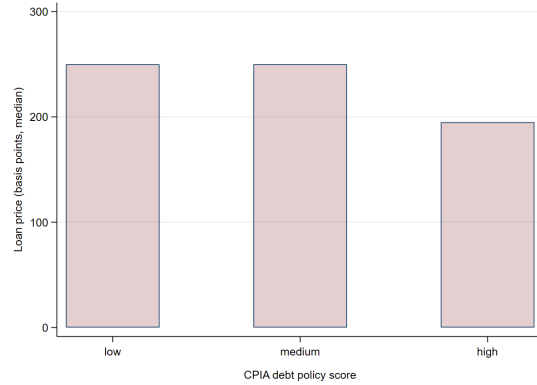
(a) Number of deals



(b) Loan amount



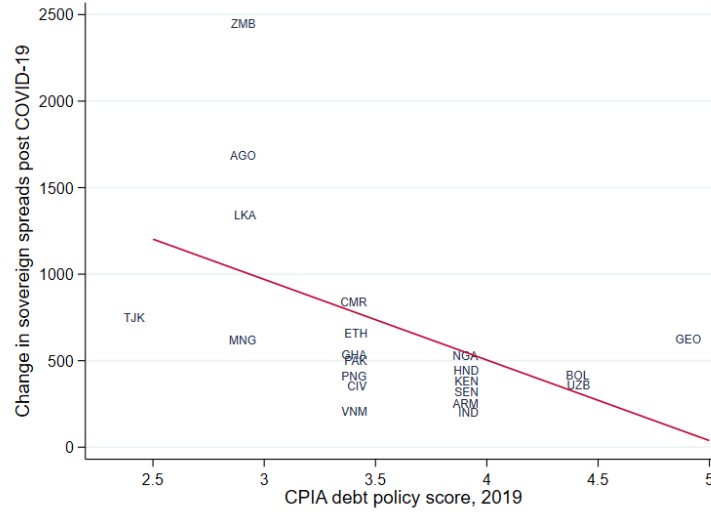
(c) Loan maturity



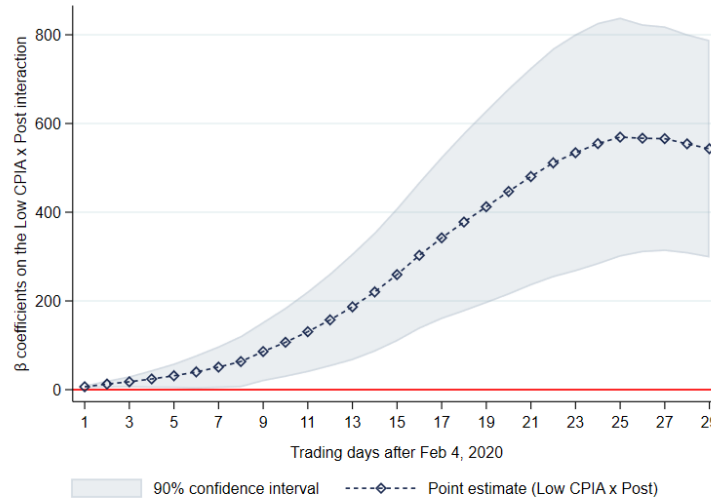
(d) Loan price

The panels plot the: i) total number of deals (panel a); ii) the median loan amount (in million USD, panel b); iii) the median loan maturity (in years, panel c); and iv) the median loan price (measured by the all-in spread, in basis points, panel d) by CPIA debt policy score. Countries are classified into Low, Medium or High CPIA Debt Policy Score depending on the average score over the period 2005 – 2018, with countries with a score < 3 classified as Low, countries with a score between 3 and 4 classified as Medium, and countries with a score > 4 classified as High. Syndicated loan data refers to 5,235 deals signed between 2005 and 2019 to borrowers in 60 low and lower middle income countries. Source: Dealogic Loan Analytics and the World Bank.

Figure 7: Public debt management and sovereign borrowing costs after COVID-19



(a) Change in spreads from Feb 4 to May 4, 2020



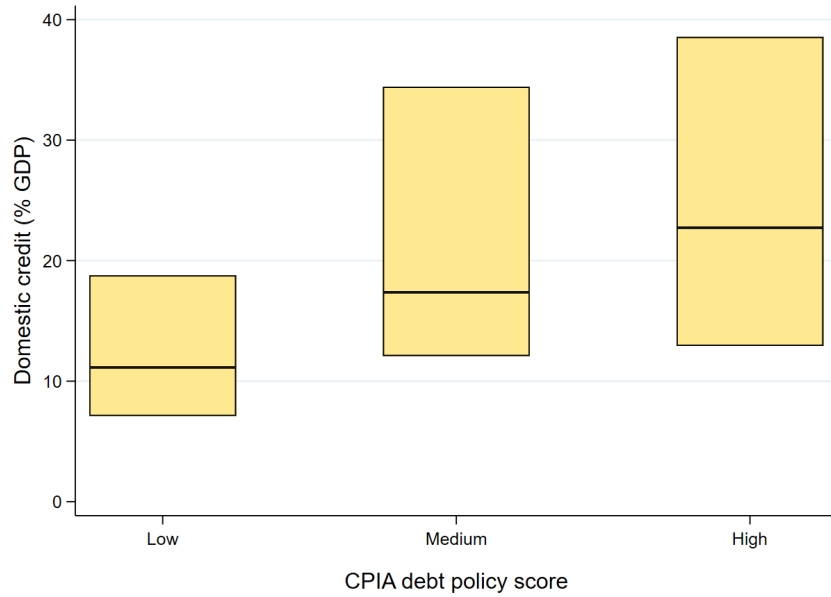
(b) Impulse response function

The top panel plots the change in sovereign bond spreads between February 4 and May 4 2020 (y-axis) against the CPIA debt policy score in 2019 (x-axis) for a sample of 21 developing countries. The bottom panel plots the differential effect of low CPIA debt policy score countries on the daily change in sovereign bond spreads over 30 trading days since February 4, 2020. Countries with a score < 3.5 classified as Low CPIA debt policy score. The impulse response function is obtained by estimating the following model:

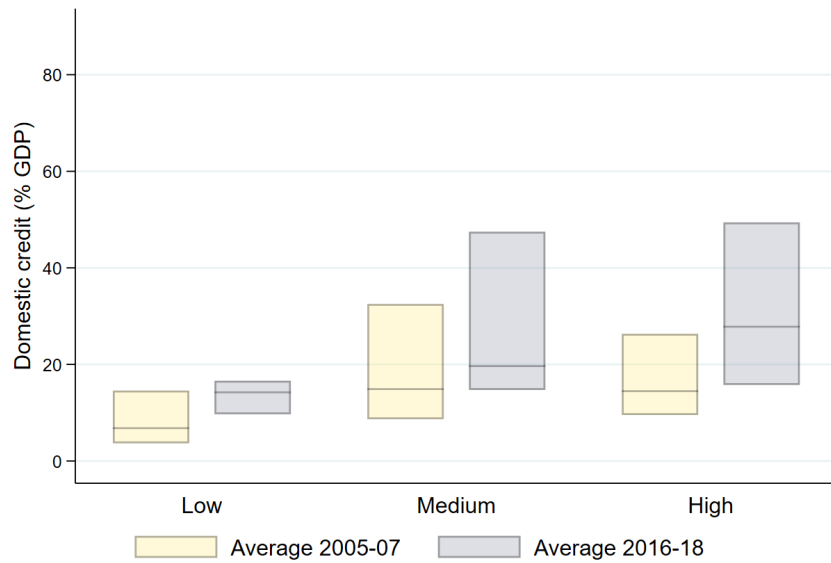
$$\Delta Spread_{c,t+h} = \beta_h Low\ CPIA_c \times Post_t + \alpha_1 Spread_{c,t-1} + \tau_t + \gamma_c + \epsilon_{c,t},$$

where the dependent variable is the change in sovereign bond spreads of country c from day t to $t+h$ (with $h = 1, \dots, 30$) and the key explanatory variable is the interaction between the Low CPIA debt policy score indicator and the $Post$ indicator, which is equal to 1 since February 4, and 0 before. The model includes day (τ_t) and country (γ_c) fixed effects. The sample runs from January 3 to March 6, 2020 and includes 21 developing countries. Source: Bloomberg and the World Bank.

Figure 8: Public debt management and domestic bank credit



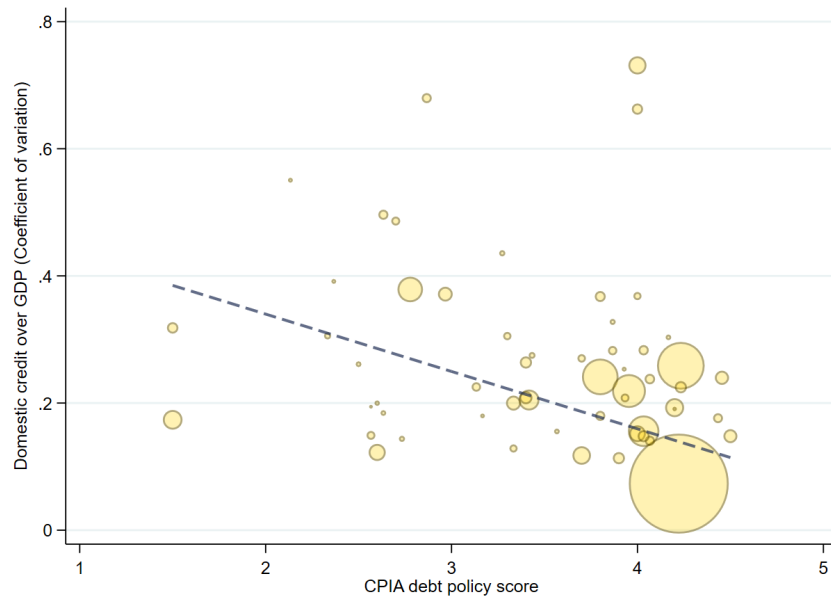
(a) Average over time



(b) 2005-07 vs 2016-18

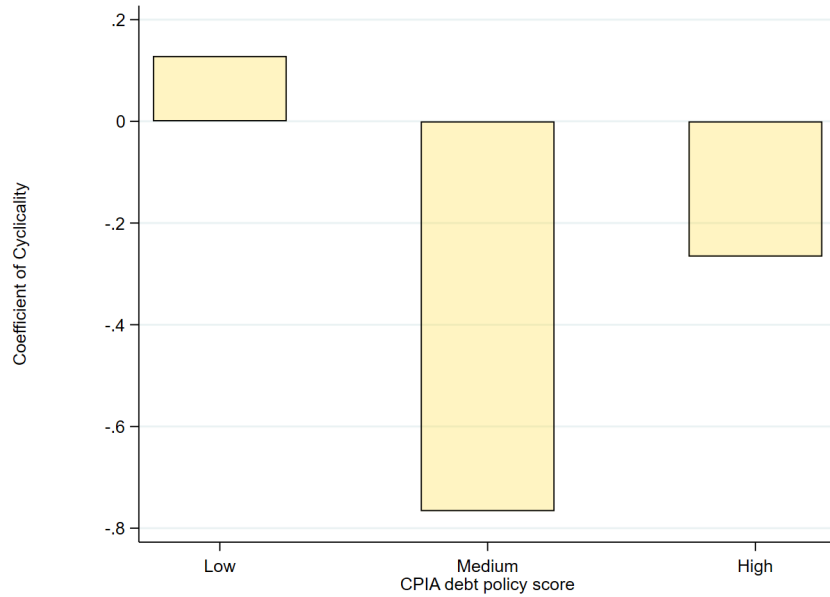
Both panels show the interquartile range and the median (horizontal line) of domestic bank credit by CPIA debt policy score. Domestic bank credit is measured as a % of GDP. Countries are classified into Low, Medium or High CPIA Debt Policy Score depending on the average score over the period 2005 – 2018, with countries with a score < 3 classified as Low, countries with a score between 3 and 4 classified as Medium, and countries with a score > 4 classified as High. The top panel plots the distribution of the average domestic bank credit by country over the period 2005 – 2018. The bottom panel plots the distribution of the average domestic bank credit by country over the periods 2005 – 2007 and 2016 – 2018. The sample includes 57 developing countries, 17 classified as Low CPIA Debt Policy Score, 22 as Medium and 18 as High. Source: International Monetary Fund and the World Bank.

Figure 9: Public debt management and bank credit volatility



The chart plots the volatility of domestic bank credit over GDP, measured by the coefficient of variation computed over the period 2005-2018 (y-axis), against the average value of the CPIA debt policy score over the same period (x-axis) for a sample of 57 developing countries. The size of the bubble is proportional to GDP; the dashed line is the GDP-weighted linear fit. Source: International Monetary Fund and the World Bank.

Figure 10: Public debt management and bank credit cyclicality



The chart plots the average coefficients of a country-specific regression of domestic bank credit over GDP against a constant and real GDP growth over the period 2005-2018 (y-axis) by CPIA debt policy score (x-axis) for a sample of 57 developing countries. Countries are classified into Low, Medium or High CPIA Debt Policy Score depending on the average score over the period 2005 – 2018, with countries with a score < 3 classified as Low, countries with a score between 3 and 4 classified as Medium, and countries with a score > 4 classified as High. The country-specific regressions include 14 observations (the period 2005-2018) each and they estimate one coefficient for the real GDP growth variable. Then, these coefficients are averaged across the three CPIA debt policy score groups. Source: International Monetary Fund and the World Bank.

Table 1: Public debt management and capital inflows: Baseline results

The table reports the OLS estimates of model 1, in which the dependent variable is the ratio of total private capital flows over GDP (columns 1-4), the ratio of foreign direct investment (FDI) over GDP (column 5), the ratio of portfolio flows over GDP (column 6) and the ratio of other non-official flows over GDP (column 7). The main explanatory variable is the value of the CPIA debt policy score lagged by one year. Growth is real GDP growth; GDP per capita is the logarithm of real GDP per capita; Public debt is the ratio of government debt over GDP; and Rule of law is the value of the rule of law indicator from the World Governance Indicators. All these variable are lagged by one year. Crisis is a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; IMF agreement is a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable:	Total flows				FDI	Portfolio flows	Other flows
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Debt policy score	2.230** (0.956)	2.321** (0.937)	2.504*** (0.923)	2.131* (1.152)	-0.162 (0.363)	0.281 (0.187)	2.183** (1.018)
Growth		-0.162 (0.134)	-0.141 (0.132)	-0.163 (0.137)	-0.007 (0.048)	-0.012 (0.020)	-0.127 (0.110)
GDP per capita		12.221*** (4.148)	11.740*** (4.092)	12.635*** (4.079)	3.342* (1.956)	1.725** (0.813)	8.320** (3.401)
Crisis			0.731 (1.206)	0.830 (1.201)	0.781 (0.555)	0.005 (0.240)	-0.267 (0.936)
IMF agreement			-1.997** (0.781)	-2.262*** (0.816)	0.071 (0.357)	-0.100 (0.148)	-2.059*** (0.640)
Public debt				-0.055 (0.048)	0.024** (0.011)	-0.005 (0.004)	-0.051 (0.032)
Rule of law				-2.703 (2.877)	1.839* (1.073)	-0.766 (0.471)	-3.980 (2.477)
Observations	637	637	637	637	637	596	637
# countries	49	49	49	49	49	48	49
R ²	0.404	0.414	0.420	0.431	0.600	0.373	0.316
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 2: Public debt management and capital inflows: Additional results

The table reports the OLS estimates of model 1, in which the dependent variable is: i) a dummy equal to 1 if the ratio of total net private capital flows over GDP is below zero, and 0 otherwise (column 1); ii) a dummy equal to 1 if the ratio of total net private capital flows over GDP is more than one standard deviation below its historical (country-specific) average, and 0 otherwise (column 2); and the ratio of total net private capital flows over GDP (columns 3-5). The main explanatory variable is the value of the CPIA debt policy score lagged by one year. In columns 3 to 5 the average effect of the debt policy score is split between Sub-Saharan African (SSA) countries versus other countries (column 3); low income countries (LIC) versus lower middle income countries (LMIC), as defined by the World Bank; and countries with high debt (those in the top quartile of the distribution of public debt over GDP) versus those with low debt (those in the bottom three quartiles). The dummy for high debt countries is also included in the regression. Growth is real GDP growth; and GDP per capita is the logarithm of real GDP per capita. Both variable are lagged by one year. Crisis is a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; and IMF agreement is a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable:	CF < 0		Bust			Total flows		
	(1)	(2)	(3)	(4)	(5)			
Debt policy score	-0.077*	-0.099***						
	(0.041)	(0.032)						
Debt policy score × SSA=0			4.151**					
			(2.066)					
Debt policy score × SSA=1			2.136**					
			(1.046)					
Debt policy score × LIC				-0.486				
				(1.889)				
Debt policy score × LMIC				3.642***				
				(0.999)				
Debt policy score × Low debt					3.634***			
					(1.066)			
Debt policy score × High debt					1.043			
					(1.173)			
Growth	0.005	0.003	-0.142	-0.135	-0.088			
	(0.007)	(0.006)	(0.132)	(0.131)	(0.130)			
GDP per capita	-0.251	-0.185	12.353***	11.788***	10.354***			
	(0.164)	(0.175)	(4.106)	(4.079)	(3.963)			
Crisis	0.041	-0.035	0.669	0.345	0.803			
	(0.056)	(0.046)	(1.198)	(1.185)	(1.190)			
IMF agreement	0.075**	0.098***	-1.978**	-1.819**	-1.542**			
	(0.035)	(0.028)	(0.783)	(0.779)	(0.751)			
Observations	637	637	637	637	637			
# countries	49	49	49	49	49			
R ²	0.302	0.193	0.421	0.425	0.428			
Country FE	Yes	Yes	Yes	Yes	Yes			
Year FE	Yes	Yes	Yes	Yes	Yes			

Table 3: Public debt management and capital inflows: Other CPIA scores

The table reports the OLS estimates of model 1, in which the dependent variable is the ratio of total private capital flows over GDP. The main explanatory variable is the value of the CPIA debt policy score lagged by one year. The set of control variables include: i) the logarithm of real GDP per capita and real GDP growth measured both lagged by one year; ii) a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; and iii) a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. The first column replicates the baseline regression (Table 1, column 3), while the other columns add one additional CPIA score at the time. Columns 2 and 3 control for the two other components of the CPIA Economic Management cluster. Columns 4, 5 and 6 control for the scores of the other three clusters: i) structural policies, ii) policies for social inclusion/equity, and iii) public sector management and institutions. All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Debt policy score	2.504*** (0.923)	2.527*** (0.961)	2.605*** (0.949)	2.496*** (0.965)	2.863*** (0.964)	2.533*** (0.951)
Macroeconomic management score		-0.101 (0.972)				
Fiscal policy score			-0.556 (0.950)			
Structural policies				0.099 (2.145)		
Public sector management and institutions					-5.216* (2.750)	
Policies for social inclusion/equity						-0.523 (2.412)
Observations	637	637	637	637	637	637
# countries	49	49	49	49	49	49
R^2	0.420	0.420	0.420	0.420	0.424	0.420
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 4: Public debt management and capital inflows: additional controls

The table reports the OLS estimates of model 1, in which the dependent variable is the ratio of total private capital flows over GDP. The main explanatory variable is the value of the CPIA debt policy score lagged by one year. The set of control variables include: i) the logarithm of real GDP per capita and real GDP growth measured both lagged by one year; ii) a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; and iii) a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. The first column replicates the baseline regression (Table 1, column 3), while the other columns include additional controls. Remittances is the ratio of international remittances over GDP; Foreign aid is the ratio of official development assistance over GDP; Reserves is the ratio of international reserves over GDP; the Globalization index measures the economic, social and political dimensions of globalization (Gygli *et al.*, 2019); and Openness is the ratio of the sum of exports and imports of goods and services over GDP. All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Debt policy score	2.504*** (0.923)	2.417*** (0.925)	2.293** (0.896)	2.406** (0.951)	2.391** (0.935)	2.088** (0.938)
Remittances (% GDP)		-0.287** (0.140)				
Official development assistance (% GDP)			-0.109 (0.136)			
International reserves (% GDP)				-0.045 (0.098)		
Globalization index					0.197 (0.224)	
Trade openness						2.664 (3.095)
Observations	637	637	637	637	624	611
# countries	49	49	49	49	48	47
R^2	0.420	0.424	0.421	0.420	0.420	0.419
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 5: Public debt management and private credit

The table reports the OLS estimates of model 3, in which the dependent variable is: i) the change in the ratio of domestic credit to private sector by banks over GDP between t and $t - 1$ (columns 1-3 and 6-7); ii) a dummy equal to 1 if the change in the ratio of domestic credit to private sector by banks over GDP is below zero, and 0 otherwise (column 4); and iii) a dummy equal to 1 if the change in the ratio of domestic credit to private sector by banks over GDP is more than one standard deviation below its historical (country-specific) average, and 0 otherwise (column 5). The main explanatory variable is the value of the CPIA debt policy score lagged by one year. In columns 6-7 the average effect of the debt policy score is split between Sub-Saharan African (SSA) countries versus other countries (column 6); and low income countries (LIC) versus lower middle income countries (LMIC), as defined by the World Bank (column 7). Credit is the ratio of domestic credit to private sector by banks over GDP; Capital inflows is the ratio of total private capital flows over GDP; Growth is real GDP growth; GDP per capita is the logarithm of real GDP per capita; Public debt is the ratio of government debt over GDP; and Rule of law is the value of the rule of law indicator from the World Governance Indicators. All these variable are lagged by one year. Crisis is a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; and IMF agreement is a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable:	Δ Credit			Δ Credit < 0	Credit bust	Δ Credit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Debt policy score	1.134*** (0.333)	1.068*** (0.329)	1.168*** (0.402)	-0.156*** (0.054)	-0.091** (0.043)		
Debt policy score \times SSA=0						1.813* (0.962)	
Debt policy score \times SSA=1						0.845** (0.342)	
Debt policy score \times LIC							1.058** (0.494)
Debt policy score \times LMIC							1.075** (0.426)
Credit		-0.098*** (0.038)	-0.090*** (0.038)	0.015*** (0.004)	0.014*** (0.003)	-0.096** (0.038)	-0.098*** (0.038)
Gross capital inflows		0.032** (0.016)	0.032** (0.016)	-0.002 (0.002)	-0.000 (0.002)	0.029* (0.016)	0.032** (0.016)
Growth		0.037 (0.036)	0.037 (0.036)	0.001 (0.007)	-0.002 (0.005)	0.040 (0.037)	0.037 (0.036)
GDP per capita		4.061** (1.784)	4.322** (1.939)	-0.377 (0.312)	-0.443* (0.226)	4.227** (1.833)	4.063** (1.799)
Crisis		-1.343*** (0.417)	-1.357*** (0.421)	0.288*** (0.076)	0.136** (0.065)	-1.373*** (0.417)	-1.344*** (0.427)
IMF agreement		0.033 (0.269)	0.052 (0.278)	0.009 (0.050)	0.022 (0.039)	0.036 (0.270)	0.034 (0.272)
Public debt (% GDP)			0.003 (0.007)				
Rule of law			-0.419 (0.945)				
Observations	604	604	604	604	604	604	604
# countries	48	48	48	48	48	48	48
R^2	0.222	0.272	0.273	0.215	0.133	0.274	0.272
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 6: Public debt management and private credit: Other CPIA scores

The table reports the OLS estimates of model 3, in which the dependent variable is the change in the ratio of domestic credit to private sector by banks over GDP between t and $t - 1$. The main explanatory variable is the value of the CPIA debt policy score lagged by one year. The set of control variables include: i) the logarithm of real GDP per capita; ii) real GDP growth; iii) the ratio of domestic credit to private sector by banks over GDP; iv) the ratio of total private capital flows over GDP (all lagged by one year); v) a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; and vi) a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. The first column replicates the baseline regression (Table 5, column 2), while the other columns add one additional CPIA score at the time. Columns 2 and 3 control for the two other components of the CPIA Economic Management cluster. Columns 4, 5 and 6 control for the scores of the other three clusters: i) structural policies, ii) policies for social inclusion/equity, and iii) public sector management and institutions. All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Debt policy score	1.068*** (0.329)	0.925** (0.379)	0.838** (0.371)	0.971*** (0.343)	1.086*** (0.340)	1.216*** (0.344)
Macroeconomic management score		0.392 (0.395)				
Fiscal policy score			0.710* (0.373)			
Structural policies				0.967 (0.674)		
Public sector management and institutions					-0.161 (0.885)	
Policies for social inclusion/equity						-1.690** (0.811)
Observations	604	604	604	604	604	604
# countries	48	48	48	48	48	48
R^2	0.272	0.274	0.278	0.275	0.272	0.278
Macro controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: Public debt management and private credit: additional controls

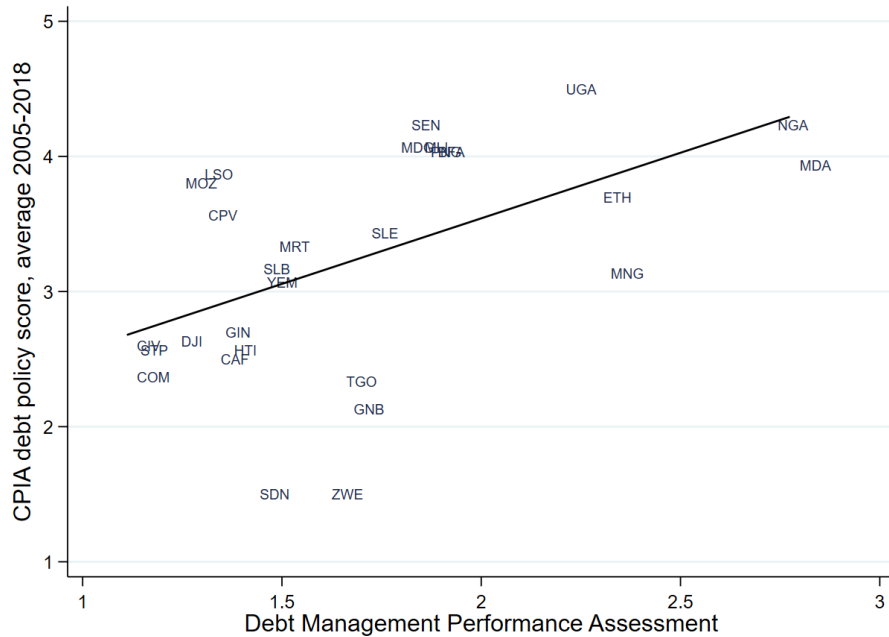
The table reports the OLS estimates of model 3, in which the dependent variable is the change in the ratio of domestic credit to private sector by banks over GDP between t and $t - 1$. The main explanatory variable is the value of the CPIA debt policy score lagged by one year. The set of control variables include: i) the logarithm of real GDP per capita; ii) real GDP growth; iii) the ratio of domestic credit to private sector by banks over GDP; iv) the ratio of total private capital flows over GDP (all lagged by one year); v) a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; and vi) a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. The first column replicates the baseline regression (Table 5, column 2), while the other columns add one additional CPIA score at the time. Remittances is the ratio of international remittances over GDP; Foreign aid is the ratio of official development assistance over GDP; Reserves is the ratio of international reserves over GDP; the Globalization index measures the economic, social and political dimensions of globalization (Gygli *et al.*, 2019); and Openness is the ratio of the sum of exports and imports of goods and services over GDP. All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Debt policy score	1.068*** (0.329)	1.138*** (0.331)	1.105*** (0.332)	1.084*** (0.329)	1.136*** (0.341)	1.105*** (0.343)
Remittances		0.106* (0.055)				
Foreign aid			0.054 (0.036)			
Reserves				0.064 (0.047)		
Globalization index					-0.060 (0.076)	
Openness						1.761* (0.916)
Observations	604	604	604	604	591	586
# countries	48	48	48	48	47	46
R^2	0.271	0.276	0.273	0.275	0.272	0.275
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Appendix

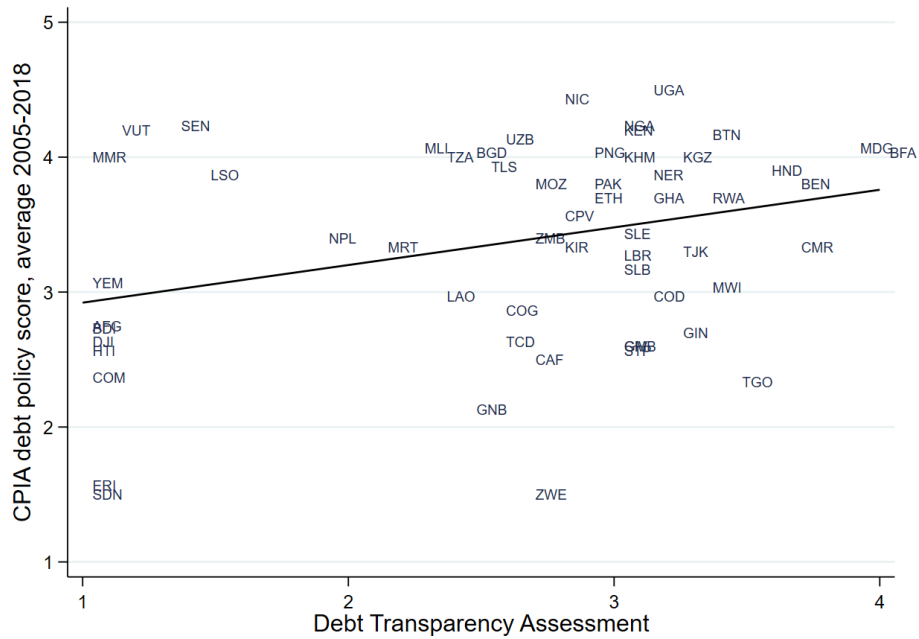
A.1 Measuring public debt management

Figure A1: CPIA debt policy score and DeMPA



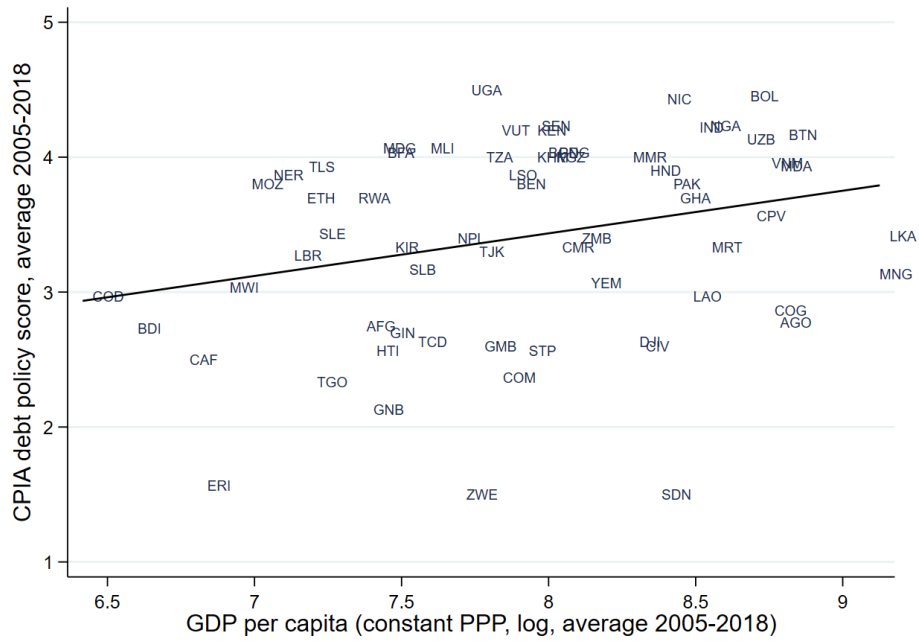
The chart plots the average values of the CPIA debt policy score over the period 2005-2018 (y-axis) versus the DeMPA score (x-axis) for a sample of 25 developing countries. See footnote 5 for details on the construction of the score. The solid line is the linear fit. Regressing the average CPIA debt policy score against a constant and the DeMPA score gives an estimate coefficient on the CPIA variable equal to 0.93 (robust standard error = 0.21). Source: The World Bank.

Figure A2: CPIA debt policy score and debt transparency



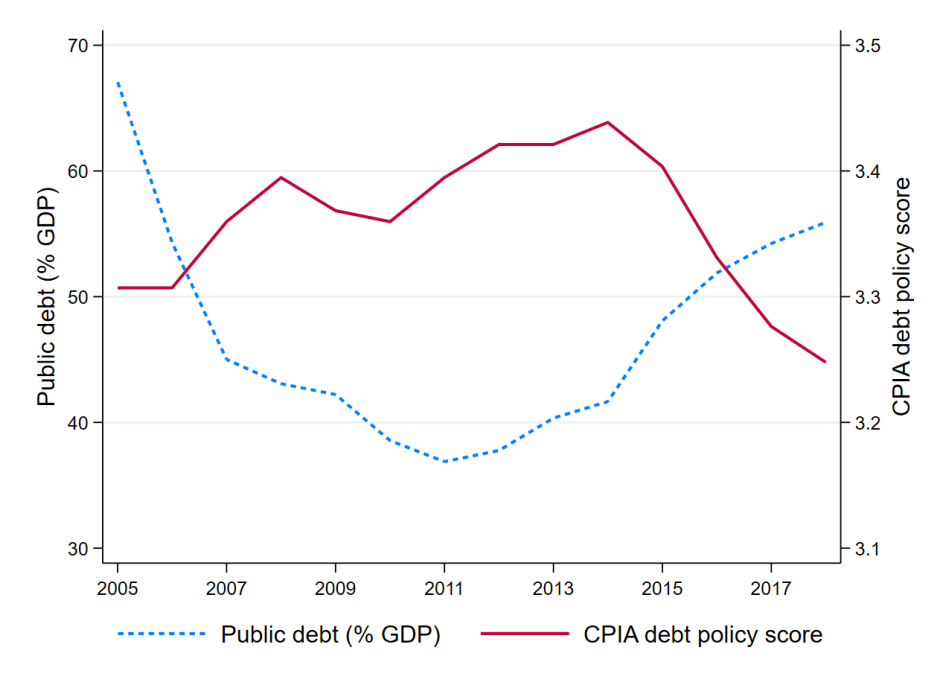
The chart plots the average values of the CPIA debt policy score over the period 2005-2018 (y-axis) versus the debt transparency score (x-axis) for a sample of 58 developing countries. See footnote 6 for details on the construction of the score. The solid line is the linear fit. Regressing the average CPIA debt policy score against a constant and the debt transparency score gives an estimate coefficient on the CPIA variable equal to 0.28 (robust standard error = 0.12). Source: The World Bank.

Figure A3: CPIA debt policy score and per capita GDP

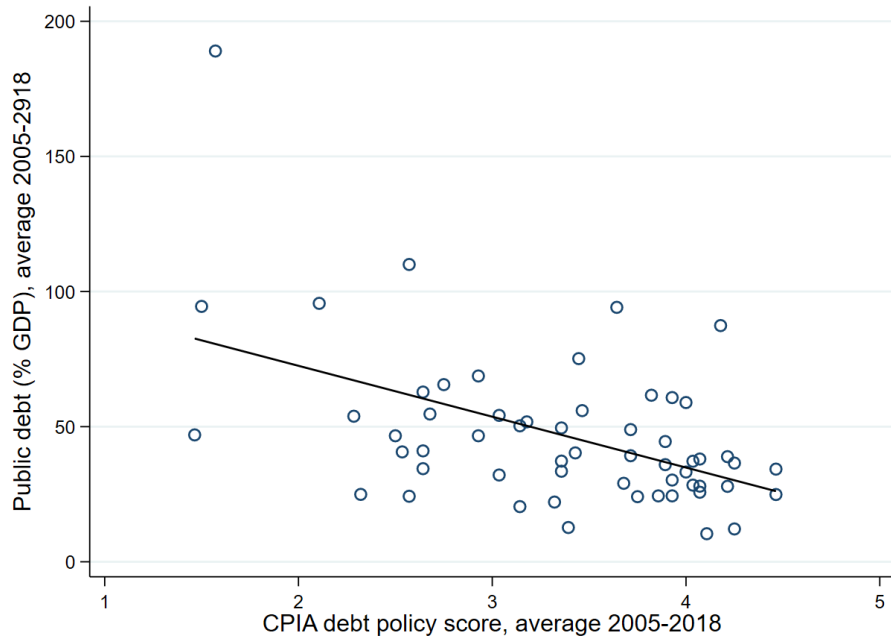


The chart plots the values of the CPIA debt policy score (y-axis) versus the logarithm of per capita real GDP (x-axis) for a sample of 65 developing countries. Both variables are averages over the period 2005-2018. The solid line is the linear fit. Regressing the average CPIA debt policy score against a constant and the average per capita real GDP gives an estimate coefficient on the GDP variable equal to 0.14 (robust standard error = 0.13) Source: The World Bank.

Figure A4: Public debt management and public debt



(a) Time series



(b) Cross section

The top panel shows the average value of the CPIA debt policy score and of the public debt-to-GDP ratio over the period 2005 – 2018. Averages are computed over a sample of 57 countries with non-missing observations for both variables in all years. The bottom panel plots public debt (as a % of GDP) against the CPIA debt policy score for the same sample of 57 countries. Both variables are country averages over the period 2005 – 2018. Source: International Monetary Fund and the World Bank.

A.2 Sample and summary statistics

Table A1: Sample used in the regression analysis

The table reports the countries included in the regression analysis on capital inflows and private credit. Countries are classified into Low, Medium or High CPIA Debt Policy Score depending on the average score over the period 2005–2018, with countries with a score < 3 classified as Low, countries with a score between 3 and 4 classified as Medium, and countries with a score > 4 classified as High. The income group classification, as defined by the World Bank, identifies low income countries (LIC) and lower middle income countries (LMIC). The CPIA debt policy score

Country	Code	CPIA debt policy score	Income group	Country	Code	CPIA debt policy score	Income group
Bangladesh	BGD	High	LMC	Mali	MLI	High	LIC
Benin	BEN	Medium	LMC	Mauritania	MRT	Medium	LMC
Burkina Faso	BFA	High	LIC	Moldova	MDA	Medium	LMC
Burundi	BDI	Low	LIC	Mongolia	MNG	Medium	LMC
Cabo Verde	CPV	Medium	LMC	Mozambique	MOZ	Medium	LIC
Cambodia	KHM	High	LMC	Nepal	NPL	Medium	LMC
Cameroon	CMR	Medium	LMC	Nicaragua	NIC	High	LMC
Comoros	COM	Low	LMC	Niger	NER	Medium	LIC
Congo, Dem. Rep.	ZAR	Low	LIC	Nigeria	NGA	High	LMC
Cote d'Ivoire	CIV	Low	LMC	Pakistan	PAK	Medium	LMC
Djibouti	DJI	Low	LMC	Papua New Guinea	PNG	High	LMC
Ethiopia	ETH	Medium	LIC	Rwanda	RWA	Medium	LIC
Gambia, The	GMB	Low	LIC	Sao Tome and Principe	STP	Low	LMC
Ghana	GHA	Medium	LMC	Senegal	SEN	High	LMC
Guinea	GIN	Low	LIC	Sierra Leone	SLE	Medium	LIC
Guinea Bissau	GNB	Low	LIC	Solomon Islands	SLB	Medium	LMC
Haiti	HTI	Low	LIC	Sri Lanka	LKA	Medium	LMC
Honduras	HND	Medium	LMC	Sudan	SDN	Low	LIC
Kenya	KEN	High	LMC	Tajikistan	TJK	Medium	LIC
Kiribati	KIR	Medium	LMC	Tanzania	TZA	High	LMC
Kyrgyz Republic	KGZ	High	LMC	Togo	TGO	Low	LIC
Lao PDR	LAO	Low	LMC	Uganda	UGA	High	LIC
Lesotho	LSO	Medium	LMC	Vanuatu	VUT	High	LMC
Madagascar	MDG	High	LIC	Zambia	ZMB	Medium	LMC
Malawi	MWI	Medium	LIC				

Table A2: Summary statistics

The table reports the summary statistics of the variables used in the regression analysis on capital inflows and private credit. Total flows is the ratio of total net private capital flows over GDP; FDI is the ratio of net foreign direct investment over GDP; Portfolio flows is the ratio of net portfolio flows over GDP; Other flows is the ratio of other net non-official flows over GDP. $CF < 0$ is a dummy equal to 1 if the ratio of total net private capital flows over GDP is below zero; Bust is a dummy equal to 1 if the ratio of total net private capital flows over GDP is more than one standard deviation below its historical (country-specific) average. Δ Credit is the change in the ratio of domestic credit to private sector by banks over GDP between t and $t - 1$; Δ Credit < 0 is a dummy equal to 1 if the change in the ratio of domestic credit to private sector by banks over GDP is below zero; Credit bust is a dummy equal to 1 if the change in the ratio of domestic credit to private sector by banks over GDP is more than one standard deviation below its historical (country-specific) average. Debt policy score is the value of the CPIA debt policy score; Macroeconomic management score is the value of the CPIA macroeconomic management score; Fiscal policy score is the value of the CPIA fiscal policy score; Structural policies is the value of the CPIA structural policies score; Public sector management and institutions is the value of the CPIA public sector management and institutions score; Policies for social inclusion/equity is the value of the CPIA policies for social inclusion/equity score. Growth is real GDP growth; GDP per capita is the logarithm of real GDP per capita; Crisis is a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; IMF agreement is a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years; Public debt is the ratio of government debt over GDP; Rule of law is the value of the rule of law indicator from the World Governance Indicators. Remittances is the ratio of international remittances over GDP; Foreign aid is the ratio of official development assistance over GDP; Reserves is the ratio of international reserves over GDP; the Globalization index measures the economic, social and political dimensions of globalization (Gygli *et al.*, 2019); and Openness is the ratio of the sum of exports and imports of goods and services over GDP. LIC is a dummy equal to 1 for low income countries, and 0 for lower middle income countries, as defined by the World Bank; SSA is a dummy equal to 1 for Sub-Saharan African countries, and for countries in other regions; and High debt is a dummy equal to 1 for observations in the top quartile of the distribution of public debt over GDP, and 0 for those in the bottom three quartiles.

Variable name	# obs.	Mean	S.D.	Min	Max
Total flows	637	4.970	9.709	-27.350	32.363
FDI	637	4.350	4.840	-4.440	22.899
Portfolio flows	596	0.127	1.667	-10.573	7.221
Other flows	637	0.578	7.345	-26.315	18.435
$CF < 0$	637	0.177	0.382	0	1
Bust	637	0.097	0.297	0	1
Δ Credit	604	0.823	2.921	-9.507	16.153
Δ Credit < 0	604	0.368	0.483	0	1
Credit bust	604	0.144	0.351	0	1
Credit	607	21.091	15.312	1.201	86.430
Debt policy score	637	3.453	0.794	1	5
Macroeconomic management score	637	3.679	0.596	2	5
Fiscal policy score	637	3.361	0.589	1.5	4.5
Structural policies	637	3.390	0.360	2.3	4.3
Public sector management and institutions	637	3.061	0.401	2	4.1
Policies for social inclusion/equity	637	3.307	0.423	2.2	4.3
Growth	637	4.981	3.462	-20.493	20.720
GDP per capita	637	7.812	0.601	6.233	9.369
Crisis	637	0.091	0.288	0	1
IMF agreement	637	0.413	0.493	0	1
Public debt	637	43.005	29.238	7.071	295.748
Rule of law	637	-0.682	0.477	-1.682	0.849
Remittances	637	6.527	8.299	0	44.126
Foreign aid	637	8.789	7.383	0.362	44.885
Reserves	637	1.436	4.563	-14.924	62.941
Globalization index	624	48.973	7.304	29.451	68.530
Openness	611	0.733	0.499	0.209	3.944
LIC	637	0.388	0.488	0	1
SSA	637	0.735	0.442	0	1
High debt	637	0.251	0.434	0	1

A.3 Additional results

Table A3: Public debt management and capital inflows: Dynamic model

The table reports the OLS estimates of model 1, in which the dependent variable is the change in the ratio of: total private capital flows over GDP (columns 1), foreign direct investment (FDI) over GDP (column 2), portfolio flows over GDP (column 3), and other non-official flows over GDP (column 4). The main explanatory variable is the value of the CPIA debt policy score lagged by one year. Growth is real GDP growth; and GDP per capita is the logarithm of real GDP per capita. Both variable are lagged by one year. Crisis is a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; IMF agreement is a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. Each column include the lagged value of the dependent variable in levels (scaled over GDP) All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable:	Δ Total flows (1)	Δ FDI (2)	Δ Portfolio flows (3)	Δ Other flows (4)
Debt policy score	2.305*** (0.827)	-0.206 (0.274)	0.240* (0.137)	2.217*** (0.763)
Growth	-0.131 (0.123)	-0.060 (0.042)	-0.005 (0.017)	-0.096 (0.104)
GDP per capita	7.761** (3.810)	1.672 (1.375)	1.224* (0.673)	6.069* (3.338)
Crisis	0.363 (1.124)	0.360 (0.410)	-0.088 (0.209)	-0.247 (0.930)
IMF agreement	-1.088 (0.755)	0.139 (0.299)	-0.025 (0.124)	-1.517** (0.636)
Total flows	-0.722*** (0.048)			
FDI		-0.514*** (0.055)		
Portfolio flows			-0.721*** (0.064)	
Other flows				-0.847*** (0.053)
Observations	637	637	596	637
# countries	49	49	48	49
R^2	0.430	0.329	0.404	0.485
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table A4: Public debt management, capital inflows, and private credit: Probit estimates

The table reports the probit estimates of a model in which the dependent variable is: i) a dummy equal to 1 if the ratio of total net private capital flows over GDP is below zero, and 0 otherwise (column 1); ii) a dummy equal to 1 if the ratio of total net private capital flows over GDP is more than one standard deviation below its historical (country-specific) average, and 0 otherwise (column 2); iii) a dummy equal to 1 if the change in the ratio of domestic credit to private sector by banks over GDP is below zero, and 0 otherwise (column 3); and iv) a dummy equal to 1 if the change in the ratio of domestic credit to private sector by banks over GDP is more than one standard deviation below its historical (country-specific) average, and 0 otherwise (column 4). The main explanatory variable is the value of the CPIA debt policy score lagged by one year. The set of control variables include: i) real GDP growth; ii) the logarithm of real GDP per capita; iii) the ratio of domestic credit to private sector by banks over GDP; iv) the ratio of total private capital flows over GDP (all lagged by one year); v) a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; and vi) a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable:	$CF < 0$	Bust	Δ Credit < 0	Credit bust
	(1)	(2)	(3)	(4)
Debt policy score	-0.265 (0.169)	-0.554*** (0.175)	-0.467*** (0.181)	-0.357* (0.216)
Growth	0.031 (0.031)	0.005 (0.028)	-0.000 (0.020)	-0.015 (0.022)
GDP per capita	-3.863*** (1.307)	-1.755 (1.103)	-0.803 (0.955)	-2.097* (1.099)
Crisis	0.182 (0.279)	-0.156 (0.340)	0.867*** (0.215)	0.741*** (0.253)
IMF agreement	0.512** (0.199)	0.964*** (0.224)	0.065 (0.153)	0.121 (0.193)
Credit			0.089*** (0.018)	0.129*** (0.020)
Gross capital inflows			-0.007 (0.007)	-0.002 (0.010)
Observations	442	456	591	521
# countries	34	38	47	41
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table A5: Public debt management and private credit: Static model

The table reports the OLS estimates of model 3, in which the dependent variable is: i) the change in the ratio of domestic credit to private sector by banks over GDP between t and $t - 1$ (columns 1-3 and 6-7); ii) a dummy equal to 1 if the change in the ratio of domestic credit to private sector by banks over GDP is below zero, and 0 otherwise (column 4); and iii) a dummy equal to 1 if the change in the ratio of domestic credit to private sector by banks over GDP is more than one standard deviation below its historical (country-specific) average, and 0 otherwise (column 5). The main explanatory variable is the value of the CPIA debt policy score lagged by one year. In columns 6-7 the average effect of the debt policy score is split between Sub-Saharan African (SSA) countries versus other countries (column 6); and low income countries (LIC) versus lower middle income countries (LMIC), as defined by the World Bank (column 7). Capital inflows is the ratio of total private capital flows over GDP; Growth is real GDP growth; GDP per capita is the logarithm of real GDP per capita; Public debt is the ratio of government debt over GDP; and Rule of law is the value of the rule of law indicator from the World Governance Indicators. All these variable are lagged by one year. Crisis is a dummy equal to 1 if the country had a banking, sovereign or currency crisis in any of the previous 3 years; and IMF agreement is a dummy equal to 1 if the country signed an IMF-supported program in any of the previous 3 years. All regressions include year and country fixed effects. Robust standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Dependent variable:	Δ Credit			Δ Credit<0	Credit bust	Δ Credit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Debt policy score	1.134*** (0.333)	0.891*** (0.335)	0.861** (0.403)	-0.129** (0.054)	-0.066 (0.044)		
Debt policy score \times SSA=0						1.749* (0.983)	
Debt policy score \times SSA=1						0.637* (0.358)	
Debt policy score \times LIC							1.077** (0.521)
Debt policy score \times LMIC							0.785* (0.423)
Gross capital inflows		0.030* (0.017)	0.030* (0.017)	-0.002 (0.002)	0.000 (0.002)	0.027 (0.017)	0.031* (0.016)
Growth		0.055 (0.037)	0.055 (0.037)	-0.002 (0.007)	-0.004 (0.005)	0.058 (0.038)	0.055 (0.037)
GDP per capita		1.756 (1.802)	1.679 (1.949)	-0.022 (0.304)	-0.117 (0.219)	1.979 (1.854)	1.739 (1.813)
Crisis		-1.205*** (0.436)	-1.201*** (0.440)	0.267*** (0.077)	0.117* (0.067)	-1.241*** (0.434)	-1.183*** (0.445)
IMF agreement		0.080 (0.275)	0.075 (0.284)	0.001 (0.051)	0.016 (0.039)	0.082 (0.276)	0.073 (0.277)
Public debt (% GDP)			-0.000 (0.007)				
Rule of law			0.172 (0.976)				
Observations	604	604	604	604	604	604	604
# countries	48	48	48	48	48	48	48
R^2	0.222	0.243	0.243	0.191	0.099	0.247	0.243
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes