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LENDING TO DEVELOPING
COUNTRIES:

HOW DO OFFICIAL CREDITORS
RESPOND TO SOVEREIGN
DEFAULTS?



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Lending to developing countries: How do official creditors respond to sovereign defaults?*

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Abstract

How is lending to developing countries from bilateral and multilateral creditors affected by sovereign defaults? The existing empirical literature on reputational costs of defaults focuses on lending from private creditors. Many developing countries, however, mostly rely on grants and loans from official creditors as they are often excluded from international capital markets. Using a panel dataset covering 118 developing countries in the period from 1972 to 2011, we estimate the effect of sovereign defaults on disbursements of concessional and non-concessional loans from official creditors. Following a default, we find that concessional lending from bilateral and multilateral creditors is reduced. For non-concessional lending, the results depend on the measure of defaults and model specification. Thus, the reputational costs of default are not only caused by exclusion from commercial capital markets but also are present when looking at official lending.

Keywords: bilateral lending, multilateral lending, reputational costs of default

JEL classification: F34; F35; H63

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1. Introduction

Capital inflows can be used to insure against income shocks, and to overcome shortages of domestic savings and foreign exchange. Developing countries can attract foreign capital from official sources in the form of bilateral or multilateral flows and from private capital sources. Bilateral capital flows include loans and grants from governments or official export credit agencies, while multilateral flows mostly refer to loans and grants from International Financial Institutions (IFIs). Private capital flows include bank lending, bonds, portfolios, foreign direct investment (FDI) and remittances.

The literature on sovereign debt normally focuses on lending from private creditors. The empirical literature on exclusion as a cost of default is restricted to exclusion from private capital markets following defaults on outstanding debt with private creditors. However, many developing countries rely on official creditors as a source for capital. Thus, we contribute to the literature on sovereign debt and the cost of default by estimating the effect of defaults on lending from bilateral and multilateral creditors. We test the effect of defaults proxied by arrears on principal and interest with both private and official creditors, controlling for access to capital from private creditors and grants. Thus, we include data on lending from both private and official creditors in our dataset, and distinguish between concessional and non-concessional lending, and bilateral and multilateral creditors. In that way, we provide an insight into the dynamics between private and official lending. This contributes to improving our understanding of the sovereign debt market as a whole.

The data used in the analysis cover 118 low- and middle-income countries in the period from 1972 to 2011.⁴ We estimate the effect of arrears on lending controlling for a large number of relevant variables, as well as country and time fixed effects. The

⁴ The classification of countries by income group is made using the thresholds for average income in 2011 USD used by the World Bank: Low-income countries: < 1026 USD and lower middle-income countries: 1026 – 4035 USD. We refer to lower middle-income countries as middle-income countries for simplicity. The classification is based on data on GDP per capita in constant 2011 USD from the World Bank. Thus, countries can drop out of the sample or move from one income group to another over time.

results show that concessional and bilateral non-concessional lending is reduced when a debtor country defaults on its sovereign debt. The negative effect is robust and indicates that a debtor country in default cannot simply turn to bilateral and multilateral creditors for new loans. We also find some support for a negative effect of defaults on non-concessional lending, but the results are not robust to changes in the model specification and measure of default.

The paper is set out as follows: An overview of the related literature is given in Section 2, and descriptive statistics for lending to developing countries during the last four decades is presented in Section 3. In Section 4, we discuss the data and methodology used in the analysis. The main results are provided in Section 5, together with a discussion of the robustness of the results. Some concluding remarks are provided in the final section.

2. Literature overview

2.1. The cost of default

In the market for sovereign debt, creditors have few legal rights. In contrast, if a domestic firm becomes bankrupt, creditors have a definite right to the company's assets. Those legal rights are necessary for the private debt to exist. So why do foreign creditors lend to sovereigns in the absence of legal rights? There is a broad consensus in the economic literature that there need to be some costs following a default to make sovereign debt possible. There is much less consensus on what the costs of default actually are, and also on what their scope is (Borensztein and Panizza, 2009).

Traditionally, the literature has focused on direct sanctions⁵ and reputational costs, but lately more attention has been paid to the costs of default for the domestic economy.⁶

⁵ Direct sanctions are usually understood as interference with a country's current transactions, either through seizure of foreign assets or denial of trade credit. See for instance Bulow and Rogoff (1989), Fernandez and Rosenthal (1990), and Sachs and Cohen (1982). Panizza et al. (2009) argue that the legal protection of sovereign assets in foreign jurisdiction has weakened over time.

⁶ The idea is that default causes broad "collateral damage" on the debtor country's government or its economy. See for instance Cole and Kehoe (1998), Catão and Kapur (2006), Kapur et al. (2007), and Sandleris (2008).

Reputational costs imply that governments repay their loans because they are worried that they will be excluded from the capital market if they default, as this would prevent them from smoothing consumption across time and possibly lead to the loss of valuable investment opportunities (Eaton and Gersovitz, 1981; Cole and Kehoe, 1998; Eaton, 1996; Kletzer and Wright, 2000). Here, we focus on reputational costs in the sense that sovereign defaults reduce access to loans in the future.

The empirical results on the duration of market exclusions vary depending on the data, time period and methodology applied. Gelos et al. (2011) and Panizza et al. (2009) conclude that a default is easily forgiven, while Richmond and Dias (2009) and Cruces and Trebesch (2013) find that the defaulting countries are excluded for a relatively long period. Richmond and Dias (2009) find that it takes, on average, 5.7 years to regain partial market access, and 8.4 years to regain full market access in the period from 1980 to 2005, where partial access is defined as the first year in which there are positive net private creditor debt transfers to the public or private sector, and full market access as the first year of positive net private creditor debt transfers to the private or public sector greater than 1.5% of GDP. Gelos et al. (2011) show that, while countries were excluded from the market after settling the debt for an average of 4 years in the 1980s, the duration of exclusion decreased to 2 years in the 1990s.

While Gelos et al. (2011) use a binary variable to indicate a default, Cruces and Trebesch (2013) exploit a comprehensive dataset on creditor losses or haircuts. In their study, higher creditor losses are associated with longer periods of market exclusion, which is more consistent with the theory on reputational costs. By using a binary default variable instead of a continuous one, the large variation in restructuring outcomes is ignored.⁷ However, Richmond and Dias (2009) do not find a significant effect of haircuts on the length of exclusion after a default.⁸

⁷ Creditors can also penalize defaulting countries through higher future borrowing costs, but the results from the empirical literature are mixed. See for instance Özler (1993), Borensztein and Panizza (2009), and Cruces and Trebesch (2013).

⁸ It has been argued that whether or not a default leads to exclusion differs between excusable and inexcusable defaults (Grossman and van Huyck, 1988). The former is defaults that are justified since they are contingent on the state of the world, and because these defaults are consistent with the lenders' expectations, they will not lead to exclusion from private capital

2.2. Official lending

An alternative to loans from private creditors in the international credit market as a source for capital inflows are loans and grants from official creditors (either governments or IFIs). Lending from official creditors differs from private lending in several aspects, including the objectives of the creditors when providing loans to sovereigns. Concessional loans are more generous than market loans, with lower interest rates, relatively long grace periods, or a combination of the two. Non-concessional lending refers to loans or export credits with market interest rates.

The literature on lending from official creditors is usually restricted to the allocation of official development assistance (ODA).⁹ ODA is defined by the Development Assistance Committee (DAC) as official flows to countries on the DAC list of recipients with a grant element of 25% or more, where the objective is to promote economic development and welfare in the recipient countries. There is a vast amount of literature analyzing the determinants of the sum of concessional loans and grants defined as ODA, but non-concessional lending and loans from private creditors are usually not included in the analyses. Capital flows from governments or IFIs that do not fulfill the criteria for ODA are referred to as other official flows (OOF).

To our knowledge, there are no empirical studies looking at how official non-concessional and concessional lending to developing countries is affected by debt restructurings and defaults. There are, however, a few papers that are relevant for our analysis. Brandt and Jorra (2012) test how aid is related to debt restructuring through the Paris Club and find that defaults on average increase aid by 6.4%.¹⁰ However, they

markets. This is supported by Richmond and Dias (2009), who find that countries defaulting after a natural disaster experience a significantly shorter period of exclusion from private capital markets.

⁹ Looking at the allocation of bilateral ODA from the member countries of the Development Assistance Committee (DAC), the largest donors (such as the US, Japan, and France) drive the main empirical results on the allocation, showing that donors favor trade partners, former colonies, and political allies (Alesina and Dollar, 2000; Berthélemy, 2006a), while smaller donors such as the Nordic countries to a larger extent emphasize recipient needs (Gates and Hoeffler, 2004). On average, Berthélemy (2006b) finds that multilateral ODA is more responsive to recipient needs than bilateral ODA, and Dollar and Levin (2006) show that multilateral organizations to a larger extent reward democracy and better rule of law than bilateral donors.

¹⁰ The Paris Club is an informal group of official creditors whose role is to find coordinated and sustainable solutions to the payment difficulties experienced by debtor countries. The measure of aid used in their analysis is gross ODA minus debt forgiveness grants and rescheduled debt.

do not look at non-concessional lending from official creditors or the effect of defaults in the private capital market. Rodrik (1995) provides some empirical results on the determinants of net bilateral transfers and net multilateral transfers, both measured in percent of GDP.¹¹ The results are in line with the literature on aid allocations, showing that bilateral and multilateral creditors differ with respect to the importance of political considerations in the allocation of financial flows. Evrensel (2004) analyzes the determinants of both official and private capital flows to developing countries. She finds that the low-income countries' access to private capital markets has been substantially reduced in favor of official lending during the post-debt crisis period (1989-1998). Bonds, portfolios, and FDI flows have replaced the decline in commercial bank lending in middle-income countries. Neither Rodrik (1995) nor Evrensel (2004) look at the effects of defaults on official lending.

In the case of defensive lending, creditors would provide new loans when the debt ratio and/or debt service of the debtor country increase, so that the debtor country is able to avoid default. If that were the case, one would observe an increase in lending as debt ratios and the debt service increase. However, Marchesi and Missale (2012) show that bilateral and multilateral creditors reduce their loans as the debt they hold increases. Thus, they do not find support for defensive lending among official creditors, but they do find evidence of defensive granting, indicating that grants are substituted for loans when debt increases. Geginat and Kraay (2012) analyze whether the International Development Association (IDA) engages in defensive lending, and conclude that new disbursements of loans are not provided simply for the debtor country to repay existing loans.

2.3. Multilateral lending

Rodrik (1995) argues that multilateral creditors have two main advantages compared to bilateral and private lenders. First, assuming that multilateral development banks are independent, they will be less politicized and so be better suited to exercise policy

¹¹ Rodrik includes both grants, concessional and non-concessional lending from bilateral or multilateral creditors in the dependent variable.

conditionality in a borrowing country. In a discussion on loans versus grants, Bulow and Rogoff (2005) emphasize that the superior enforcement technology of multilaterals is outweighed by the risk of debt crisis, as it would lead to more lending and moral hazards for the government in the borrowing country.¹² Second, IFIs have access to substantial information on developing countries that can be beneficial for investors undertaking new investments in these countries. As stated by Hagen (2009), “multilaterals are better posed to monitor borrowers due to privileged access to information from their members” (p.127).

Based on the arguments for multilateral lending presented above, a commonly held view, although controversial, is that multilateral lending works as a catalyst for private lending. The role of the International Monetary Fund (IMF), especially, has received a lot of attention in the literature on the possibly catalytic effect of multilateral lending. Conditionality signals policy reforms aimed at improving economic performance, and as multilaterals have better access to information, they can act as a gatekeeper, certifying more creditworthy borrowers, thus alleviating the problem with adverse selection (Hagen, 2009). Focusing on the role of the IMF, Hagen (2009) shows that signaling good policies through certification only improves the global allocation of investment if the interests of private lenders are given more weight than the welfare in the country.

One can also argue that the IFI programs send out pessimistic signals about upcoming economic performance. Bird and Rowlands (1997) contend that there could be a negative effect of multilateral lending on other capital flows if countries only turn to the IFIs when the country is in economic distress. In such a case official lenders may react positively to a commitment made by the borrowing country, while private lenders react to actual results in macroeconomic indicators. Even though financing from the IMF is supposed to be short-term, for poorer countries the involvement has

¹² They also argue that multilateral institutions have internal pressure to push out loans, persuading politically fragile developing countries to take on unwanted debt. Countries with weak institutions are likely to be serial defaulters and one should be careful in using external enforcement to expand the borrowing capacity of these countries.

been more or less continuous (Hagen, 2012). This observation suggests that an IMF program probably signals needs more than good policies.

The empirical literature on the catalytic effect of IMF lending is mixed. Hagen (2009) summarizes the empirical literature on IMF programs and states that it shows a neutral effect on the whole, a negative effect on private flows, and a positive effect on official flows. Bauer et al. (2012) argue that the catalytic effect depends on the countries' domestic institutions. They argue that democracies are able to commit to implementation of new policies, and show that IMF agreements have a positive effect on FDI inflows for democracies, while the effect is negative for autocracies.

Another aspect is creditor seniority. According to Eichengreen (2003), IMF loans are typically repaid, and examples of arrears on IMF loans are the exception to the rule. Saravia (2010) confirms this observation, arguing that "countries have shown a higher aversion to default on IMF loans than on loans from private creditors" (p.1025). The seniority clause has been criticized because it could reduce the incentives of private lenders to provide loans to countries with IMF programs. A senior official loan would also increase the interest rate on new private loans that are made in the same environment (Chamley and Pinto, 2012). Since loans from the IMF are more likely to be repaid than others, the costs of loans are lower, and it is assumed that this allows the IMF to provide loans to countries in financial distress when other creditors are not willing to do so (Saravia, 2010).

3. Lending to developing countries

In this section, we briefly present some descriptive statistics for disbursements of loans and net transfers (NTR) from official and private creditors to developing countries. Disbursements are drawings made by the debtor country on loans committed. NTR are disbursements minus principal and interest repayments, and thus capture the real resources transferred to the borrowing country.¹³The sample includes data on 118 low-

¹³ See Eaton (1992) for an introduction to accounting of sovereign debt.

and middle-income countries for the period from 1972 to 2011. A list of the countries is provided in the appendix. Due to missing observations for some of the variables and because some countries drop out of the sample if GNI per capita exceeds 4035 USD, the dataset is unbalanced. In addition to illustrating the development in lending over time for the full sample, we separate low- and middle-income countries to highlight some differences between the two income groups.

Developing countries are often grouped in debtor “clubs” based on various characteristics, including different indicators for creditworthiness (Reinhart et al., 2003) and their frequency of market access (Gelos et al., 2011).¹⁴ Low-income countries usually rely on grants and concessional loans, while middle-income countries receive non-concessional loans from official creditors and have periodic access to the international credit market. Thus, many countries receiving loans from official creditors are often excluded by private creditors.

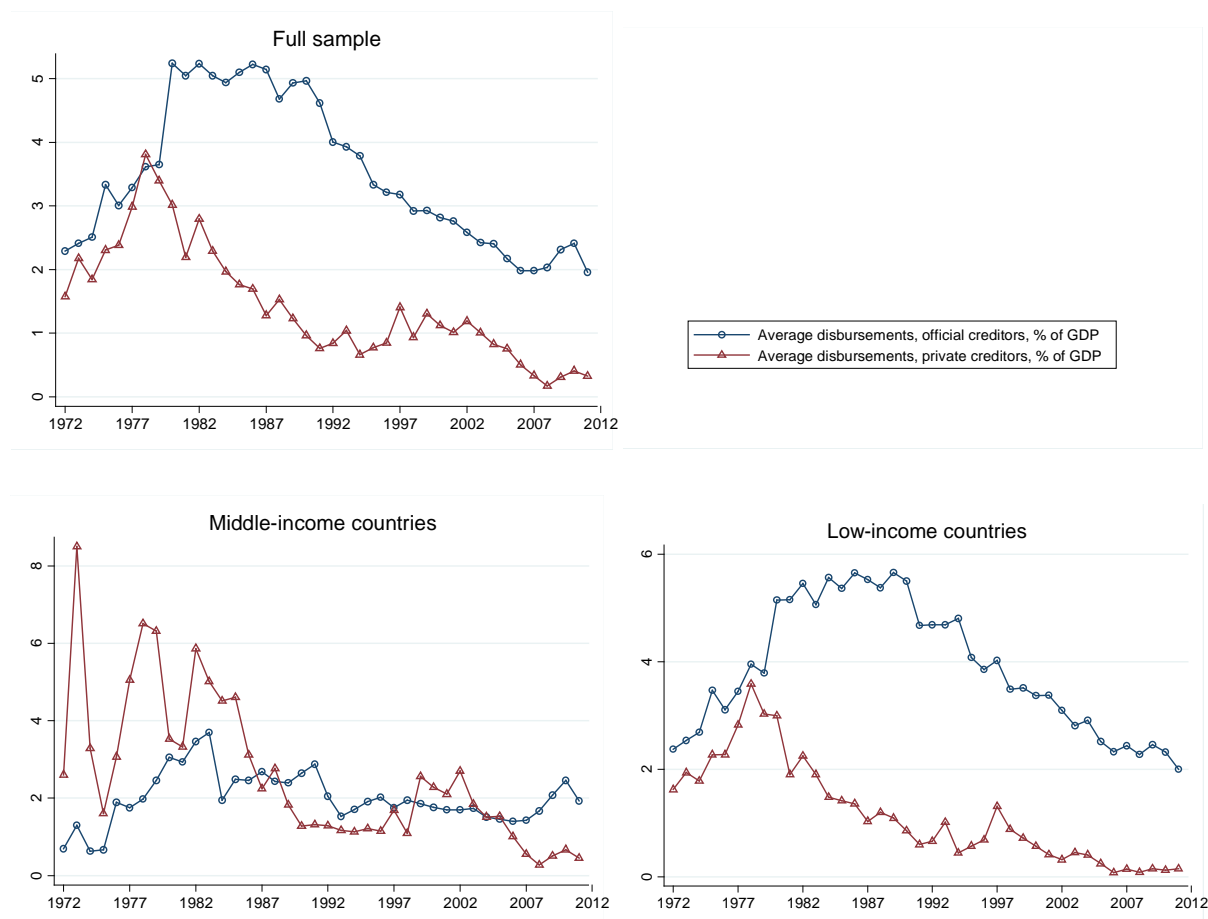
Figure 1 provides graphs of the average disbursements to low- and middle-income countries from private and official creditors, as measured in percent of GDP. Official lending is the main source for international lending for low-income countries, clearly exceeding lending from private creditors, especially since the late 1970s. The relative sizes of disbursements from private and official creditors to low-income countries are not surprising given that they are often excluded from the private capital market. It is also possible that low-income countries prefer concessional loans from official creditors over loans from private creditors because of the lower costs of borrowing. However, there are often conditions attached to concessional loans, so countries with alternative sources for capital might still prefer either non-concessional loans or capital from private creditors.

For middle-income countries, there is a much larger volatility in disbursements from private creditors. The trend is, however, downward sloping from around 1980, just as

¹⁴ Reinhart et al. (2003) classify three different debtor “clubs” depending on their access to private capital. While one group of countries usually has no access to capital markets and is dependent on grants and concessional official loans, other countries tend to have access to capital even during recessions and crisis. In the third debtor club, there are large variations between the countries, and access to capital is volatile and depends on different external and internal factors. Also see Gelos et al. (2011) for a discussion on different debtor “clubs.”

for low-income countries. While disbursements from private creditors exceeded those from official creditors in the 1970s, this has changed over time. With the debt crisis in the 1980s, disbursements, especially from private creditors, were reduced.

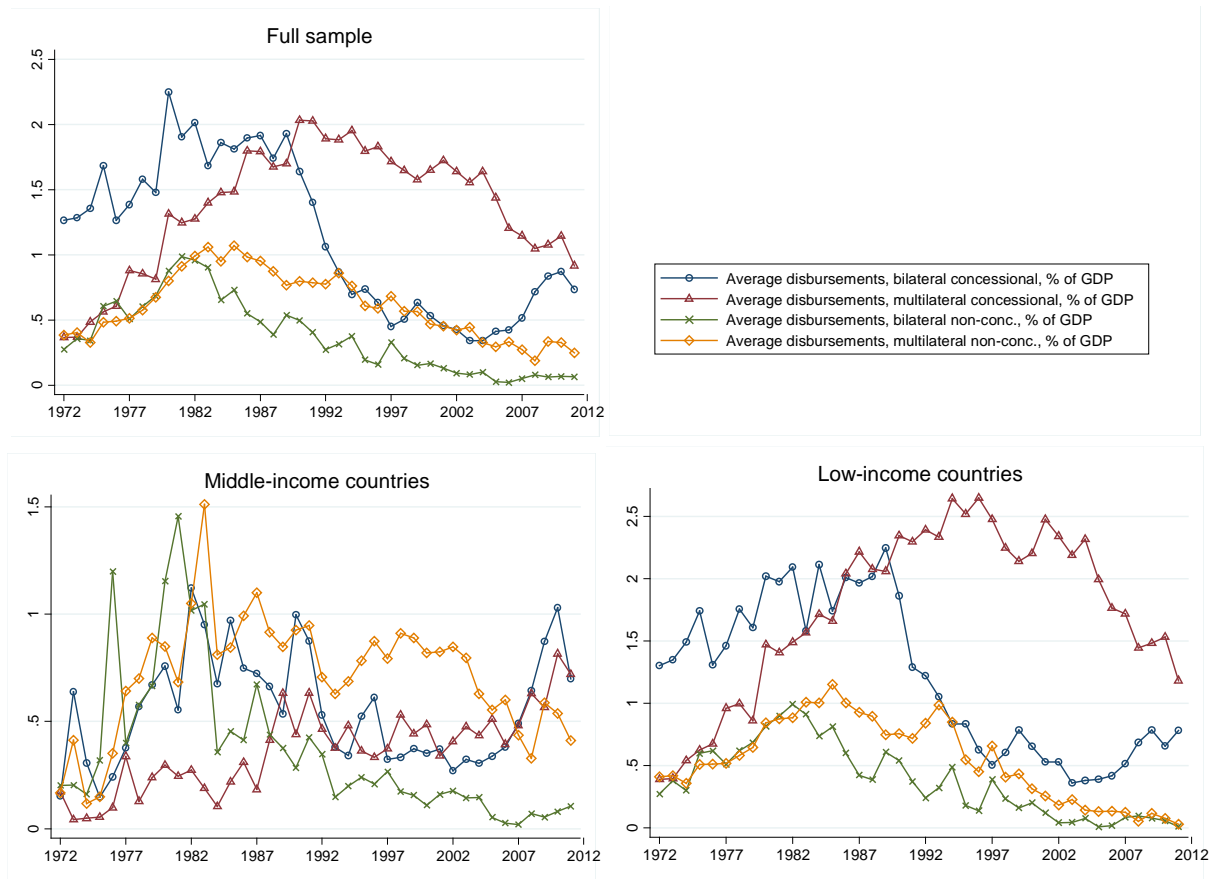
Figure 1 – Disbursements from private and official creditors



Source: Authors' calculations based on data from the World Bank.

In Figure 2, we separate total official lending into concessional and non-concessional, bilateral, and multilateral lending. For concessional lending to low-income countries, the importance of multilateral lending increased substantially from the 1970s to the mid-1990s. It appears that the fall in lending from private and bilateral creditors in the 1980s has been offset by an increasing involvement of multilateral lending. By the end of the Cold War, disbursements from multilateral organizations surpassed disbursements from bilateral creditors. A similar trend is also observed for non-concessional lending, but the difference between multilateral and bilateral lending is smaller.

Figure 2 – Disbursements from official creditors



Source: Authors' calculations based on data from the World Bank.

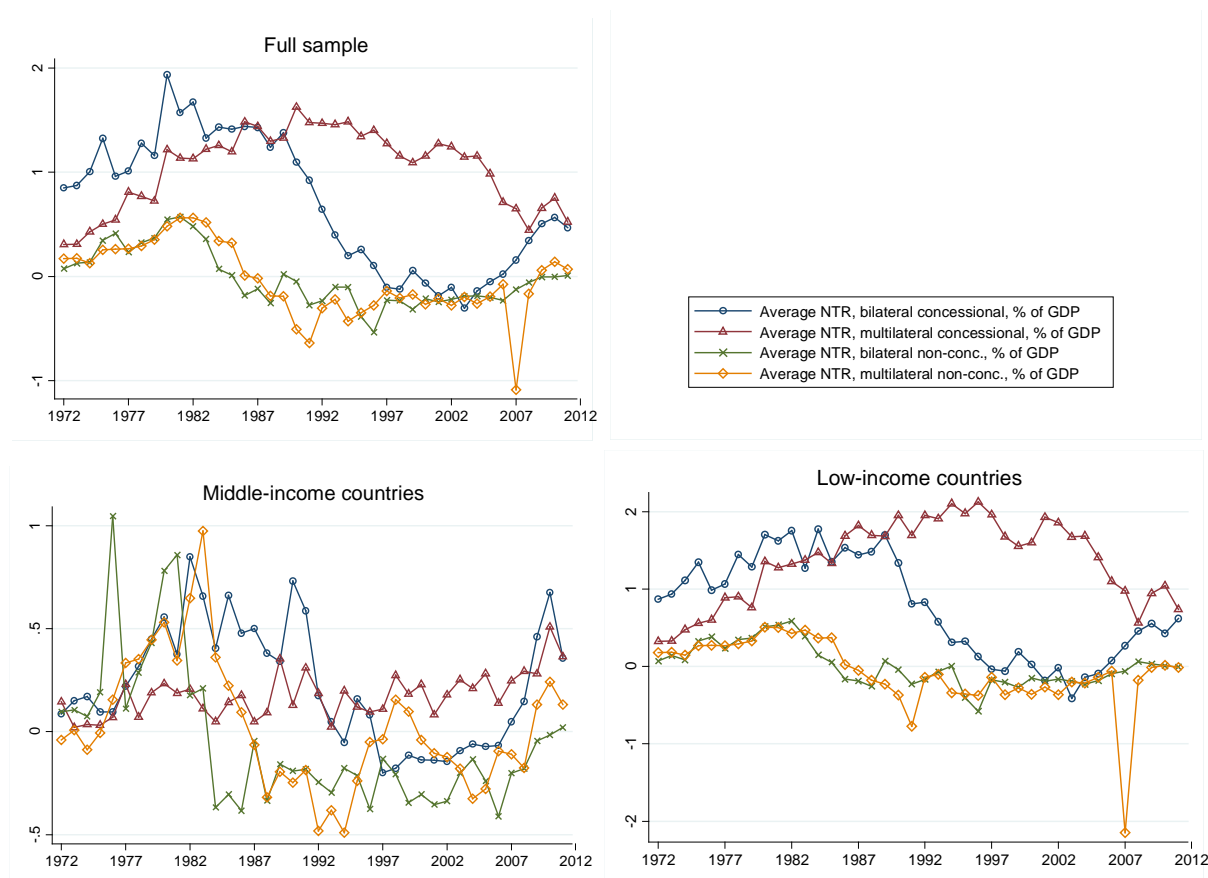
Net transfers from official creditors are graphed in Figure 3. The development in NTR is influenced both by changes in disbursements and repayments of principal and interest. The drop in net transfers for the full sample and low-income countries in 2007 is due to one extreme observation for multilateral net transfers to Liberia. Excluding this observation from the sample, average net transfers from official creditors are higher than NTR from private creditors throughout the period from 1972 to 2011.

For concessional lending, bilateral NTR are reduced substantially in the post-Cold War period, while multilateral net transfers are only modestly decreasing. At the end of the time period observed, bilateral and multilateral concessional NTR converge, as bilateral NTR have increased after the beginning of the 2000s.

Splitting the sample by income groups, the picture looks different. NTR of non-concessional lending are lower on average than for concessional lending and are often

negative for both income groups. However, the difference between non-concessional and concessional NTR is larger for low-income countries. In addition, non-concessional net transfers are frequently higher than concessional NTR for middle-income countries. This is as expected, and could be explained by the same logic as the difference in official and private lending observed in Figure 1. Low-income countries are perhaps more dependent on concessional lending (and grants) for the simple reason that they are poorer. Thus, they may prefer concessional lending despite the conditions that normally follow this type of lending, because non-concessional loans have higher interest rates and/or shorter grace periods. They may also be excluded from non-concessional loans because they are less creditworthy.

Figure 3 – Net transfers from official creditors



Source: Authors' calculations based on data from the World Bank.

4 Empirical analysis

4.1. Hypotheses

The purpose of the empirical analysis is to investigate how official creditors respond to sovereign defaults. In addition to reduced access to loans from private creditors, a default may affect capital flows from official creditors, and thus the costs of default. Concessional loans with low interest rates and/or relatively long grace periods are targeted to low-income countries, while non-concessional loans are offered at market terms or near-market terms to more creditworthy countries. Due to the objectives behind concessional loans, we expect no effect of sovereign defaults on concessional loans (or maybe even a positive effect) and a negative effect on non-concessional loans. Thus, the hypotheses tested are:

H₁: Net transfers of concessional loans from official creditors are not affected by defaulting on sovereign debt, and:

H₂: Net transfers of non-concessional loans from official creditors are negatively dependent on sovereign defaults.

To test our hypotheses we estimate the model given in Equation 1:

$$L_{it} = \alpha Arr_{it} + \beta' X_{it} + \lambda_t + \eta_i + u_{it}, \quad (1)$$

where the dependent variable L_{it} represent disbursements to country i at time t measured in percent of GDP. The main independent variable in the model is the sum of arrears on interest and principal measured in percent of external debt.¹⁵ X_{it} is a vector of control variables, λ_t indicates time fixed effects, η_i are the country fixed effects, and u_{it} represents the error terms.¹⁶

We test the model using data disaggregated by creditor groups (multilateral or bilateral) and the type of loan (concessional or non-concessional). Thus, we allow for

¹⁵ Arrears in percent of external debt are used to measure defaults as it captures both being in default and the size of the default relative to the debt stock. As a robustness test we also use arrears in percent of GDP.

¹⁶ The variables included in the main model specification and their sources are listed in the Appendix.

the effect on lending from bilateral and multilateral creditors to differ. If multilateral creditors have seniority, the negative effect on lending from bilateral creditors may be stronger compared to the effect for multilateral creditors, on average.

4.2. Data

The main data source is the World Bank database World Development Indicators (WDI), but we also include data from other sources for some of the control variables.¹⁷ Based on the annual data, we construct a panel data set with eight five-year periods used in the analysis. Averaging data across periods we reduce possible problems related to measurement errors and noise in the data.¹⁸ Due to missing observations, and because some countries are only included in the sample when they are classified as either low- or middle-income countries, the dataset is unbalanced.

From the literature on defaults and exclusion by private creditors we know that the duration of exclusion varies from around 2 to 8 years (Gelos et al., 2011; Richmond and Dias, 2009). Estimating Equation 1, we look at whether countries in default experience a change in disbursements of loans from official creditors, controlling for all other relevant variables. In order to say something about the timing of the effects, we also test the model lagging all independent variables one period using both annual data and averages across five year periods.

The dependent variable is lending from official creditors, including public and publicly guaranteed loans from international organizations (multilateral lending) and governments (bilateral lending).¹⁹ Using data on net transfers, we would avoid the possibility of the debtor countries rolling over their debt, as net transfers reflect the real resources transferred. An obvious problem when estimating the effect of arrears on official loans on the net transfers of loans from official creditors is that, once

¹⁷ See Table A.1. in the Appendix for a complete list of variables and sources.

¹⁸ The main results are not sensitive to the length of time periods. Results using annual data are reported in the Appendix.

¹⁹ The data include both long-term and short-term debt. Multilateral loans include loans and credits from multilateral and intergovernmental agencies. Bilateral loans include loans from governments and their agencies, autonomous bodies and direct loans from official export credit agencies.

arrears are being accumulated, net transfers will increase by definition.²⁰ Thus, we use data on disbursements measured in percent of GDP.

The main independent variable is sovereign defaults proxied by the stock of arrears on long-term debt measured in percent of total external debt.²¹ The data on arrears are available for debt to private creditors and official creditors separately and, as can be seen in Table 1, the two variables are highly correlated. When defaulting on commercial loans, it is very likely that a country defaults on official loans, and vice versa. The high correlation between arrears in the two markets for capital is also evident when looking at the development in arrears over time in Figure 4, which may indicate that countries do not default strategically. In order to avoid problems with multicollinearity, we therefore test the model using data on the sum of arrears to private and official creditors; but as a robustness test, we also include either arrears to private creditors or official creditors, one at a time.

Table 1 – Arrears

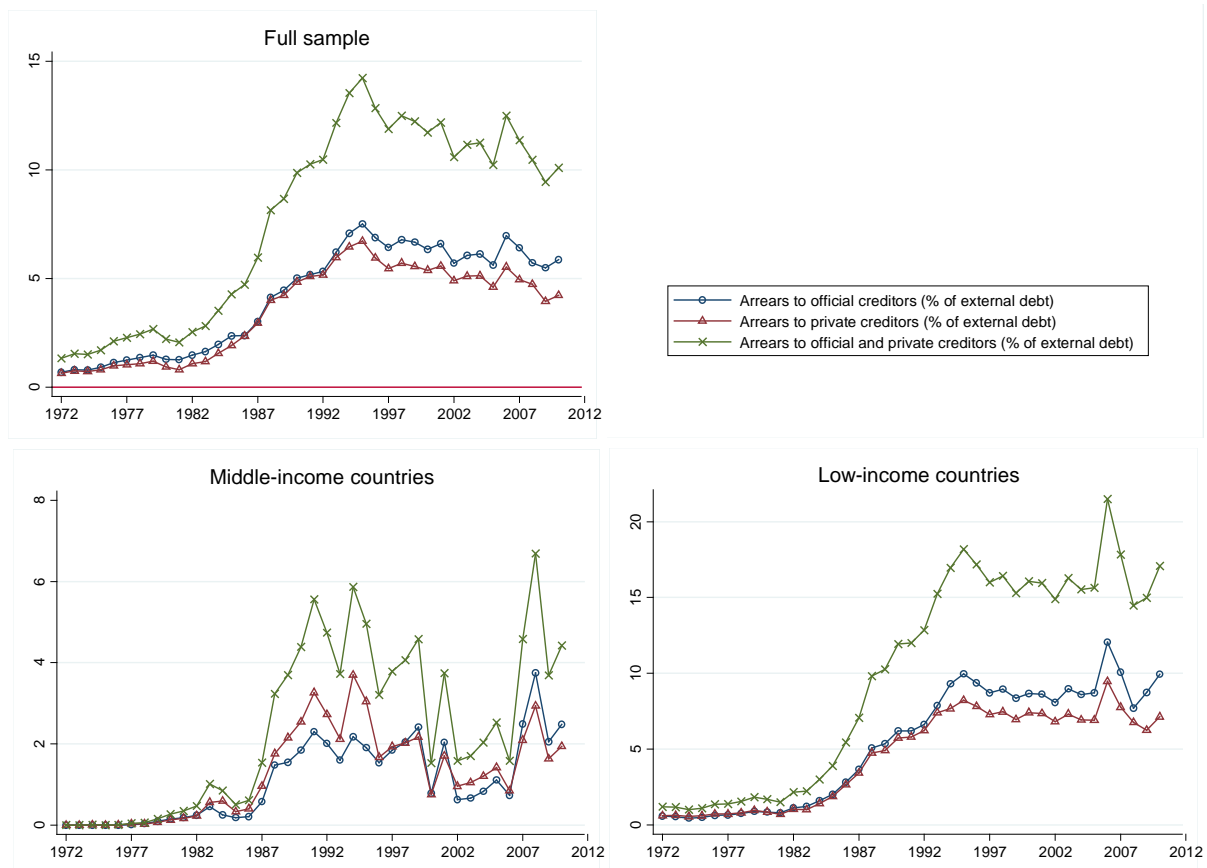
Full sample					
	N	Mean	SD	Min	Max
Arrears (% of external debt)	816	4.23	9.04	0	58.91
Arrears to official creditors (% of external debt)	816	3.64	7.47	0	58.93
Arrears to private creditors (% of external debt)	816	7.87	16.31	0	117.85
Arrears (% of GDP)	813	11.73	68.43	0	1437.79
Correlation (arrears to official creditors, arrears to private creditors)					0.95
Low-income countries					
	N	Mean	SD	Min	Max
Arrears (% of external debt)	510	9.72	18.13	0	117.85
Arrears to official creditors (% of external debt)	510	5.26	9.94	0	58.91
Arrears to private creditors (% of external debt)	510	4.46	8.33	0	58.93
Arrears (% of GDP)	527	16.17	84.15	0	1437.79
Correlation (arrears to official creditors, arrears to private creditors)					0.97

²⁰ Net transfers are disbursements minus principal and interest repaid.

²¹ Benczur and Ilut (2009) also use arrears to identify defaults/repayment history, while Kraay and Nehru (2006) use arrears to identify debt distress.

Arrears are measured in percent of external debt. Thus, in addition to indicating a default, the variable also reflects the severity of the default relative to the size of the debt stocks. By using arrears, we avoid problems with timing, which is present in data on debt restructurings. As it may take several years to resolve a default (Benjamin and Wright, 2009), the effect of a default on lending is likely to occur prior to debt restructuring. Figure 4 presents a graph of the development of arrears in percent of external debt for the countries in our sample. As for lending, the development is somewhat different depending on whether we look at low- or middle-income countries. For the full sample, arrears reached a peak in 1995 and have slightly decreased since. The slight reduction in arrears has thus occurred after the Heavily Indebted Poor Countries (HIPC) Initiative started in 1996. This is not surprising, as one of the requirements to reach the decision point in the HIPC Initiative is clearance of arrears. For the HIPCs, both arrears and external debt will be reduced as a result of clearance of arrears followed by debt relief. Thus, if we look at the development in arrears measured in percent of GDP, the picture looks quite different with arrears in percent of GDP moving towards zero at the end of the period observed. The relatively stable development in arrears in percent of debt is simply a result of a considerable reduction in debt ratios in the same period. While the average external debt for the full sample was around 80% of GDP at the end of the 1990s, ten years later it is less than 40% of GDP. Thus, it seems as though decades of debt relief has both led to a decrease in the external debt ratio as well as arrears in percent of GDP, on average.

Figure 4 – Development in stock of arrears (% of external debt)



Source: Authors' calculations based on data from the World Bank.

Of the 118 countries in our sample, only three (China, Lithuania, and Papua New Guinea) have no positive observations for arrears. Thus, even though there is a relatively large share of observations with no arrears, most of the countries have defaulted on principal and/or interest due at some point during the period from 1972 to 2011.

4.3. Control variables

The control variables included in the model are mainly those found to be relevant for access to capital/creditworthiness in the literature on access to international capital markets and on aid allocation. First, we control for the average income in the debtor countries by including the logarithm of GDP per capita. The expected effect of average income on disbursements from official creditors is dependent on the type of loans analyzed. Concessional lending is assumed to be targeted toward low-income

countries. Still, the poorest countries also receive more grants, which could reduce the negative effect of average income on concessional lending. Non-concessional lending is expected to be positively dependent on average income, as an increase in income is likely to have a positive effect on the creditworthiness of the countries. We also control for the size of the country by including the logarithm of population.

Further, we follow the literature on default and exclusion from private creditors and control for economic performance using macroeconomic variables expected to affect the size of disbursements to developing countries. The growth rate in GDP per capita controls for the fact that debtor countries are likely to repay in good times and borrow in bad times, given the assumption that lending is used for consumption smoothing.¹ External debt in percent of GDP (debt ratio) is included to control for the indebtedness of the debtor countries. In the case of defensive lending, one would expect to see a positive effect of debt ratios on lending.² We also control for the current account balance in percent of GDP. In addition to the average income, all three variables indicate whether the country is considered to be creditworthy.

In order to control for the political environment in the debtor countries, we use the Polity IV index for autocracy/democracy from the Center for Systemic Peace (2013), the International Country Risk Guide (ICRG) indicator for political risk provided by the PRS Group (2012), and an index for the similarity in voting patterns in the UN General Assembly (UNGA) between the debtor country and the US. The latter is an indicator for the similarity in voting patterns with the US in the UNGA from Gartzke (2010). From the aid allocation literature, we know that being a political ally is positively related to aid flows. The US is a major aid donor and has a strong influence on the policies in multilateral organizations like the IMF and the World Bank

¹ Contrary to the theoretical predictions, Panizza et al. (2009) find that private lending is pro-cyclical, while official lending is not significantly dependent on the output gap.

² The results in Marchesi and Missale (2012) show that loans from official donors do not increase when debt increases.

(McKeown, 2009). Finally, we include the degree of openness (trade in percent of GDP) to control for the dependence on access to international markets.³

In Sections 2 and 3, the change in international markets over time has been discussed. Different events, such as the debt crisis in the 1980s, the end of the Cold War, and the financial crisis starting in 2008, are likely to have significant effects on lending from official creditors. In order to deal with global events, we also include time fixed effects. Country fixed effects control for country specific characteristics, such as colonial past, religion, and ethnic and geographical variables.

4.4. Methodology

We control for a large number of variables, as well as country and time fixed effects, and there should not be a problem of any omitted variables bias.⁴ However, we cannot conclude on the direction of causality of our results without addressing the possible endogeneity problem. Reduced access to capital (a reduction in new loans) may increase the risk of defaulting on loans, thus accumulating arrears. However, Bjørnskov and Schröder (2013) find that foreign aid reduces incentives to repay existing debt, suggesting that the effect of official (concessional) lending in fact has the opposite effect on arrears: an increase in (concessional) lending will lead to an increase in arrears.

An alternative to fixed effects estimation in the absence of valid external instruments is to use a GMM model with internal instruments (Holtz-Eakin et al., 1988; Arellano and Bond, 1991; Arellano and Bover, 1995; Blundell and Bond, 1998). Even though the GMM models are popular, the instruments are often weak, leading to biased estimates (Bazzi and Clemens, 2013; Bound et al., 1995), and the tests for validity are sensitive to the (often) high number of instruments (Roodman, 2009b). For the instruments to be valid, the exclusion restriction must hold. Thus, the instrument (e.g., the lagged differences in arrears) must not have a direct effect on lending, but only

³ The robustness of the results to adding additional variables is discussed in Section 5.

⁴ An F-test confirms that there is unobserved heterogeneity, and fixed effects should be controlled for in order to obtain unbiased estimates.

affect lending through the instrumented variable (arrears in levels lagged one period) controlling for the other variables in the model.⁵ From the literature on defaults and reputational costs in commercial international capital markets, we know that defaults can have a direct effect on lending for up to nine years after defaulting (Richmond and Dias, 2009). The probability of default is also closely related to past incidents of defaults (Reinhart et al., 2003). Thus, using the lagged differences as instruments, the lags used should be restricted to lags 2 and up.

Estimating the model using the system GMM estimator (Blundell and Bond, 1998), which is more efficient than the difference GMM (Arellano and Bond, 1991) and is less likely to suffer from weak instruments (Bun and Windmeijer, 2010; Bazzi and Clemens, 2013), the independent variables in levels are instrumented for using lagged differences.⁶ Thus, any country fixed effects are transformed away, and possible endogeneity is dealt with if the lagged differences are valid and strong instruments. The Windmeijer finite-sample correction in the two-step estimation is used to correct for the downward bias in the standard errors for small samples (Windmeijer, 2005). In order to restrict the number of instruments, we collapse the instrument matrix and restrict the lags for our two variables for default to lag 2 to 8.⁷ Thus, our identification relies on the assumption that defaults that occurred more than 10 years ago do not influence lending today, but having a history of default (even more than 10 years ago) does influence defaults today.

Overall, the results from the Hansen J-test fail to reject the null hypothesis that the instruments are valid, supporting our assumption that the exclusion restriction holds. However, following Bazzi and Clemens (2013), we test the strength of the instruments by running the model using 2SLS as a standard test for instrument strength, which is

⁵ It is assumed that “past changes in y (or other instrumenting variables) are uncorrelated with the current errors in levels, which include fixed effects” (Roodman, 2009b, p.138).

⁶ Bun and Windmeijer (2010) confirm that the system GMM has a smaller bias than the difference GMM when series are persistent. However, they also show that when the variance of the country fixed effects increases relative to the variance of the error term, the bias in the system GMM increases.

⁷ As a general rule, Roodman (2009b) argues that the instrument count should at least be lower than the number of countries in the sample. In addition to making the Hansen J-test unreliable, a large number of instruments also lead to a bias. The cost of reducing the number of instruments by using laglimits or collapsing the instrument matrix is a loss of efficiency. In the presence of second-order autocorrelation, we restrict the lags used to lags 3 and longer.

not available for the difference and system GMM models. The results of the Kleibergen-Paap LM test for underidentification, and Kleibergen-Paap Wald statistics show that the instruments are weak, and we therefore focus on the fixed effects results in our discussion.⁸ However, the results from the system GMM estimation and test of the instruments are provided in the Appendix for comparison.

5. Results

5.1. Introduction

In this section, the main results from the analysis are presented. In Table 2, we present results for the fixed effects model using data on disbursements for the full sample. We also report the results using data on only low-income countries in Table 3, to have a more homogeneous group of countries in the sample. Low-income countries depend on capital from official sources, and we therefore present results only including countries with GDP per capita below 1026 constant 2011 USD since the creditors' response to default may differ depending on the average income. The main independent variable, arrears, is measured in percent of external debt. This makes our measure of default sensitive to debt reductions. Thus, we also present the results with arrears measured in percent of GDP (Table 4). In Table 5, we present the results using data on arrears to loans from official creditors and arrears on loans from private creditors separately. To further explore possible heterogeneity, we also estimate the model controlling for being in the HIPC Initiative (Table 6) and using data on only World Bank lending (Table 7).

5.2. Baseline results

Contrary to what we expected, the results presented in Table 2 show that the effect of defaults is negative and significant at the 5% level for concessional lending, while for non-concessional lending, the coefficients are negative but not always significant at

⁸ A Cragg-Donald Wald test can also be used to test the strength of the instruments, but because it assumes iid errors, we prefer the Kleibergen-Paap Wald test.

conventional levels. Adding additional variables to the model in columns 5 to 8, the number of countries in the sample drops considerably. Still, the negative coefficients for the stock of arrears when looking at concessional lending remain significant at conventional levels.

An increase in arrears of one standard deviation (16.3 percentage points) is related to a decrease in bilateral concessional lending of around 0.8 percentage points. Average disbursements of bilateral concessional loans in the full sample are 1.10%. Thus, the estimated reduction in bilateral concessional loans related to a default is quantitatively large. The equivalent effect for multilateral concessional lending is around 0.5 percentage points.

Comparing the estimated coefficients for arrears in columns 5 to 8 using a Wald test, we find that the coefficients for default when looking at concessional lending are not significantly different from each other at the 10% level. The same holds for non-concessional lending. However, the effect of defaults on concessional loans and non-concessional loans are significantly different from each other at the 5% level. Thus, we find that bilateral and multilateral creditors do not respond differently to sovereign default when providing loans to low- and middle-income countries, as could have been the case due to seniority. However, as some large donors (especially the US) have great influence over the policies of multilaterals, such as the IMF and the World Bank (McKeown, 2009; Fleck and Kilby, 2006; Kilby, 2009), it may also be that multilaterals will react to defaults on bilateral loans.

The negative effects of defaults on concessional lending are not sensitive to controlling for a possible substitution effect from loans to grants and access to capital from private creditors. Thus, the access to capital from official creditors is reduced following a default on sovereign debt, on average. Neither lending from private creditors nor grants is significant at conventional levels when looking at concessional lending (indicating that there is no substitution between grants and concessional loans) and private and official concessional lending, once the income level and other economic characteristics of the debtor country are controlled for. We have also controlled for the

possibility of catalytic effects by including lending from other official creditors, but again the main results remain the same.⁹

Using disbursements, the results may be affected by the possibility of rolling over debt. When a country is in default, a creditor may increase disbursements to make the debtor country able to serve its debt. The fixed effects results show a negative relationship between arrears and disbursements from both bilateral and multilateral creditors. If rolling over debt is present, we then underestimate the negative effect of default. In other words, the negative effect would be stronger if we were able to control for this behavior and the estimated effect can thus be interpreted as a lower bound. The literature on defensive lending investigates how debt ratios or total debt service affects new lending. Looking at both loans and grants to low-income countries, Marchesi and Missale (2012) find support for the hypothesis of defensive granting, but not for defensive lending, by bilateral and multilateral donors. This is in line with the results presented here, where the external debt ratio is not significant when looking at concessional lending. In the presence of defensive lending and a substitution from loans to grants as countries become more indebted, this could lead to an insignificant effect of the external debt ratio, as the two mechanisms have the opposite effects on lending. Controlling for grants, however, does not affect the results for arrears or external debt.¹⁰

The lack of statistical significance is probably due to the fact that most of the countries in the sample are low-income countries with limited access to non-concessional lending. However, it could also be caused by the implicit assumption of a linear relationship between default and disbursements of new loans. If the effect of sovereign defaults increases with the size of arrears, we would overestimate the effect for low levels of arrears and underestimate the effect for high values of arrears. Thus, we have

⁹ The results when including grants and lending from other official creditors or private creditors are not reported for brevity, but are available upon request.

¹⁰ Using data on net transfers rather than disbursements, we still find a statistically significant negative effect of defaults on concessional lending at the 5% level. For non-concessional lending, however, the effect is still negative but not significant at the 10% level. The results are not reported in the paper due to space limitations, but are available upon request.

also tested the model, adding a squared term for arrears to allow for a non-linear relationship, but have found no empirical support for this.¹¹

The control variables mostly have the expected sign but are not always significant at conventional levels. Only bilateral concessional lending is significantly dependent on the political stability in the debtor country at the 10% significance level, proxied by the ICRG indicator for political risk. It is also interesting to see that the variable for voting in line with the US in the UNGA has a significantly positive effect on multilateral lending. This is in line with the literature on US influence on multilateral organizations such as the World Bank and the IMF (McKeown, 2009; Fleck and Kilby, 2006; Kilby, 2009).

The coefficients for the time dummies are not reported in any of the tables for brevity, but it is worth noting that they are mostly significant at conventional levels and have a relatively strong effect on lending. Thus, a great share of the variation in disbursements of both concessional and non-concessional loans from official creditors is explained by global changes over time.

¹¹ The results are not reported in the paper but are available upon request.

Table 2 – Disbursements to low- and middle-income countries (FE)

	Concessional		Non-concessional		Concessional		Non-concessional	
	Bilateral (1)	Multilateral (2)	Bilateral (3)	Multilateral (4)	Bilateral (5)	Multilateral (6)	Bilateral (7)	Multilateral (8)
Arrears (% of external debt)	-0.052*** (0.013)	-0.021*** (0.008)	-0.013 (0.008)	-0.010** (0.004)	-0.048*** (0.018)	-0.028** (0.012)	-0.020* (0.012)	-0.007 (0.004)
ln GDP per capita	-0.162 (0.486)	-0.713* (0.364)	0.321 (0.316)	-0.088 (0.235)	0.363 (0.674)	-0.354 (0.550)	0.905** (0.405)	0.033 (0.297)
Growth in GDP per capita	-0.035* (0.019)	0.040*** (0.014)	-0.007 (0.010)	-0.011 (0.009)	-0.036 (0.042)	0.048* (0.026)	-0.014 (0.012)	-0.003 (0.011)
Current account balance	-0.028* (0.015)	-0.016 (0.014)	-0.007 (0.007)	-0.015*** (0.005)	-0.009 (0.020)	-0.024 (0.023)	-0.013 (0.009)	-0.013* (0.008)
External debt stocks	0.010* (0.006)	0.003 (0.003)	0.006 (0.004)	0.001 (0.001)	0.011 (0.008)	0.002 (0.002)	0.007* (0.004)	0.001 (0.001)
Openness	0.003 (0.005)	0.011*** (0.004)	0.001 (0.002)	0.002 (0.003)	0.005 (0.004)	0.010** (0.005)	0.000 (0.002)	-0.001 (0.004)
ln population	-1.611* (0.950)	0.657 (0.792)	0.802 (0.588)	-0.487 (0.534)	-0.635 (1.587)	-0.918 (1.311)	1.705* (0.901)	-0.056 (0.784)
Political risk (ICRG)					-0.021* (0.012)	0.009 (0.016)	-0.005 (0.009)	-0.001 (0.007)
Democracy					-0.031 (0.023)	-0.022 (0.022)	0.001 (0.009)	-0.008 (0.012)
UNGA voting similarity with the US					-2.283 (1.587)	1.719 (1.088)	-0.682 (0.963)	1.434** (0.579)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared within	0.33	0.22	0.24	0.20	0.39	0.24	0.39	0.23
Number of observations	688	688	688	688	350	350	350	350
Number of countries	118	118	118	118	71	71	71	71
Years	72-11	72-11	72-11	72-11	82-11	82-11	82-11	82-11

* p<0.1, ** p<0.05, *** p<0.01. Dependent variables are disbursements in percent of GDP. The model is estimated using fixed effects on data averaged across five-year periods. Standard errors clustered at the country level are reported in parentheses.

5.3. Low-income countries

Only including low-income countries in Table 3, the results roughly remain the same as the full sample in Table 2. Sovereign defaults now have a negative effect on bilateral non-concessional lending at the 10% level for both model specifications, while the effect on multilateral non-concessional lending is never significant at the 10% level. Non-concessional lending is mainly provided to middle-income countries, so the lack of significance when looking at this type of loans is as expected.

A notable difference when comparing the results in Tables 2 and 3 is the importance of similarity in the voting patterns to the US when looking at multilateral lending. For the full sample, the variable for being a political ally of the US is only significant for multilateral non-concessional lending. An increase of one standard deviation (which is equivalent to comparing a situation where no votes are similar to the votes of the US to a situation having 12.5% similarity) increases disbursements by almost 0.4 percentage points. Restricting the sample to only low-income countries, the effect is similar for multilateral non-concessional lending. For multilateral concessional lending, on the other hand, the effect is now significant at the 1% level, indicating an increase in disbursements of 1.4 percentage points from an increase in similarity of voting patterns in the UNGA of one standard deviation. Again, the results are in line with the literature on the major influence of U.S. interests on the policies of multilateral organizations.

While we would expect the results to change when excluding lower middle-income countries, the robustness of the results may not be that surprising after all. As can be seen in Figures 1 to 5, the development in the dependent variables and the stock of arrears is mainly driven by lending to and defaults by low-income countries, indicating that lending from official creditors, to a large extent, is directed at low-income countries.

Table 3 – Disbursements to low-income countries (FE)

	Concessional		Non-concessional		Concessional		Non-concessional	
	Bilateral (1)	Multilateral (2)	Bilateral (3)	Multilateral (4)	Bilateral (5)	Multilateral (6)	Bilateral (7)	Multilateral (8)
Arrears (% of external debt)	-0.051*** (0.014)	-0.029*** (0.010)	-0.018* (0.009)	-0.005 (0.003)	-0.044*** (0.016)	-0.038*** (0.012)	-0.019* (0.010)	-0.002 (0.003)
ln GDP per capita	-0.072 (0.712)	-0.845 (0.579)	0.476 (0.420)	0.141 (0.198)	0.049 (0.936)	-0.098 (0.788)	1.108** (0.526)	0.419* (0.240)
Growth in GDP per capita	-0.029 (0.030)	0.054** (0.025)	-0.004 (0.016)	-0.009 (0.011)	-0.022 (0.082)	0.052 (0.041)	-0.018 (0.026)	-0.002 (0.012)
Current account balance	-0.054*** (0.019)	-0.039* (0.022)	-0.012 (0.008)	-0.017*** (0.005)	-0.005 (0.034)	-0.070*** (0.023)	-0.014 (0.018)	-0.014 (0.010)
External debt stocks	0.012* (0.007)	0.002 (0.003)	0.007 (0.004)	-0.000 (0.001)	0.011 (0.008)	0.000 (0.002)	0.008* (0.005)	-0.001* (0.001)
Openness	0.009 (0.007)	0.014** (0.006)	0.004 (0.003)	0.008*** (0.003)	0.020** (0.008)	0.012 (0.008)	0.002 (0.005)	0.002 (0.002)
ln population	-0.549 (1.654)	0.988 (1.693)	2.392* (1.385)	0.303 (0.641)	1.713 (3.258)	-0.241 (2.597)	3.415 (2.184)	0.171 (0.856)
Political risk (ICRG)					-0.035 (0.024)	0.007 (0.024)	-0.009 (0.018)	-0.001 (0.006)
Democracy					-0.074** (0.036)	-0.015 (0.029)	-0.008 (0.015)	-0.004 (0.009)
UNGA voting similarity with the US					-5.268 (3.931)	5.580*** (2.025)	-2.360 (2.258)	1.138** (0.552)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared within	0.37	0.32	0.26	0.28	0.47	0.37	0.41	0.30
Number of observations	440	440	440	440	217	217	217	217
Number of countries	104	104	104	104	62	62	62	62
Years	72-11	72-11	72-11	72-11	82-11	82-11	82-11	82-11

* p<0.1, ** p<0.05, *** p<0.01. Dependent variables are disbursements in percent of GDP. The model is estimated using fixed effects on data averaged across five-year periods. Standard errors clustered at the country level are reported in parentheses.

5.4. Measure of arrears

Measuring arrears in percent of external debt, there is a possibility that the results simply capture an effect of debt relief. Reducing external debt would lead to an increase in our preferred measure of default. If debt relief is positively correlated with disbursements of new loans, the negative effect of default we find could simply be a result of this. However, using arrears in percent of GDP rather than total external debt, the negative effect of defaults on concessional lending does not change (Table 4). For non-concessional lending, on the other hand, the effect of defaults on multilateral non-concessional lending is now negative and significant at the 1% level. An increase in arrears equivalent to one standard deviation (68.4 percentage points) is related to a decrease in disbursements of new loans between 0.3 and 0.9 percentage points, depending on the creditor group and type of loan analyzed. Thus, defaults now seem to cause a reduction in new loans from both bilateral and multilateral creditors, and in both concessional and non-concessional lending. This could indicate that total external debt has a positive correlation with multilateral non-concessional lending, which reduces the negative relation between arrears and disbursement when measuring arrears in percent of external debt.

Table 4 – Arrears in percent of GDP (FE)

	Concessional		Non-concessional	
	Bilateral (1)	Multilateral (2)	Bilateral (3)	Multilateral (4)
Arrears (% of GDP)	-0.013* (0.007)	-0.011** (0.005)	-0.007* (0.004)	-0.005*** (0.001)
Time fixed effects	Yes	Yes	Yes	Yes
Full set of controls	Yes	Yes	Yes	Yes
R-squared within	0.367	0.257	0.393	0.268
Number of observations	350	350	350	350
Number of countries	71	71	71	71
Years	82-11	82-11	82-11	82-11

* p<0.1, ** p<0.05, *** p<0.01. Dependent variables are disbursements in percent of GDP. The model is estimated using fixed effects on data averaged across five-year periods. Standard errors clustered at the country level are reported in parentheses.

Separating arrears to loans from official and private creditors in Table 5, we gain some additional insight to what is driving the main results. First, non-concessional lending

bilateral creditors respond negatively to defaults on official loans, while multilaterals respond negatively to defaults on loans to private creditors. However, comparing the effects of arrears by type of loan and creditor group, the effects are never statistically different from each other at the 10% significance level.

Table 5 – Arrears to private and official creditors (FE)

	Concessional		Non-concessional		Concessional		Non-concessional	
	Bilateral (1)	Multilateral (2)	Bilateral (3)	Multilateral (4)	Bilateral (5)	Multilateral (6)	Bilateral (7)	Multilateral (8)
Arrears on official loans (% of external debt)					-0.092*** (0.033)	-0.044** (0.021)	-0.039* (0.023)	-0.009 (0.008)
Arrears on private loans (% of external debt)	-0.087** (0.034)	-0.063** (0.024)	-0.035 (0.022)	-0.018* (0.009)				
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Full set of controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared within	0.370	0.244	0.370	0.237	0.408	0.228	0.394	0.227
Number of observations	350	350	350	350	350	350	350	350
Number of countries	71	71	71	71	71	71	71	71
Years	82-11	82-11	82-11	82-11	82-11	82-11	82-11	82-11

* p<0.1, ** p<0.05, *** p<0.01. Dependent variables are disbursements in percent of GDP. The model is estimated using fixed effects on data averaged across five-year periods. Standard errors clustered at the country level are reported in parentheses.

5.5. HIPC

The results indicate reduced access to capital from official sources when the debtor countries are in default. However, the results could simply reflect an increase in lending to countries qualifying for the HIPC Initiative. Starting in 1996, the initiative was targeted at poor countries with unsustainable debt ratios. One of the prerequisites of qualifying was clearance of arrears. Thus, as arrears were reduced, countries received debt relief through the program. However, in addition to clearance of arrears, the countries also had to fulfill several other requirements. Decreasing arrears could then result in better access to capital from official creditors due to the commitment to the policy requirements for the HIPC. In order to test whether the results simply reflect an increase in lending when countries reach the decision point for the HIPC Initiative, we add a dummy variable for HIPC and an interaction term between the HIPC dummy and arrears. The results are presented in Table 6.

Only the three main independent variables are reported, as we are interested in whether or not the constitutive term for arrears remains significant. Thus, we would like to see whether the negative effect of default holds given that the debtor countries are not HIPC. The results for arrears are almost identical to the main results provided in Table 2. Concessional lending is negatively related to defaults, and this effect holds when including only the dummy for HIPC and the interaction between HIPC and arrears. For non-concessional lending, the coefficients are still negative, but the statistical significance varies as for the main results.

Table 6 – HIPC

	Concessional		Non-concessional		Concessional		Non-concessional	
	Bilateral (1)	Multilateral (2)	Bilateral (3)	Multilateral (4)	Bilateral (5)	Multilateral (6)	Bilateral (7)	Multilateral (8)
Arrears (% of external debt)	-0.048*** (0.018)	-0.027** (0.012)	-0.020* (0.012)	-0.007 (0.004)	-0.045** (0.020)	-0.023** (0.010)	-0.020 (0.012)	-0.008* (0.004)
HIPC dummy	-0.695*** (0.257)	0.143 (0.276)	-0.154 (0.125)	-0.250** (0.098)	-0.404 (0.326)	0.601** (0.278)	-0.200 (0.157)	-0.327** (0.152)
Interaction, HIPC, and arrears					-0.018 (0.019)	-0.028 (0.021)	0.003 (0.009)	0.005 (0.005)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Full set of controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared within	0.41	0.24	0.39	0.24	0.41	0.26	0.39	0.25
Number of observations	350	350	350	350	350	350	350	350
Number of countries	71	71	71	71	71	71	71	71
Years	82-11	82-11	82-11	82-11	82-11	82-11	82-11	82-11

* p<0.1, ** p<0.05, *** p<0.01. Dependent variables are disbursements in percent of GDP. The model is estimated using fixed effects on data averaged across five-year periods. Standard errors clustered at the country level are reported in parentheses.

5.6. World Bank lending

In Table 7, we only look at World Bank lending, which is divided into IDA and IBRD. We do this in order to compare the results with the results for total multilateral lending. The decision to look at World Bank lending instead of disaggregated data for other creditors was made based on data availability, and the nature of the IDA and the International Bank for Reconstruction and Development (IBRD) are suitable for testing our hypotheses. The IDA and the IBRD, where the former provides concessional loans (and grants) and the latter non-concessional loans, are financed in different ways. The IBRD raises its funds from international financial markets, and is meant to be self-sustained, and thus provides non-concessional loans to middle-income countries and creditworthy low-income countries. The IDA, on the other hand, is replenished by the richer member states every three years, and also receives some funds from the IBRD and repayments from debtor countries. Thus, while the IBRD is meant to make a profit, the objective of the IDA is to provide loans and grants to reduce poverty and increase economic growth.

The results for World Bank lending are similar to the results for aggregate disbursements of loans from multilateral creditors. The estimated coefficient for arrears is always negative, but once the full set of control variables are included, the effect is only significant at conventional levels for loans from IDA.

The influence of the US on World Bank lending is again evident, with a strong positive effect on disbursements of new loans if the debtor countries vote in line with the US in the UNGA. Country fixed effects are controlled for, so the effect revealed is based on variation within countries only. Thus, by voting similarly to the US, countries can significantly increase their access to capital from the World Bank.

Table 7 – World Bank lending

	IDA (1)	IBRD (2)	IDA (3)	IBRD (4)
Arrears (% of external debt)	-0.014*** (0.005)	-0.004* (0.002)	-0.022*** (0.008)	-0.002 (0.002)
ln GDP per capita	-0.493** (0.236)	-0.038 (0.181)	-0.264 (0.385)	0.049 (0.154)
Growth in GDP per capita	0.020** (0.009)	-0.006 (0.005)	0.035** (0.015)	-0.001 (0.007)
Current account balance	-0.014 (0.010)	-0.006* (0.003)	-0.021 (0.015)	-0.002 (0.003)
External debt stocks	0.002 (0.002)	0.000 (0.001)	0.002 (0.002)	0.000 (0.001)
Openness	0.004** (0.002)	0.000 (0.001)	0.006*** (0.002)	-0.000 (0.002)
ln population	0.043 (0.404)	-0.237 (0.335)	-0.330 (0.855)	0.374 (0.413)
Political risk (ICRG)			0.002 (0.012)	-0.003 (0.004)
Democracy			-0.024 (0.015)	0.008 (0.008)
UNGA voting similarity with the US			1.448* (0.800)	0.742** (0.352)
Time fixed effects	Yes	Yes	Yes	Yes
R-squared within	0.25	0.17	0.28	0.28
Number of observations	688	688	350	350
Number of countries	118	118	72	72
Years	72-11	72-11	82-11	82-11

* p<0.1, ** p<0.05, *** p<0.01. Dependent variables are disbursements in percent of GDP. The model is estimated using fixed effects with clustered standard errors reported in parentheses.

5.7. Timing of effects

In Table 8, results with lagged independent variables for both annual data and data averaged across five year periods are presented. The main results hold for concessional lending when using annual data, but the significant negative effect of defaults on official lending disappears when using five year averages. Thus, the results suggest that disbursements from official creditors in year t are negatively related to defaults in year $t-1$, while disbursements in the current five year period are not dependent on defaults occurring six to ten years ago.

Table 8 – Timing of effects

	Annual data				Five year averages			
	Concessional		Non-concessional		Concessional		Non-concessional	
	Bilateral	Multilateral	Bilateral	Multilateral	Bilateral	Multilateral	Bilateral	Multilateral
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Arrears (% of external debt) (t-1)	-0.021** (0.009)	-0.017** (0.007)	-0.008 (0.007)	-0.004 (0.003)	-0.001 (0.009)	-0.006 (0.010)	-0.001 (0.005)	0.001 (0.003)
ln GDP per capita (t-1)	0.714 (0.749)	-0.751 (0.518)	1.157* (0.667)	-0.044 (0.321)	0.589 (0.707)	0.465 (0.471)	0.659 (0.414)	0.611** (0.249)
Growth in GDP per capita (t-1)	-0.048** (0.023)	0.010 (0.007)	-0.016 (0.016)	-0.009 (0.006)	-0.026 (0.024)	0.051 (0.035)	0.014 (0.009)	-0.002 (0.014)
Current account balance (t-1)	-0.006 (0.013)	-0.018 (0.014)	-0.009 (0.005)	-0.010** (0.004)	-0.036** (0.014)	-0.084 (0.058)	-0.020* (0.011)	-0.023*** (0.006)
External debt stocks (t-1)	0.007** (0.003)	0.001 (0.001)	0.004*** (0.002)	0.001** (0.001)	-0.005** (0.002)	-0.002 (0.003)	-0.002 (0.002)	0.002* (0.001)
Openness (t-1)	0.010 (0.006)	0.007* (0.003)	-0.000 (0.002)	-0.002 (0.003)	0.001 (0.003)	0.002 (0.005)	-0.001 (0.002)	-0.004 (0.005)
ln population (t-1)	-0.139 (1.695)	-1.732 (1.360)	1.910* (1.059)	-0.246 (0.694)	-1.728 (1.450)	0.938 (1.551)	0.893 (0.549)	0.684 (0.705)
Political risk (ICRG) (t-1)	-0.015 (0.015)	0.010 (0.014)	-0.012 (0.013)	0.001 (0.005)	-0.029 (0.025)	-0.019 (0.015)	-0.025 (0.017)	-0.010 (0.006)
Democracy (t-1)	-0.039* (0.020)	-0.019 (0.016)	-0.001 (0.008)	-0.000 (0.010)	-0.028* (0.017)	-0.058** (0.024)	0.003 (0.009)	0.010 (0.013)
UNGA voting similar to the US (t-1)	-1.799 (1.099)	1.291* (0.659)	-0.742 (0.850)	1.019** (0.441)	-3.264 (2.298)	1.899 (1.341)	-1.539 (1.380)	1.238** (0.586)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared within	0.21	0.13	0.17	0.15	0.28	0.30	0.20	0.39
Number of observations	1362	1362	1362	1362	282	282	282	282
Number of countries	118	118	118	118	71	71	71	71
Years	72-11	72-11	72-11	72-11	82-11	82-11	82-11	82-11

* p<0.1, ** p<0.05, *** p<0.01. Dependent variables are disbursements in percent of GDP. The model is estimated using a fixed effects estimator. Standard errors clustered at the country level are reported in parentheses. (t-1) indicates that the variables are lagged one period.

The negative effect of defaults on bilateral non-concessional lending found in Tables 2 and 3 is no longer statistically significant at the ten percent level when lagging the independent variables. This could indicate a problem with reverse causality in the estimated effects for non-concessional lending presented so far, where non-concessional lending decreases prior to the default.

6. Concluding remarks

The paper contributes to the empirical literature on the cost of default by analyzing how official creditors respond to defaults on sovereign debt to both private and official creditors. The results show that both bilateral and multilateral creditors respond negatively to defaults on sovereign debt when providing concessional loans. The effect is not due to substitution from loans to grants or an increase in loans to countries clearing their arrears to qualify for the HIPC Initiative. The effect of arrears on concessional lending has been shown to be very robust to changes in model specification and sample size. In addition to the results discussed so far, the results are also robust to controlling for total reserves, oil rents, and the residuals from a regression of Institutional Investor country credit ratings on the full set of independent variables.³³ Thus, there are some reputational costs of default in the market for official loans as well as in the private capital markets, indicating that developing countries in default cannot simply turn to official creditors for capital. This is crucial when discussing capital flows to developing countries, and to low-income countries especially, as they rarely have access to bonds and bank loans from private creditors, and should strengthen the debtor countries' incentives to repay their sovereign debt.

Lagging the independent variables one period using both annual data and data averaged across five year periods, we find that the negative coefficient for defaults is statistically significant at conventional levels for concessional lending using annual

³³ The residuals are used when controlling for credit ratings in order to capture the effect of market perceptions not explained by other variables included in the model (Garibaldi et al., 2001; Gelos et al., 2011).

data only. The results suggest that the negative relation between defaults and concessional lending from official creditors only holds in the short run.

For non-concessional lending, the results are not robust to changes in the model specification and measure of default. The lack of support for the hypothesis that access to non-concessional lending is reduced following a default is somewhat surprising. However, the lack of robust results could be explained by the fact that most of the countries in the sample are low-income countries with limited access to non-concessional lending.

There are several aspects of the link between sovereign default and lending from official creditors that should be investigated further. In addition to analyzing the relation between arrears on sovereign debt and disbursements of new loans from official creditors, our dataset includes lending from private creditors in addition to lending from bilateral and multilateral creditors, making it possible to control for possible substitution or catalytic effects from official to private creditors or vice versa. Still, we do not focus on how the two sources for capital are related, which is a question that should be pursued in future research. Kraay and Nehru (2006) claim that the failure to repay concessional loans reduces the ability of multilateral creditors to provide new loans to other developing countries. We do not analyze the effect of other countries defaulting on the disbursements of new loans, but it would be an interesting hypothesis to test empirically. A third question that would be interesting to investigate closer is the role of the IMF, and whether the reputational costs of sovereign default are contingent on whether or not the debtor country accepts the terms of IMF lending programs following the default.

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Appendix

A.I. Variables included in the model

Explanatory variable	Description	Source
Bilateral concessional disbursements	Disbursements of concessional loans from bilateral creditors, % of GDP.	World Bank (2012)
Multilateral concessional disbursements	Disbursements of concessional loans from multilateral creditors, % of GDP.	World Bank (2012)
Bilateral non-concessional disbursements	Disbursements of non-concessional loans from bilateral creditors, % of GDP.	World Bank (2012)
Multilateral non-concessional disbursements	Disbursements of non-concessional loans from multilateral creditors, % of GDP.	World Bank (2012)
Private disbursements	Disbursements from private creditors, % of GDP.	World Bank (2012)
Bilateral concessional NTR	Net transfers of concessional loans from bilateral creditors, % of GDP.	World Bank (2012)
Multilateral concessional NTR	Net transfers of concessional loans from multilateral creditors, % of GDP.	World Bank (2012)
Bilateral non-concessional NTR	Net transfers of non-concessional loans from bilateral creditors, % of GDP.	World Bank (2012)
Multilateral non-concessional NTR	Net transfers of non-concessional loans from multilateral creditors, % of GDP.	World Bank (2012)
Private NTR	Net transfers from private creditors, % of GDP.	World Bank (2012)
Arrears	The sum of arrears to private and official creditors, either in percent of debt or GDP.	Worlds Bank (2012)
Arrears to official creditors	Arrears of principals and interests in percent of total external debt	Worlds Bank (2012)
Arrears to private creditors	Arrears of principals and interests in percent of total external debt	World Bank (2012)
Grants	Total grants, % of GDP.	World Bank (2012)
ln GDP per capita.	ln GDP per capita.	World Bank (2012)
ln population	ln population.	World Bank (2012)
Growth in GDP per capita	Annual growth in GDP per capita.	World Bank (2012)
External debt stocks	External debt stocks, % of GDP.	World Bank (2012)
Current account balance	Current account balance, % of GDP.	World Bank (2012)
Total reserves	Total reserves, % of total external debt.	World Bank (2012)
Credit ratings	Institutional Investor country credit ratings.	Institutional Investor (2013)
HIPC	Dummy for HIPC Initiative and MDRI	IMF (2013)
US affinity	Index for similarities with the US in voting patterns in the UNGA.	Gartzke (2010)
Democracy	Polity IV index ranging from -10 (autocracy) to 10 (democracy)	Center for Systemic Peace (2013)
Openness	Trade, % of GDP.	World Bank (2012)
Oil rents	Oil rents, % of GDP.	World Bank (2012)
Political risk (ICRG)	ICRG indicator for political risk.	PRS Group (2012)

A.2. List of countries

Albania	Dominica	Lesotho	<i>Senegal</i>
Algeria	Dominican Republic	<i>Liberia</i>	Seychelles
Angola	Ecuador	Lithuania	Sierra Leone
Argentina	Egypt, Arab Rep.	Macedonia, FYR	Solomon Islands
Armenia	El Salvador	Madagascar	South Africa
Azerbaijan	Eritrea	Malawi	Sri Lanka
Bangladesh	Ethiopia	Malaysia	St. Lucia
Belarus	Fiji	Maldives	St. Vincent and the Grenadines
Belize	Gabon	Mali	Sudan
<i>Benin</i>	<i>Gambia, The</i>	<i>Mauritania</i>	Swaziland
Bolivia	Georgia	Mauritius	Syrian Arab Republic
Bosnia and Herzegovina	Ghana	Mexico	Tajikistan
Botswana	Grenada	Moldova	Tanzania
Brazil	Guatemala	Mongolia	Thailand
Bulgaria	Guinea	Morocco	Togo
Burkina Faso	Guinea-Bissau	Mozambique	Tonga
<i>Burundi</i>	Guyana	Nepal	Tunisia
Cambodia	Haiti	Nicaragua	Turkey
Cameroon	Honduras	Niger	Turkmenistan
Cape Verde	India	Nigeria	Uganda
<i>Central African Republic</i>	Indonesia	Pakistan	Ukraine
<i>Chad</i>	Iran, Islamic Rep.	Panama	Uruguay
Chile	Jamaica	Papua New Guinea	Vanuatu
China	Jordan	Paraguay	Venezuela, RB
Colombia	Kazakhstan	Peru	Vietnam
<i>Comoros</i>	Kenya	Philippines	Yemen, Rep.
<i>Congo, Rep.</i>	Kyrgyz Republic	Romania	Zambia
Costa Rica	Lao PDR	Russian Federation	Zimbabwe
<i>Cote d'Ivoire</i>	Latvia	<i>Rwanda</i>	
Djibouti	Lebanon	Samoa	

Bold: Countries included when running the model with the full set of control variables.

Italic: Countries in the HIPC Initiative at some point in the period from 1972 to 2011.

A.3. Summary statistics (full sample)

Variable	N	Mean	SD	Min.	Max.
Disbursements, official creditors, % of GDP	782	3.45	3.35	0.00	32.52
Disbursements, bilateral concessional, % of GDP	782	1.10	1.86	0.00	23.14
Disbursements, multilateral concessional, % of GDP	782	1.39	1.80	0.00	15.19
Disbursements, bilateral non-concessional, % of GDP	782	0.35	0.79	0.00	11.62
Disbursements, multilateral non-concessional, % of GDP	782	0.61	0.73	0.00	4.01
Disbursements, private creditors, % of GDP	782	1.38	2.33	0.00	19.34
NTR, official creditors, % of GDP	782	1.60	3.17	-20.02	31.55
NTR, bilateral concessional, % of GDP	782	0.65	1.78	-4.93	22.33
NTR, multilateral concessional, % of GDP	782	1.05	1.55	-3.10	12.88
NTR, bilateral non-concessional, % of GDP	782	-0.05	0.84	-4.70	10.10
NTR, multilateral non-concessional, % of GDP	782	-0.07	0.92	-17.02	4.01
NTR, private creditors, % of GDP	782	0.11	1.39	-5.52	12.88
Grants, % of GDP	813	6.31	8.45	0.00	96.80
Arrears, % of external debt	816	7.87	16.31	0.00	117.85
Arrears on debt to private creditors, % of external debt	816	3.64	7.47	0.00	58.93
Arrears on debt to official creditors, % of external debt	816	4.23	9.04	0.00	58.91
Arrears, % of GDP	813	11.73	68.43	0.00	1437.79
ln GDP per capita	817	6.74	1.01	4.27	8.89
ln population	908	1.81	1.86	-2.84	7.19
Growth in GDP per capita	809	1.73	4.70	-20.41	57.99
External debt stocks, % of GDP	782	63.64	83.22	0.00	1493.38
Current account bal., % of GDP	721	-4.92	7.36	-48.69	27.29
Total reserves, % of external debt	775	56.71	218.02	-0.17	4446.23
Openness	799	73.93	38.89	8.68	367.02
Democracy	751	-0.30	6.35	-10	10
UNGA voting similarity with the US	743	-0.32	0.26	-0.81	0.45
Political risk (ICRG)	451	56.40	11.11	17.17	79.68
Institutional Investor country credit rating	547	28.50	14.60	4.88	75.60

A.4. Summary statistics (low-income countries)

Variable	N	Mean	SD	Min.	Max.
Disbursements, official creditors, % of GDP	510	4.00	3.39	0.00	32.52
Disbursements, bilateral concessional, % of GDP	510	1.25	1.84	0.00	18.30
Disbursements, multilateral concessional, % of GDP	510	1.78	1.90	0.00	15.19
Disbursements, bilateral non-concessional, % of GDP	510	0.41	0.92	0.00	11.62
Disbursements, multilateral non-concessional, % of GDP	510	0.57	0.72	0.00	3.85
Disbursements, private creditors, % of GDP	510	1.17	2.02	0.00	15.72
NTR, official creditors, % of GDP	510	2.17	3.23	-20.02	24.33
NTR, bilateral concessional, % of GDP	510	0.80	1.78	-4.93	17.53
NTR, multilateral concessional, % of GDP	510	1.41	1.66	-3.10	12.88
NTR, bilateral non-concessional, % of GDP	510	0.02	0.91	-4.34	10.10
NTR, multilateral non-concessional, % of GDP	510	-0.06	1.02	-17.02	2.69
NTR, private creditors, % of GDP	510	0.12	1.21	-4.30	8.73
Grants, % of GDP	527	7.94	9.45	0.00	96.80
Arrears, % of external debt	510	9.72	18.13	0.00	117.85
Arrears on debt to private creditors, % of external debt	510	4.46	8.33	0.00	58.93
Arrears on debt to official creditors, % of external debt	510	5.26	9.94	0.00	58.91
Arrears, % of GDP	527	16.17	84.15	0.00	1437.79
ln GDP per capita	527	6.26	0.85	4.27	8.45
ln population	527	2.00	1.76	-2.84	7.17
Growth in GDP per capita	521	1.53	5.00	-20.41	57.99
External debt stocks, % of GDP	510	71.59	96.07	0.55	1493.38
Current account bal., % of GDP	458	-5.64	6.94	-46.07	16.68
Total reserves, % of external debt	496	32.89	49.61	-0.17	553.81
Openness	516	67.35	34.28	8.68	184.23
Democracy	488	-1.12	5.89	-10	10
UNGA voting similarity with the US	471	-0.31	0.27	-0.76	0.41
Political risk (ICRG)	269	52.80	10.71	17.17	72.60
Institutional Investor country credit rating	319	23.59	13.13	4.88	72.90

A.5. Results using annual data

	Concessional		Non-concessional		Concessional		Non-concessional	
	Bilateral	Multilateral	Bilateral	Multilateral	Bilateral	Multilateral	Bilateral	Multilateral
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Arrears (% of external debt)	-0.044*** (0.010)	-0.018*** (0.006)	-0.010* (0.006)	-0.007** (0.003)	-0.036** (0.014)	-0.022** (0.009)	-0.015* (0.008)	-0.005 (0.003)
ln GDP per capita	0.471 (0.512)	-0.926** (0.430)	0.582* (0.328)	0.049 (0.207)	1.164 (0.893)	-0.739 (0.561)	1.203* (0.615)	-0.245 (0.369)
Growth in GDP per capita	-0.012* (0.007)	0.024*** (0.005)	-0.004 (0.003)	-0.010** (0.004)	-0.005 (0.011)	0.027** (0.012)	-0.012 (0.008)	-0.005 (0.006)
Current account balance	-0.022** (0.010)	-0.008 (0.007)	-0.007 (0.005)	-0.013*** (0.004)	-0.000 (0.014)	-0.016 (0.014)	-0.006 (0.010)	-0.005 (0.006)
External debt stocks	0.014** (0.007)	0.003 (0.003)	0.007* (0.004)	0.001 (0.001)	0.017** (0.007)	0.000 (0.002)	0.009** (0.004)	0.001 (0.001)
Openness	0.002 (0.004)	0.008** (0.004)	0.001 (0.002)	0.002 (0.002)	0.006 (0.004)	0.009** (0.004)	-0.000 (0.002)	-0.000 (0.003)
ln population	-0.193 (1.099)	0.303 (1.029)	1.102 (0.711)	-0.168 (0.621)	0.683 (1.783)	-1.425 (1.359)	2.259** (1.109)	-0.562 (0.798)
Political risk (ICRG)					-0.005 (0.009)	0.012 (0.013)	-0.003 (0.007)	-0.000 (0.006)
Democracy					-0.024 (0.017)	-0.011 (0.018)	-0.001 (0.007)	-0.009 (0.010)
UNGA voting similar to the US					-1.373 (0.976)	0.883 (0.689)	-0.379 (0.809)	0.759* (0.390)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared within	0.25	0.14	0.19	0.11	0.37	0.14	0.29	0.13
Number of observations	2950	2950	2950	2950	1391	1391	1391	1391
Number of countries	118	118	118	118	71	71	71	71
Years	72-11	72-11	72-11	72-11	82-11	82-11	82-11	82-11

* p<0.1, ** p<0.05, *** p<0.01. Dependent variables are disbursements in percent of GDP. The model is estimated using fixed effects on annual data. Standard errors clustered at the country level are reported in parentheses.

A.6. Disbursements (System GMM)

	Concessional		Non-concessional			Concessional		Non-concessional		
	Bilateral	Multilateral	Bilateral	Multilateral	Multilateral	Bilateral	Multilateral	Bilateral	Multilateral	Multilateral
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Arrears (% of external debt)	-0.033** (0.014)	-0.028* (0.015)	-0.011 (0.007)	-0.006 (0.005)	-0.004 (0.003)	-0.024*** (0.008)	-0.023 (0.015)	-0.012* (0.007)	-0.005 (0.005)	-0.005 (0.006)
ln GDP per capita	0.171 (0.340)	-0.991*** (0.313)	0.216 (0.162)	0.310*** (0.119)	0.199* (0.119)	0.181 (0.212)	-0.702** (0.293)	0.181 (0.187)	0.285*** (0.092)	0.186 (0.134)
Growth in GDP per capita	-0.008 (0.038)	-0.020 (0.063)	0.001 (0.025)	0.007 (0.024)	-0.002 (0.027)	-0.016 (0.029)	-0.040 (0.048)	0.007 (0.034)	0.015 (0.032)	0.020 (0.033)
Current account balance	0.007 (0.004)	0.008 (0.005)	0.002 (0.001)	-0.001 (0.001)	-0.000 (0.001)	0.006* (0.003)	0.007 (0.005)	0.002 (0.001)	-0.001 (0.001)	-0.000 (0.001)
External debt stocks	-0.049 (0.043)	0.021 (0.029)	-0.034* (0.017)	-0.033*** (0.012)	-0.036** (0.016)	-0.052* (0.028)	-0.002 (0.021)	-0.029* (0.017)	-0.028** (0.014)	-0.037** (0.017)
Openness	0.000 (0.006)	0.002 (0.008)	-0.001 (0.004)	-0.000 (0.003)	0.000 (0.002)	0.005 (0.005)	-0.001 (0.007)	0.000 (0.003)	-0.001 (0.003)	0.000 (0.003)
ln population	-0.326 (0.306)	-0.605* (0.325)	-0.143 (0.128)	-0.029 (0.114)	0.191** (0.088)	-0.089 (0.145)	-0.551 (0.380)	-0.133 (0.134)	-0.023 (0.079)	0.200 (0.140)
Political risk (ICRG)	-0.032 (0.033)	0.031 (0.026)	-0.031* (0.018)	-0.022** (0.010)	-0.018 (0.013)	-0.022 (0.019)	0.015 (0.021)	-0.028 (0.019)	-0.021* (0.013)	-0.021 (0.013)
Democracy	-0.038* (0.022)	0.000 (0.044)	0.008 (0.016)	-0.002 (0.012)	0.007 (0.016)	-0.056*** (0.016)	0.005 (0.038)	0.001 (0.015)	0.004 (0.016)	0.025 (0.022)
UNGA voting similar to the US	-2.817* (1.554)	-1.297 (1.562)	-1.265 (0.808)	-0.629 (0.825)	0.861 (0.563)	-1.865* (1.101)	-0.523 (1.435)	-1.244 (0.890)	-0.548 (0.727)	0.351 (0.619)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations/countries/instruments	350/72/74	350/72/74	350/72/74	350/72/74	350/72/64	350/72/56	350/72/56	350/72/56	350/72/56	350/72/46
Laglimits	2, 8	2, 8	2, 8	2, 8	3, 8	2, 5	2, 5	2, 5	2, 5	3, 5
Collapsed instruments matrix	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Arellano-Bond test for AR(2)	0.93	0.16	0.84	0.05	0.06	0.93	0.15	0.74	0.05	0.06
Arellano-Bond test for AR(3)	0.38	0.21	0.88	0.11	0.43	0.31	0.15	0.83	0.11	0.42
Hansen J-test	0.41	0.25	0.54	0.57	0.85	0.75	0.62	0.56	0.34	0.49

* p<0.1, ** p<0.05, *** p<0.01. Dependent variables are disbursements in percent of GDP. The model is estimated using a two-step system GMM with data averaged across five-year periods. Standard errors are corrected using the Windmeijer finite-sample correction.

A.7. Test for strength of instruments

	Bilateral concessional	Multilateral concessional	Bilateral non- concessional	Multilateral non- concessional
Number of observations	350	350	350	350
Number of countries	72	72	72	72
Number of instruments	16	16	16	16
Collapsed instruments	Yes	Yes	Yes	Yes
Lags used	2nd	2nd	2nd	2nd
Kleibergen-Paap LM test (p-value)	0.14	0.14	0.14	0.14
Kleibergen-Paap Wald F-statistics	0.21	0.21	0.21	0.21
Kleibergen-Paap Wald stat:				
Relative OLS bias > 30% (p-value)	1.00	1.00	1.00	1.00

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