International Lending in War and Peace

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Abstract

We study international capital flows across 200 years. A major novelty is our analysis on official flows (government-to-government lending), which are routinely neglected in the vast literature on private capital flows. To trace official flows, we collect an encompassing new database of 1.1 million cross-border loans, grants and guarantees from foreign governments, central banks, and multilateral organizations over the period 1790-2020. The size of official cross-border flows often exceeds total private flows, especially during wars and financial crises. Official flows are counter-cyclical, surging when private capital flows retreat, and acting as a counterweight during economic downturns and disasters. Time and again, official international lending has helped avert military defeat or financial collapse abroad. We conclude that official finance is a crucial but underappreciated pillar of the international financial system.

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Keywords: *international capital flows, financial crises, bailouts, war finance, disaster risk*

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1 Introduction

A main tenet in international macroeconomics is that cross-border capital flows are pro-cyclical and prone to "sudden stops" - thus providing only limited international risk sharing[1]. This textbook view builds on an extensive literature, which typically focused on *private* cross-border flows since the 1970s. In this paper, we collect data across two centuries and extend the analysis to another type of external flows: *official* international (government-to-government) loans and grants. We document that official international lending is large and remarkably counter-cyclical. Many "sudden stops" in private flows of the past 200 years are accompanied by "sudden spikes" in official capital flows. The most pronounced surges in official lending occurred in major disasters such as WW1, WW2 and 2008, when global GDP, global asset prices, and global private flows collapsed. These findings have important implications for our understanding of global capital allocation, international cooperation, and disaster risk.

Knowledge on official capital flows has been held back by a lack of transparency and data. Governments rarely publicize their lending to other governments, which puts taxpayer money at risk. No international organization has been monitoring the various types of official flows systematically, and neither have rating agencies or commercial data providers who typically focus on private flows. As a result, it has been cumbersome to examine official financial flows rigorously[2]. Private capital flows, in contrast, are far more visible and much better researched.

This paper places official capital flows at the center and contrasts it to private flows across 200 years. We gather an extensive new dataset to (i) document the characteristics of official capital flows and debt stocks today and in history, (ii) compare the dynamics and financial terms of private vs. official lending, and (iii) shed light on the drivers of official finance with a 200-year gravity model.

We make three major data contributions:

- First, we compile a comprehensive, granular dataset of official international lending and international aid flows, spanning 1790-2022. The data covers over 1 million individual loans and grants extended by 134 creditor countries and 50 international and regional financial organizations since the French Revolutionary Wars. We gathered and compared hundreds of sources, including international treaties, budget accounts, archival material, or proprietary lending data by the World Bank. Besides covering the incidence, origin, and amounts of official lending, we also gathered information on the interest rates and repayment terms.
- Second, we gather the first database of debt stocks owed to private versus official creditors, spanning 140 countries and the period from 1910 to 2020. The few existing long-run debt datasets cover total public debt ratios and stocks (e.g. Reinhart and Rogoff, 2009), but not a breakdown by creditor (private, bilateral, and multilateral). Compiling this dataset of debt stocks

[1] See, for example, Calvo et al. (1993), Kaminsky et al. (2004), Aguiar and Gopinath (2007), Rey (2015), Schmitt-Grohé et al. (2022).

[2] A notable exception is the pioneering work on official flows since 1970s by Alfaro et al. (2014). Our finding that official flows are counter-cyclical is very much in line with their results for the post-1970 decades (see also Avdjiev et al., 2022).

required an entirely different set of sources, in particular archival material on debt gathered from international organizations.

- Third, we gathered rich data on private capital flows and bond issuances in selected financial crises and wars since 1790. The data work on private flows is less original and less systematic than for official lending flows and debt stocks, but the resulting dataset is nevertheless the most comprehensive collection of historical private capital flows we are aware of. This further expands and complements the aggregate long-run data on private international capital flows compiled by Reinhart et al. (2016, 2017).

Our main findings can be summarized as follows.

- Finding 1: **Official cross-border lending by governments, central banks, and multilateral institutions has a long history and is much larger than commonly known.** Since 1790, official capital flows have repeatedly exceeded private cross-border flows on a global level.
- Finding 2: **The biggest surges in official lending occurred during major wars**, in particular during WW1, WW2 and the Napoleonic Wars. The amounts lent during these global conflicts were much larger than the loans made during global financial crises.[3] Major wars are the most disruptive force in international finance, with capital accounts typically closed, and private capital flows coming to an almost complete halt.
- Finding 3: **In peacetime, the main driver of official international lending are financial crises.** We show that cross-border rescue lending during financial crises has a long history, occurring repeatedly during the 19th and early 20th century, well before the creation of the IMF or the World Bank. In history, rescue loans were often substantial, e.g. in the crises of 1861 or 1890, but they were granted ad hoc and to bridge short-term liquidity problems. In contrast, since WW2, financial crisis lending and "serial" bailouts to highly indebted countries have become more common, including during the 1980s, or the Asian or Eurozone crisis. This is partly the result of the rise of international and regional financial institutions. Lending by multilateral creditors overtook total bilateral lending for the first time in the 1970s.
- Finding 4: **The biggest official lenders are the great powers of their time** – Britain in the 19th century, the United States in the 20th century, and, since 2015, China. Hegemons were most willing to extend (risky) international lending to other states, in particular during disaster episodes. This is a major insight for our understanding of financial hegemony and global risk sharing. We know from Gourinchas and Rey (2007), Caballero et al. (2008), Rey (2015), Maggiori (2017), and Lenel and Kekre (2023), that the US has the dominant currency, produces the safest and most liquid global asset, and shows a greater risk bearing capacity than other countries - thus providing insurance to the rest of the world. Our results suggest that hegemons insure the world not just through private capital markets, but also by lending big in case of global shocks. The history of hegemonic official lending is long, but (too) little understood.

[3]The same is true in modern-day Ukraine which has received large-scale financial aid after Russia's invasion in 2022, with volumes surpassing all the previous bailouts it received in its serial balance of payment and debt crises since independence (Trebesch et al., 2023).

- Finding 5: **The dynamics and terms of official and private capital flows are starkly distinct**. Official capital flows are highest when private capital flows dry out. Official foreign loans tend to have below-market interest rates (especially since the 1970s), while private foreign lending usually carries a sizable premium, or yield spread, capturing sovereign and country risk. We also see longer maturities for official loans compared to private bonds, especially for riskier sovereign borrowers.

- Finding 6: **The motives for official lending differ in times of war and peace, but self-interest always plays a role.** We estimate 200-year gravity models to help to understand the drivers of official finance. Theoretical work points to self-interest as a leading motive.[4] Creditor countries with close economic linkages to a crisis country, have an incentive to grant rescue loans to limit the negative spillovers to their own investors and exporters. Due to a lack of systematic data, it had been difficult to test these priors empirically. Our results confirm that bilateral exposure - the intensity of trade and financial linkages pre-crisis - is a key predictor of official flows during financial crises. The gravity model also sheds light on official flows in wartime. During wars, loans and grants are largest between military allies and countries who fight together, and this alliance effect clearly dominates the effect of bilateral economic exposure pre-war. In the bigger picture, both in war and peace, foreign official flows can be interpreted as a function of self-interest, rather than of altruism or more generally "country solidarity". Governments bail out other governments in their own economic interest, and they finance foreign allies to fight a war on their behalf.

Our paper helps to better understand the profound changes in the current international financial system. It is not widely appreciated that we are seeing a comeback of state control in international financial flows. China's rise as an international creditor has been underestimated due to a lack of transparency. We document how China has become one of the most important official creditors worldwide, as almost all of its foreign lending is extended by the government and its state-owned banks (see also Horn et al., 2021). Unknown to the broader public, China has also granted billions in rescue lending to developing countries (Horn et al., 2024). China's extensive use of state finance is emblematic for other new global creditor powers, such as Russia, India, Brazil or the Arab oil states, who are all prone to use state institutions when allocating capital abroad and who have now all become active official lenders to varying degrees. These new creditors are also increasingly prone to create new multilateral lending institutions, including the Beijing-based Asia Infrastructure Investment Bank or the BRICS Development Bank. "South-South" (official) lending is likely to continue to rise – with considerable state involvement. We are also witnessing a resurgence of official financing via central banks. Central bank "swap lines" have grown in volume and relevance, most evident during the crisis of 2008 and the Covid-19 pandemic. We show that this development is reminiscent of the flourishing cross-border central bank lending during the gold standard era.

Related literature: Our paper adds a significant missing piece to the rich literature on international capital flows and on the international financial system. Thanks to four decades of research we have a deep understanding on how private investors allocate capital abroad (Lane and Milesi-Ferretti, 2007;

[4] Bulow and Rogoff (1988), Tirole (2015), Farhi and Tirole (2018), Gourinchas et al. (2019) and Azzimonti and Quadrini (2023) all predict official bailouts to increase with (bilateral) economic and financial exposure.

Bruno and Shin, 2015; Coeurdacier and Rey, 2013), on the effects of private capital inflows and outflows on recipient economies (Calvo et al., 1993; Kose et al., 2009), on the scope of international risk sharing through private markets (Lewis, 1996; Maggiori, 2017), or on the global financial cycle in private asset markets (Rey, 2015). We create the foundation to reassess these big picture questions by providing rich new data on official cross-border flows. The few existing papers on official flows use aggregate data (most notably the pioneering work by Alfaro et al., 2014 as well as Avdjiev et al., 2022). Here, we collect data on more than 1 million individual official grants and loans. We thus offer a level of granularity that mirrors recent, cutting-edge contributions on private capital allocation that leverage data on millions of stocks and bonds (Maggiori et al., 2020; Coppola et al., 2021).

The main advantage of studying capital flows across 200 years is that it allows us to look beyond the current, post-1970 era of open capital accounts, US (dollar) dominance, and relative peace. Our data show that in periods of geopolitical turmoil and great power rivalry, private capital flows can come to an almost complete halt, while state-led finance becomes the dominant form of cross-border capital allocation. This long-run view informs our understanding of what may lie ahead for the global financial system (see also the recent related work on geoeconomics and fragmentation by Broner et al., 2024; Clayton et al., 2023; Gopinath et al., 2024).

Our analysis thereby relates to the literature on macroeconomic disasters (e.g. Barro, 2006; Barro and Ursúa, 2008; Gabaix, 2012) and on the economics of international wars (e.g. Martin et al., 2008; Glick and Taylor, 2010; Hall and Sargent, 2022; Gorodnichenko and Rashkovan, 2023; Federle et al., 2024). We show that in rare macroeconomic disasters and global wars such as WW1 and WW2, official lending reached record heights, with flows reaching up to 10% of US GDP per year. International transfers at this scale likely have major consequences for output, trade and asset markets, but these effects remain largely unexplored. Global disaster risk and global official finance are closely linked.

We also contribute to the literature on financial crises. We show that financial crises are not just characterized by a "sudden, dramatic outflow" of private capital (the definition of a financial crisis by Lorenzoni, 2014) but also often by a sudden, dramatic inflow of official loans and grants. Our paper is the first systematic long-run study on international rescue lending during financial crises worldwide. We thus considerably expand existing narratives and data collections on country bailouts, e.g. by Kindleberger (2006), Bordo and Schwartz (1998), Roubini and Setser (2004), Barkbu et al. (2012), Tooze (2015) or Corsetti et al. (2017, 2018). We show that crisis lending has evolved from occasional, ad-hoc rescue loans by allied states to a global financial safety net with dozens of active creditor governments and multilateral institutions. Our data facilitates future research on the determinants, optimal design, and consequences of cross-border bailouts.[5]

Relatedly, we add to the literature on sovereign debt. The history of official debt has long been overlooked in this research area, except for a rich body of work on IMF and World Bank lending, which only became large in the 1970s (and today accounts for a third of total official lending). Countless papers have explored the pricing of privately held sovereign bonds and the determinants and effects of sovereign default on private debt (see Reinhart and Rogoff, 2009; Panizza et al., 2009; Aguiar and

[5] A small theoretical literature specifically studies sovereign bailouts across borders, e.g. Corsetti et al. (2006), Dellas and Niepelt (2016), Fink and Scholl (2016), Roch and Uhlig (2018), as well as the references cited above: Tirole (2015), Farhi and Tirole (2018), Gourinchas et al. (2019).

Amador, 2014; Mitchener and Trebesch, 2023, for overviews). In contrast, there has been very little work on lending by sovereigns (Reinhart and Trebesch, 2016; Schlegl et al., 2019, study defaults on official loans). Here, we trace official lending flows across two centuries and construct the first long-run database with a breakdown of sovereign debt stocks into private and official debt.

Finally, our data allows to reassess fundamental questions of international cooperation and international financial support. Existing work on cross-border economic cooperation is largely qualitative or focused on the realms of fiscal policy, exchange rate policy, or banking regulation (e.g. Keohane, 1984; Kindleberger, 1986; Gilpin, 1987; Eichengreen, 1992; James, 1996; Farhi and Werning, 2017). Our 200-year dataset allows us to study the determinants and outcomes of financial cooperation and transfers via sovereign-to-sovereign and central-bank-to-central-bank flows in a systematic way. We thus help to bridge the various strands of work on international financial support which, thus far, have remained largely disconnected, including work on (i) foreign aid (Qian, 2015), (ii) on the US Marshall Plan (Eichengreen, 1995; Brunnermeier et al., 2018) (iii) on China's Belt and Road Dreher et al. (2022); Horn et al. (2021, 2022), (iv) on financial crisis bailouts, e.g. by the IMF, within the Eurozone 2010-12 or US-driven bailouts in the Asian or Mexican crises of the 1990s (Lane, 2012; Brunnermeier and Reis, 2023), (v) on international financing of wars, e.g. in the current Russian war against Ukraine (Trebesch et al., 2023; Gorodnichenko and Rashkovan, 2023), or on (vi) central bank to central bank crisis lending, including its modern-day reincarnation - central bank swap lines (Bahaj and Reis, 2022a,b) Our paper combines all of these variants of official international finance under a common concept and in one data resource, thus allowing for a much more comprehensive picture of the phenomenon.

The remainder of the paper proceeds as follows: Section 2 provides information on who lends, tracking official creditors and institutions since 1790. This section also describes our coding and data sources. Section 3 presents our new database and provides a panoramic view on salient features of official sovereign lending across two centuries: We identify the main creditors and document the time profile of official transfers. Section 4 examines how official and private international capital flows compare, with a focus on major wars and financial crises. In the last part of the paper, we use a 200-year gravity model to explain the direction and magnitude of official flows. Section 6 concludes.

2 Three new datasets on official and private finance

The main challenge to studying the history of global capital allocation is the lack of systematic and encompassing data. The gap is particularly large with regard to official finance.

In this paper, we make three main contributions by collecting unique new data on (i) official flows, for a global country sample, 1790-2020, (ii) a new decomposition of external debt stocks into private vs official for a broad country sample, 1900-2020, (iii) private cross-border flows in selected crises and wars since 1790. In the following we start by explaining concepts and definitions (sub-section 2.1) and then go on to summarize the data collection efforts in each of the three dimensions (sub-sections 2.2 – 2.4). The lengthy Data Appendices B, D and C provide further details, full lists of sources, and a variety of data validation exercises.

2.1 Concepts and definitions

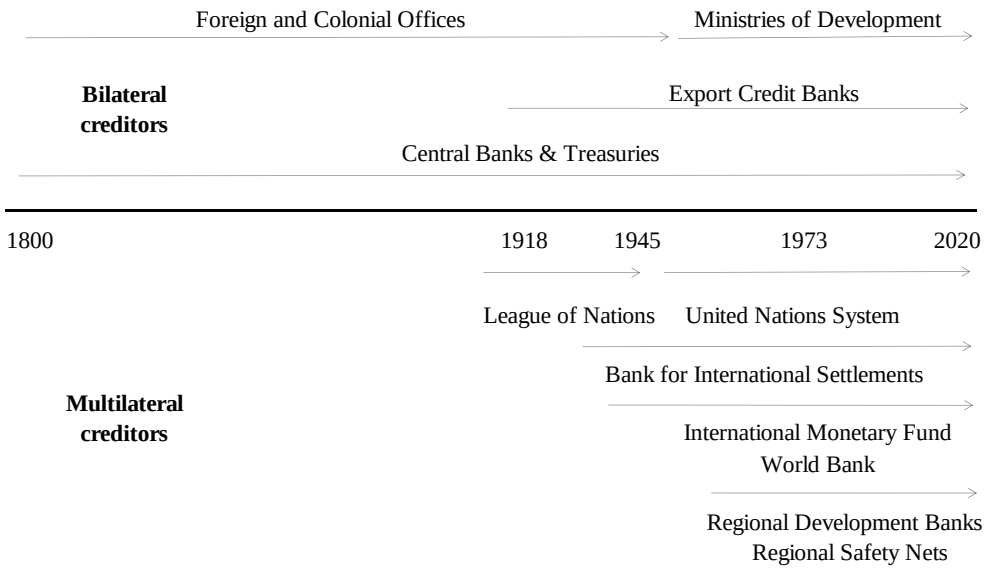
In broad terms, official international finance includes grants, loans and debt guarantees extended by state-linked creditors. This includes lending and other official transfers between two governments of independent states, lending by a multilateral or regional financial institutions to a debtor country government, or cross-border loans between two central banks. More precisely, we identify official sovereign debt and lending flows by building on the standard OECD definition according to which: *"official transactions are those undertaken by central, state or local government agencies at their own risk and responsibility, regardless of whether these agencies have raised the funds through taxation or through borrowing from the private sector. This includes transactions by public corporations i.e. corporations over which the government secures control by owning more than half of the voting equity securities or otherwise controlling more than half of the equity holders' voting power; or through special legislation empowering the government to determine corporate policy or to appoint directors"* (OECD, 2018). We use this modern definition and then extend it backwards, to code official finance flows and stocks in history.

Which creditors? The definition of official lending includes both bilateral and multilateral lending. Bilateral lending is directly channeled from the creditor country to the recipient country. Multilateral lending is extended by international financial institutions that are established through political agreements among multiple member countries (IMF, 2014; OECD, 2018). Over the past 200 years, the set of official creditor institutions has changed profoundly and now includes an ever-growing number of bilateral and multilateral creditor institutions. Figure 1 provides a stylized representation of the evolution of the official creditor universe and maps out the different types of creditors that our data collection effort focuses on. During the 19th century, official lending was almost exclusively extended by bilateral creditors, in particular by the treasuries and foreign ministries of nations, as well as by their central banks. Since WW1 most official lending has been extended by specialized creditor institutions, such as development agencies and export credit banks at the bilateral level and by a growing number of multilateral financial institutions with diverse lending mandates. These include not only the UN, the IMF and the World Bank Group but a large number of regional or plurilateral development banks and safety nets (see Appendix Table B9 for a full list and Appendix Section A.1 for a detailed historical account of the institutional evolution of official lending over the past two centuries).

Which debtors? We aim to capture all official lending transactions with non-residents as defined in IMF (2014), i.e., all instances of *cross-border* official lending.[6] To avoid double counting, we do not include bilateral contributions to international financial organizations in the data set. While the creditor entity, by definition, needs to be a state or state-owned entity, we do not impose a similar restriction on the debtor entity. In principle, our data set captures both government-to-government and government-to-private lending transactions. In practice, however, by far the largest share of official lending transactions are taken up by public sector debtor entities (see Appendix B for details).

[6]For the early sample period an importer qualifier is needed: We only consider official lending to non-residents in sovereign states, i.e., we do not aim to capture official lending to colonies or overseas territories. While sizeable, these flows are arguably more akin to domestic lending and do not share the same commitment and enforcement problems that characterize non-colonial cross-border lending. For a discussion of resource flows within colonial empires see for example Davis and Huttenback (1987) or Huillery (2014).

Figure 1: The universe of official sovereign creditor institutions 1790 - 2020



Sources: Official international lending database and Cogan et al. (2016). See Appendix Section A.1 for a more detailed summary of the historical evolution of official lending.

Which instruments? We aim to capture all forms of official grants and loans that are extended across borders. Loans are defined as all transfers in cash or in kind for which the recipient incurs legal debt and for which the resulting liability is not traded in secondary markets (see for example OECD, 2018). This definition includes concessional and non-concessional instruments, trade advances and credits as well as drawdowns under standing credit lines and foreign currency swaps.[7] We also include in our database cases of private creditor lending that are explicitly guaranteed by the creditor government.[8] Finally, we trace cross-border grants which we define as transfers of cash, goods or services, for which no repayment needs to be made (OECD, 2018).

Our dataset covers the history of development aid, as well as loans for infrastructure and reconstruction, e.g. of the US Marshall Plan or China's Belt and Road Initiative: Our paper does not focus on development aid, but, by definition, our data collection also covers the universe of aid flows by official donors, including grants and highly concessional loans.[9] We also trace all official loans and grants that states or state-banks have extended to finance post-war reconstruction and infrastructure projects in foreign countries, such as the US Marshall Plan or China's Belt and Road Initiative. We thereby provide the first quantitative long-run history of international development aid and of debt-financed "big push" infrastructure and reconstruction initiatives that were financed by foreign states. These loans and grants are a subset of the much larger universe of official finance.

[7] We follow standard practice and only count credit lines and foreign currency swap lines to the extent that they are being drawn down (IMF, 2014).

[8] The provision of creditor government guarantees on sovereign bonds issued in private markets were a common way to support foreign countries during the 19th century and inter-war era. See Myers (1945), Flores Zendejas and Decorzant (2006), Esteves and Tunçer (2016) and below.

[9] According to the OECD, aid-like loans are loans with a development purpose and a grant element of at least 25 percent (see OECD (2018) for details).

Portfolio investments and sovereign wealth fund holdings are not included: This paper focuses on bilateral (government-to-government and central bank-to-central bank) transactions, as captured by a contract signed between two state-linked actors. We therefore do not track official portfolio investments, such as secondary market purchases of sovereign bonds by foreign official creditors such as central banks or sovereign wealth funds. In legal terms, portfolio transactions are market-based and clearly distinct from contract-based international credit flows or grants. For the same reason, we also exclude implicit central bank transfers such as intra-euro area claims from Target2 balances. These flows are not legally contracted on a case-by-case basis. Future work may expand our granular data collection to include sovereign and central bank portfolio flows, but detailed data on central banks or SWF holdings and purchases are even harder to come by than for the issuance of official loans and grants. Because we exclude portfolio flows, the volume of official lending stocks and flows can be interpreted as a lower bound of global official finance.

2.2 Yearly flows: The International Official Lending Database 1790-2020

To construct our long-run database back to 1790, we collect and carefully combine information from hundreds of different data sources. This subsection gives an overview on our sources and coding approach on official loans and grants, with many more details listed in Appendix B.

International treaty series: Our main source for official lending during the 19^{th} century and up until World War II are international treaty collections. In doing so, we make use of the fact that the conduct of foreign policy became increasingly formalized in the late 18^{th} century, so that international loans between two states were now codified in inter-governmental treaties (Keene, 2012). Our sources show that, over the course of the 150 years from 1790 to WW2, sovereigns negotiated thousands of bilateral treaties, in which they regulated their political and commercial interactions (see also Broner et al., 2024). To identify bilateral lending, we systematically search the available treaty collections and related databases such as the League of Nations Treaty Collection or the British government's UK Treaty Series database. We focus in particular on bilateral financial agreements that extend loans, grants or guarantees (on privately issued international loans or bonds).

National budget accounts, parliamentary records: We supplement the information obtained from international treaties with national budget accounts and parliamentary records. This was best possible for the main bilateral creditor countries prior to WW2, in particular the large European sovereigns. International official loans often required parliamentary approval so that data coded from parliamentary papers allow us to conduct consistency checks of our treaty-based coding. Specifically, we comb through the national budgets and parliamentary records of the UK, France, Germany and the US starting in the early 19^{th} century.

Archival research: For a subgroup of official creditors, mainly for central banks, no published reports of sufficient detail are available. In these cases, we have supplemented our data collection through archival research. Appendix Section B provides details on the information we obtained in the archives of the US Federal Reserve Bank, the Bank for International Settlements, the Banque de France and the Bank of England.

Reports and datasets from international organizations and academic researchers: Another highly valuable source are publications and data by international organizations, especially from the interwar period onwards. We make extensive use of detailed research reports on international capital flows by the League of Nations, the BIS, the IBRD, the UN, the OECD and the IADB. We also use a wide range of creditor specific sources, such the annual reports of a large number of bilateral and multilateral creditor institutions. In the post-WW2 era, a further important find was a set of recently declassified CIA reports that meticulously trace foreign lending transactions by Sino-Soviet Bloc countries. We also considerably enrich our hand-coded data with a comprehensive data-extract on bilateral lending from the World Bank's International Debt Statistics (IDS). The IDS records all bilateral lending transactions of all member states reporting to the World Bank, starting in the 1960s. For aid flows and grants, main sources are the OECD's Creditor Reporting System as well as the widely used aid databases provided by AidData at William & Mary (Tierney et al., 2011), which we update and expand.

Coding approach and data validation: Our data coding approach involves two main steps. First, we make use of the primary sources described above to identify individual loans, grants and guarantees and to collect all available transaction-level data. In a second step, we then cross-check our data collection across different data sources and against the secondary literature. This procedure helps us to fill gaps in the data collection and to reconcile conflicting information. Appendix Section B.5 presents the results from a variety of these consistency checks.

Scope of data collection: For all creditors, debtors and instruments described in Section 2.1, we collect, whenever available, transaction-level data on (i) the committed and disbursed amounts, (ii) the year of the agreement, (iii) the creditor and debtor country as well as (iv) the financial terms including the interest rate, the grace period, maturity, and currency denomination.

Scope of the final database: The resulting database on official lending spans 230 years of data from 1790 to 2020 and covers more than 1.1 million loans, grants and guarantees extended by national agencies of up to 134 bilateral creditor countries and by more than 60 different international organizations. At the recipient side, we capture transactions to more than 200 different debtor countries. The total sum of commitments from 200 years of official international lending amounts to more than 17 trillion dollars (in 2015 USD).

Limitations: We emphasize three main limitations of our database. First, despite our best efforts, the data collection needs to be considered a lower bound for the incidence and magnitude of official sovereign lending. Given that our data collection breaks new ground, there is no off-the-shelf benchmark against which we can check the completeness of bilateral official lending transactions, especially in the historical dimension. But even for more recent years, research has shown that bilateral lending is prone to under-reporting in public debt statistics and government documents (Horn et al., 2024). Second, and as is pertinent in debt data, it is not always possible to ensure the definitional and conceptual consistency of the collected data over our two hundred year time horizon and the broad creditor and debtor country sample (see e.g. Abbas et al., 2010 or Reinhart and Rogoff, 2009). In later parts of the analysis, we therefore limit our data sample to a subset of creditor and debtor countries and years, for which comprehensive and fully harmonized data exists. Third, in most cases, our database traces commitments but not disbursements, because disbursement data is even harder to come by

than commitments. It is therefore crucial to not just trace committed flows but also the resulting debt stocks, as we do in the next section.

2.3 A new debt stock breakdown: external debt to official vs. private creditors 1910-2020

In addition to our data work on official lending *flows*, we gather a novel database on outstanding debt *stocks* owed to bilateral and multilateral creditors at the debtor-country year level. This dataset is a major contribution to the literature on public debt, because, thus far, there is no systematic long-run database with a breakdown of total public debt into debts owed to official versus private creditors (see Reinhart and Rogoff, 2009, for an overview of historical public debt databases).

Coding official debt stocks is essential to understand how the lending flows translate into outstanding claims. The database reveals, for the first time, that official debt accounts for a large share in total public external debt claims worldwide.

To create this new data resource, we embarked on another data collection journey, because the sources on official lending flows summarized above did not contain sufficient information on debt stocks. We therefore gathered, cleaned and combined another large set of hundreds of reports and archival sources. For recent decades, a key starting point was the World Bank's International Debt Statistics which contains detailed debt stock data since 1970 and for developing and emerging market countries. For all other debtor countries and for all other decades, information on outstanding official debt stocks had to be compiled by hand. For the early sample period, stocks are estimated from granular loan-level data such as from historical Moody's reports. For the interwar years as well as for 1950s and 1960s we build on, among others, detailed debtor reports by the League of Nations, by the United Nations as well as by the IMF and the World Bank, as gathered from their digital historical archives. See Appendix Section B.6 for details on sources, data construction and sample coverage.

The resulting database covers public external debt stocks of up to 140 developing, emerging and advanced country debtors towards both official and private creditors from 1910 to 2020 with a total of 8,300 country-year observations.

2.4 Private capital flows in selected crises and wars, 1790 - 2020

A third data contribution of this paper is that we gather and consolidate rich new data on private capital flows and bond issuances since 1790. While private international capital flows have been studied extensively in the academic literature, there exists no granular long-run dataset that tracks private cross-border lending over the past two centuries. Here we take a first step towards this objective, with a focus on private external debt issuance in disaster episodes.[10]

[10]The data on private issuance here complements the aggregate 200-year capital flow database compiled by Reinhart et al. (2016, 2017), which splices data on gross primary bond issuance until WW1 with a new 100-year dataset on in net capital flows to 63 capital importing countries, which starts in 1918.

Specifically, we collect rich new instrument-level private lending data for 32 global financial crisis episodes and 29 Great Power Wars since 1790 that we analyze in detail in Section 4. In each of these episodes, we track total external sovereign borrowing from private creditors in a 20-year window across the disaster event. We focus on external sovereign bond issuance, because these were *the* dominant instrument of cross-border private capital flows in the 19th and early 20th century, especially pre-WW1 (see Meyer et al., 2022; Eichengreen, 1992).

To track international bond issuance in the 19th and early 20th century, we rely on investor manuals such as the Moody's Manuals of Investments, the yearbooks of stock exchanges, e.g. from the LSE, and statistical compendia of international organizations such as the League of Nations and the UN. To trace modern bond issuance and syndicated bank lending in the post-1970 era, our key sources are the International Debt Statistics and related debt reports compiled by the World Bank and the International Debt Securities Statistics compiled by the BIS. We complement the information from these sources by additionally consulting dozens of country- and episode-specific sources. Appendix Section D provides a comprehensive list of all sources used and gives a detailed account on the data construction process.

The resulting private cross-border lending database provides both an aggregate 200-year series of private capital flows and rich, instrument-level data on hundreds of bond issues and bank loans across 60 debtor countries. While this data is significantly less complete than our novel official lending database, it is – to the best of our knowledge – nonetheless the most comprehensive resource on historical cross-border capital transfers by private bond investors and banks.

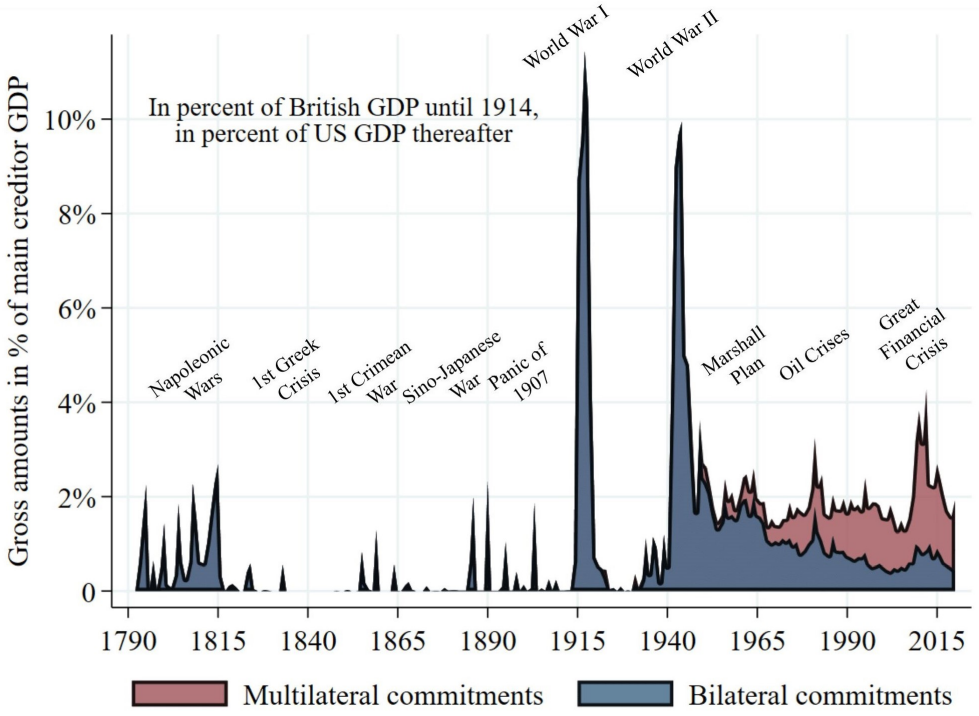
3 A panorama of official sovereign lending 1790 – 2020

This section offers a panorama on official sovereign lending flows across two centuries. Figure 2 summarizes the ebbs and flows of inter-governmental lending. To create this graph, we aggregate all individual official cross-border loans and grants worldwide on a yearly basis back to the French Revolution and distinguishing between bilateral and multilateral creditors (the multilateral category includes regional supranational lending institutions). We then scale the resulting yearly gross flows (commitments) by the GDP of the most important official creditor country – the UK until WW1 and the US after that. We use UK and US GDP for scaling, since these series have been carefully scrutinized by economic historians. The overall picture looks similar, however, if we use an imputed series of global GDP, but this historical global series is noisier and less reliable than the US and UK GDP series. The remainder of this section summarizes key stylized facts from our newly collected data.

3.1 Official lending is large and spikes during major wars and financial crises

Major wars have been and continue to be the main driver of government lending, as evident from Figure 2. In the period before WW1, we find large lending surges during the French Revolutionary Wars, the Napoleonic Wars and the First Crimean War. In each case, the Great European Powers extended substantial financial support to their allies via loans, guarantees and grants, e.g. Great Britain's massive financial support to Austria, Prussia and Russia during the continental campaign against Napoleon. Similarly, during the Latin American Wars of Independence, the newly founded republics provided loans and grants to each other - in a joint effort to win against Spain.

Figure 2: Bilateral and multilateral official lending 1790 - 2020



Note: This figure shows all gross official commitments through grants, loans and guarantees in percent of British GDP (until 1914) and in percent of US GDP thereafter. Cross-border lending by central banks is excluded from this figure. All data is from our new official lending database (see Section 2 and Appendix B for details).

The most striking surge in official lending, however, occurred during the two World Wars, which saw historically unprecedented levels of international assistance. In 1916 or in 1942, for example, we record annual official loans and grants flows (commitments) amounting to roughly 10% of US GDP. Today, this would correspond to more than 2.5 trillion USD in official lending in a single year - or 35 times total US commitments to Ukraine in 2022 plus 2023 (see Trebesch et al., 2023). Global wars are a deeply disruptive force for international financial flows.

Interestingly, the aftermaths of the two wars look very different. After WW1, official flows declined rapidly, with just some lending for relief and reconstruction in Europe. In contrast, after 1945, official

lending remained strong over the course of the entire Bretton Woods era. US bilateral loans, in particular, played a crucial role in the closing of the Dollar Gap and the reconstruction of Europe (mostly connected with the Marshall Plan). This period - from the break-down of the inter-war gold exchange standard in 1931 to the late 1960s - can be considered the heyday of official finance. With wide-spread capital controls on private flows and financial repression, official loans constituted the only feasible means of international capital transfers.

In peacetime, the largest spikes in official rescue lending operations occur during financial crises. In the 19th century and prior to World War II, financial crisis bailouts were less common than today but notable cases include the Greek bailouts of 1832 and 1898 via debt guarantees extended by France, Great Britain and Russia (Reinhart and Trebesch, 2016) and the official guarantees extended to Austria in the Inter-War Period. Since WW2, financial crisis lending has become much more institutionalized; "serial" bailouts to highly indebted countries have become widespread. As a result, many of the recent spikes in bilateral and multilateral commitments can be linked to financial crises, including the bailouts of Great Britain and France in the 1950s and 1960s, official rescue packages extended during the Oil Crises in 1973 and 1979, the emerging markets crises of the 1980s and 1990s, and more recently after the 2008 crash and the subsequent Eurozone crisis in 2010-12.

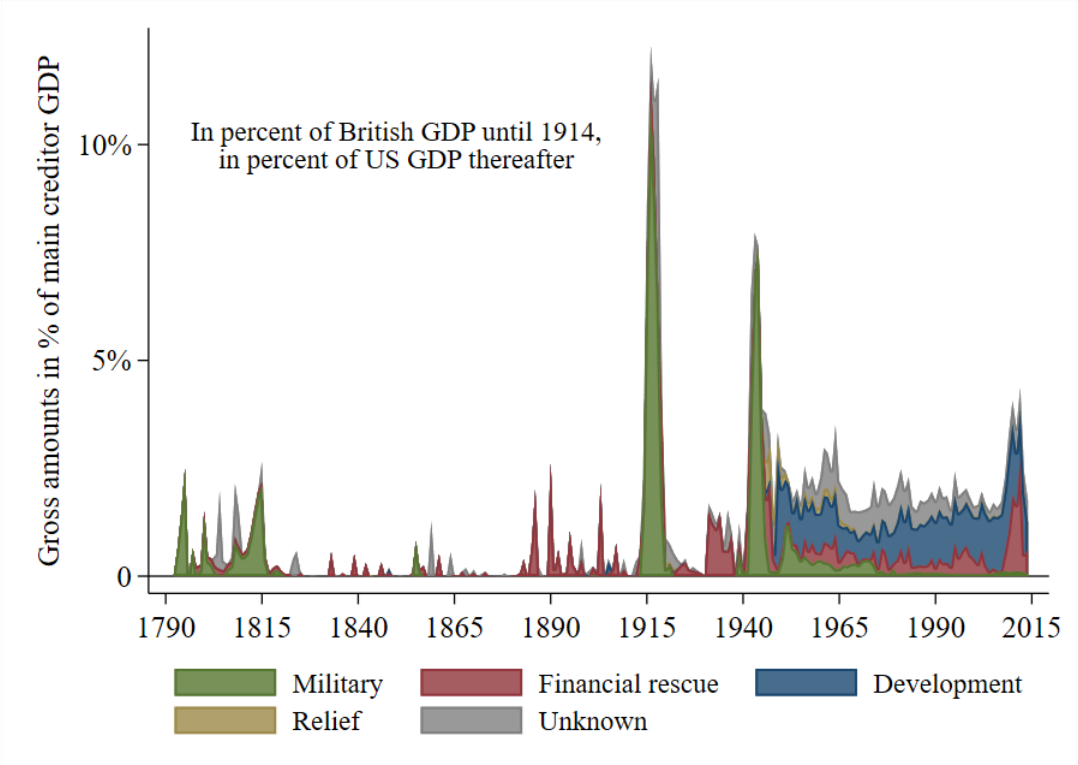
We also observe a notable shift in the recipients of official finance. Today's advanced economies used to be the main recipients of official loans, both in wartime and peace and over a span of 150 years. Since the 1960s, however, the bulk of official lending went to developing countries (see Appendix Figure A1). These countries often lack access to international private capital markets, so that official lending and grants are often the only source of foreign savings.

A main reason for the growing flows to developing countries is the rise of international aid. Development aid to poorer countries was very limited throughout the 19th century, with the exception of transactions within empires, where grants and loans were occasionally used to build infrastructure (loans and grants to colonies are excluded from the analysis). This changes after WW2 and in particular after 1970, as aid and development project support become very sizable, with annual flows hovering around 2% of US GDP over the past decades. In recent years, this category of development support includes China's large scale overseas lending and its ambitious Belt and Road Initiative. Indeed, China's state-directed loans have become an important source of financing for dozens of countries in the Global South (Horn et al., 2021).

Figure 3 classifies the motives of government-to-government and multilateral official lending more systematically. We distinguish between four categories – military assistance, economic development, humanitarian relief, and financial crisis rescues. The category of military assistance covers loans and grants extended for the pursuit of war, defense or procurement of military equipment. The category of economic development includes loans and grants extended for the financing of projects abroad ranging from infrastructure investments to state-building activities, including those of the US Marshall Plan or the China's Belt and Road Initiative. The category of humanitarian relief relates to financial assistance in response to natural disasters, e.g. grants to purchase basic necessities such as food. The fourth category, financial rescue loans, covers loans, grants and guarantees during currency, debt and banking crises as well as general budget support.

Whenever possible, we rely on the original sources to distinguish between these purposes, although we are aware that the distinction is not always clear-cut and requires a number of judgement calls. One problem is that the officially declared purpose of a loan does not necessarily need to align with its de facto purpose (money is fungible). As an example, foreign currency loans for development projects are often provided during a financial crisis, in order to address a severe balance-of-payment problem. Moreover, we often lack official information on the lending purpose so that we need to infer the purpose from events at the time. Despite these caveats, Figure 3 is helpful as a first overview and helps to explain our focus on wars and financial crises in the remainder of the paper. Indeed, the figure gives further empirical support that war finance and financial crisis bailouts are the two main motives of state-directed financial flows to other countries over the past 200 years. Development funding has only become relevant in the past decades, and humanitarian disaster relief accounts for only a very small faction of total global official flows.

Figure 3: Purposes of official sovereign lending 1790 – 2020



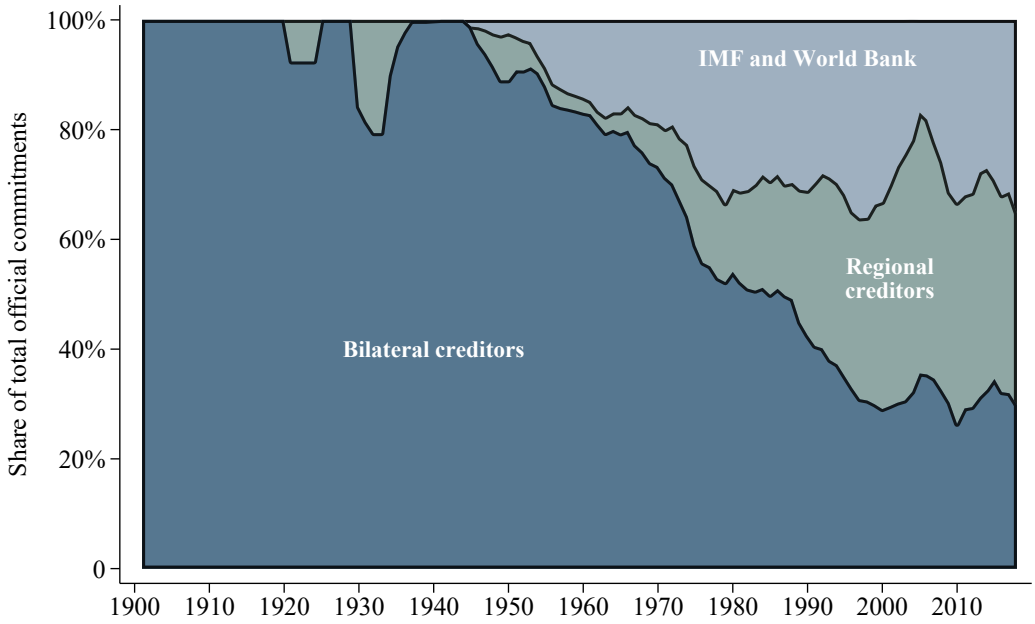
Note: This figure shows all gross official commitments through grants, loans and guarantees in percent of British GDP (until 1914) and in percent of US GDP thereafter. Cross-border lending by central banks is excluded. See text and Appendix Section B for details on the data and the coding approach).

3.2 The biggest official lenders are the great powers of their time

This section zooms in on the creditor side. Figure 4 breaks down total official international flows into three groups of creditors since 1900: (i) bilateral creditors, (ii) the IMF and the World Bank,

and (iii) other multilateral creditors, in particular regional development banks and regional financial arrangements. Bilateral flows clearly dominate throughout the 19th century (not shown) and until WW2. After that, lending gradually shifts from bilateral to multilateral sources, in particular with the founding of the IMF and the World Bank in 1946. By the late 1970s, multilateral lending had overtaken bilateral lending and remained dominant since then. Interestingly, however, IMF and World Bank loans today account for only about half of total multilateral flows. The third group of regional multilateral creditors is large, growing, and much less well understood.

Figure 4: Relative importance of multilateral and bilateral creditors over time



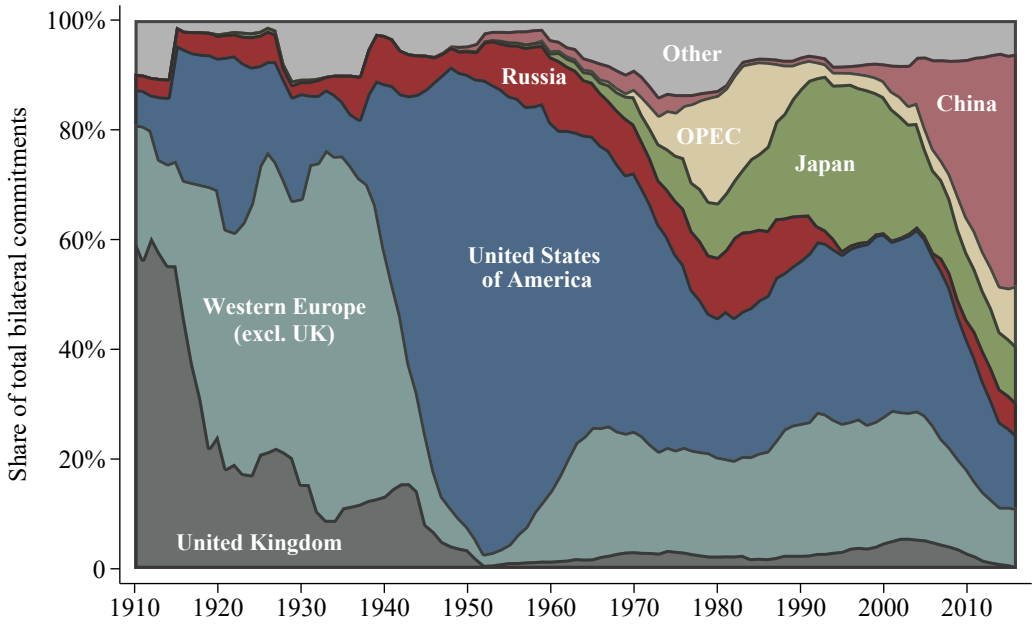
Note: "Other multilateral creditors" includes regional development banks and regional financial arrangements as well as loans issued under the auspices of the League of Nations (see Appendix B.4 for a full list). The series have been smoothed with a 5-year moving average.

Another key insight is that bilateral flows are highly concentrated and driven by a few major creditors. Figure 5 shows that the biggest official creditors we the great powers of their time. Up until WW1, bilateral lending was dominated by the European powers, in particular Great Britain. The United States then took over as the world's primary official creditor during and after the World Wars and throughout the Cold War, In comparison, official lending by the Soviet-Sino bloc was small. Since then, and in particular after the end of the Cold War in 1991, the landscape of official international finance has become more heterogeneous. Oil exporting (OPEC) nations, Japan, and, increasingly, China emerged as new creditors powers.

China, in particular, has recently surpassed not just the US, but also the World Bank and the IMF. It is now the world's main official creditor, as we show in a paper that builds on the data originally collected for this project (Horn et al., 2021). This rise of China and other new creditor powers such as India or resource-rich Arab countries is contributing to a general resurgence of official finance. In

fact, creditor countries from the Global South are generally more prone to use state-banks and state finance when investing and lending at home or abroad.

Figure 5: The geography of official lending: Main bilateral creditors 1900 - 2020



Note: This figure shows the share of major creditors in total bilateral lending commitments over time. Bilateral commitments include direct loans, grants and guarantees but exclude central bank lending. The series have been smoothed with a 10-year moving average.

3.3 Central bank support across lenders is large and re-emerging

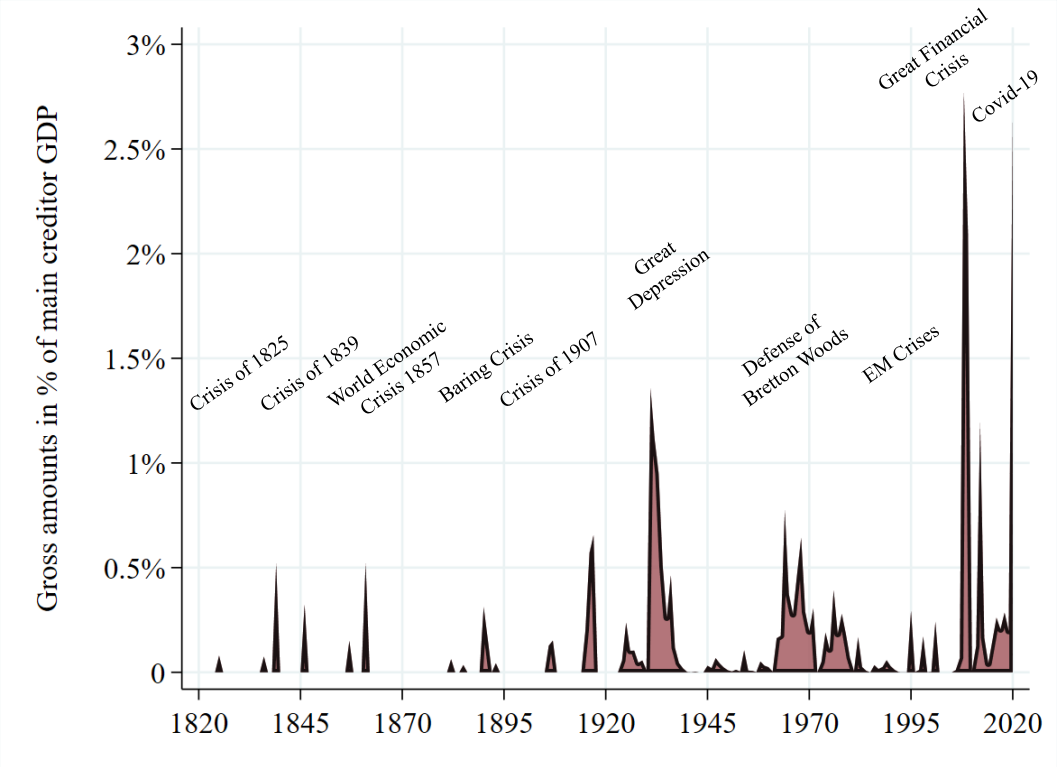
Another important reason for the comeback in official finance is the re-emergence of cross-border central bank lending. Figure 6 summarizes our granular data on global central bank-to-central bank lending on an annual level, again scaled to UK and US GDP. To compute aggregate volumes we first count total newly extended loans (or swap lines drawn), measured at the end of each month and globally. We then aggregate these monthly volumes at an annual level.

The figure shows that international central bank support has been quantitatively important both today and historically, with gross new loans/swap line drawings exceeding 1% of UK or US GDP at various times over the past 200 years. While the instruments used have changed significantly over time, the fundamental nature of these support measures have remained the same, which makes a long-term comparison informative. Historically, central bank support to other central banks typically involved short-term loans (e.g. three month credits), which were mostly extended during periods of financial turmoil, such as during the Panic of 1861, the Baring Crisis of 1890 or the Panic of 1907, as well as during the turbulent interwar years.[11] Starting in the 1960s, cross-border central bank support

[11] During the 1920s, for example, consortia of central banks agreed to extend reciprocal credits so as to help each other return to gold (Meyer, 1970). In 1931, central bank lending reached a sizable peak. The large rescue credit to inter

shifted increasingly to swap lines, which already played an important role in the defense of the Bretton Woods system of fixed exchange rates (Bordo et al., 2015). More recently, we saw two major spikes in collateralized currency swap line drawings of up to 500 bn USD, namely during the 2008 crash and the Covid-19 pandemic (Obstfeld et al., 2009; Bahaj and Reis, 2022a)[12]. During these shocks, swap lines by the US Federal Reserve played the central role. In addition, the People's Bank of China (PBOC) has emerged as an important provider of international swap lines with RMB drawdowns by counterparties reaching more than 150 bn USD (Horn et al., 2024).

Figure 6: Central bank-to-central bank lending through loans and swap lines, 1815 – 2020



Note: This figure shows a time series on cross-border central bank lending since 1815. The data includes central bank credits to foreign central banks as well as bilateral swap line drawings (after WW2), shown in percent of UK GDP until 1914 and in percent of US GDP thereafter. Credit with maturities of less than one months are excluded.

It is also insightful to compare the size of central-bank support across borders to that of other official creditors. This is done in Appendix Figure A2, which adds the central bank credits and swap line drawings from Figure 6 to the total volume of official international loans and grants over 200 years from Figure 2. The comparison shows just how large government lending and lending by multilaterals have been in the bigger historical picture. Bilaterals and multilaterals clearly outweigh the role of central

alia Austria, Hungary, Germany and Britain, did however not suffice to save the inter-war gold standard from collapse (Eichengreen, 1992; Bordo and Schwartz, 1998; Accominotti and Eichengreen, 2015). Beyond these rescue operations, the US Federal Reserve granted a series of short-term credits to Latin American countries facing balance-of-payments difficulties during the 1930s.

[12] At their peak in end-2008 and spring 2020, total cross-border swap line drawings by foreign central banks exceeded 500 billion USD, a whopping amount that corresponds to almost 3% of USD GDP, respectively.

bank support, although one needs to keep in mind the judgment calls involved when aggregating the volume of central bank swap lines (volumes would be much higher if we were to add up daily swap rollovers, for example). Despite this caveat, it seems that the biggest international lenders of last resort were governments and multilateral organizations rather than central banks.

4 Official versus private finance

In this section, we compare official and private international finance across 200 years. We start with an aggregate comparison (Section 4.1), that builds on our newly collected data on external debt stocks, as well as on aggregate capital flows data since 1800. We then zoom into some of the most important major wars and financial crises since 1790, and trace the dynamics of private versus official international flows in these disaster episodes (Section 4.2). In a third step, we compare the lending terms of private and official creditors (Section 4.3) and then summarize the main takeaways (Section 4.4).

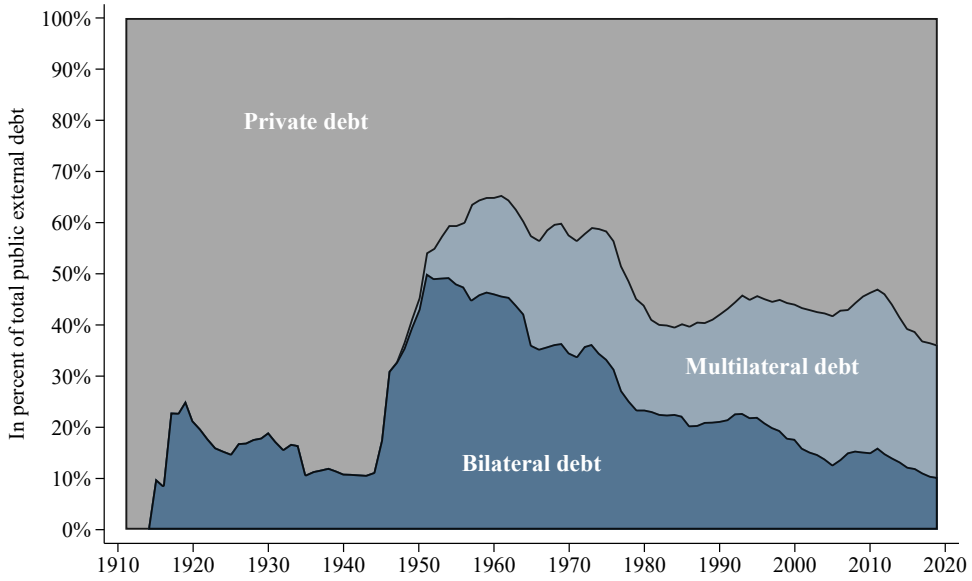
4.1 Aggregate comparison: global stocks and flows

Aggregate stocks: To assess the relative size of the official and private external sovereign debt market, we build on our newly constructed 100-year debt stock database. Figure 7 shows that official debt accounts for almost half of total outstanding foreign debt around the world. To avoid bias, we focus the comparison on a balanced sample of 73 advanced and emerging market countries that have been independent since at least 1910. We thus exclude almost all of today's poor, low-income countries that gained independence at later stages.[13]

Advanced country governments heavily relied on official loans and grants during the World Wars, and it took several decades to repay (and restructure) the large resulting inter-governmental war debts. Moreover, the data shows a partial return to external official borrowing by advanced countries after the crash of 2008 (see Appendix Figure A8)). Emerging and developing countries accumulated large official debts during and in the aftermath of the Second World War when international private markets froze. Since then, however, official loans and grants have remained the dominant source of external funding for most countries in this group (Appendix Figure A9). Today, more than 70 emerging and developing countries owe more external debts to official creditors than they owe private external creditors.

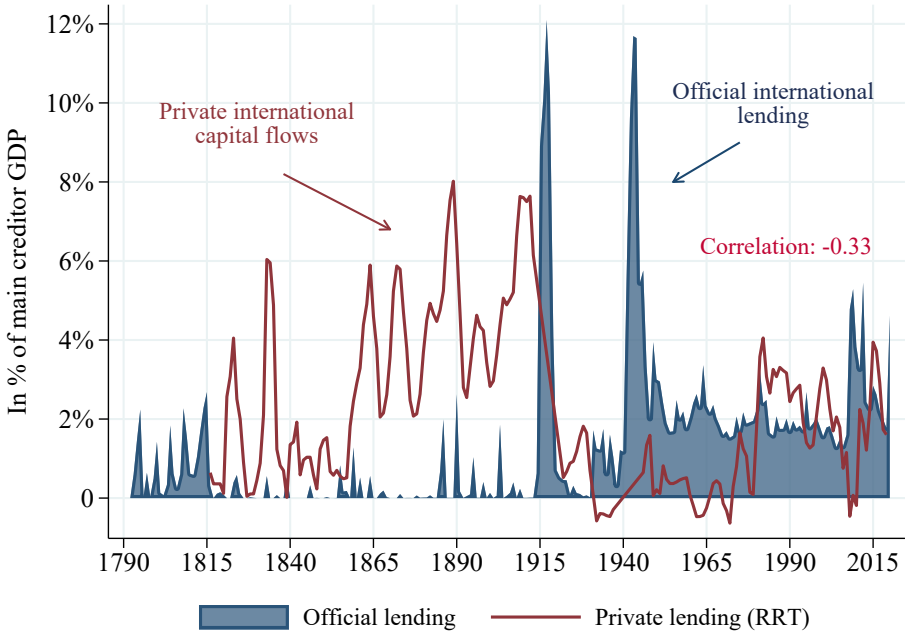
[13]See Appendix Section B.6 for a list of countries included in this figure. In the full data sample of up to 140 countries and 110 years, the average share of external public debt owed to official creditors is 26 percent in advanced economies and 71 percent in emerging and developing countries. Since unweighted averages put a large weight on small countries with high shares of official debt, we also computed GDP-weighted debt shares, which tend to be smaller but still sizable. Specifically, with GDP-weighting, the average share of official debt is 8 percent in advanced economies and 51 percent in developing and emerging market countries (see Appendix A.2).

Figure 7: Share of public external debt owed to private vs. official creditors, 1910-2020



Note: This figure shows time series on the share of external public debt owed to private, bilateral and multilateral creditors since 1910 and for a balanced sample of 73 advanced and developing countries. See Appendix Section B.6 for details.

Figure 8: Official sovereign lending and private capital flows, 1790 - 2020



Note: The blue shaded era shows official international lending, including bilateral and multilateral commitments through grants, loans and guarantees, as well as central bank lending and swap line drawings. The red bold line shows the spliced series on private, cross-border capital flows from Reinhart et al. (2016, 2017). Both series are scaled by main creditor GDP.

Aggregate flows: To compare the dynamics of private and official capital flows, we combine our series of official loan and grant commitments since 1790 (from Figure 2) with the long-run database of private cross-border capital flows from Reinhart et al. (2016, 2017), which starts in 1815.

The main take away from Figure 8 is that official and private flows are negatively correlated. When private capital flows retrench, official international flows often step in, with major multilateral and bilateral lending surges during WW1 and WW2 as well as in major financial crises, most visibly during the Great Depression and after the 2008 crash, but also in more idiosyncratic, regional crises such as during the 1960s or during the EM crises of the 1990s.

The comparison is complicated by the fact that the aggregate data on official flows capture gross debt issuance while the series of private capital flows (by Reinhart et al., 2017) is spliced, combining gross flows before WWI with net flows thereafter (see Section 2.4). We therefore next move to a set of case studies that allow for a more precise apples-to-apples comparison of gross official flows with gross private flows across borders.

4.2 Wars and financial crises: while private flows retreat, official flows surge

This section compares the dynamics of official and private international lending in disaster episodes, focusing on a set of major wars and financial crisis cases.[14] We build on the data on gross official flows from our main database and combine it with the newly collected data on private lending flows (mainly external sovereign bond issuance) in selected episodes 1790-2020, both measured in gross USD terms.

For our comparison of private versus official flows during major disaster events, we study 60 of the costliest wars and financial crises. Specifically, we study 29 episodes of Great Power War as defined by Levy (1983), in which at least two Great Powers fight on opposite sides of the war. Historically, Great Power Wars have been the most disastrous and deadly episodes of military conflict. They include, in particular, the Napoleonic War and the two World Wars. Furthermore, we study 32 severe financial crisis episodes - those defined and dated as *global financial crises events* by Reinhart and Rogoff (2009). These deep crises are characterized by high global synchronicity and severe output losses and include, among others, the first global wave of sovereign defaults in the 1820s, the Great Depression after 1931 and the global crash of 2008 (see Appendix Tables D12 and D13 for the full list of major wars and global financial crises). For each Great Power War and for each global debt crisis, we then trace private versus official cross-border lending dynamics (see Appendix Section D for details).

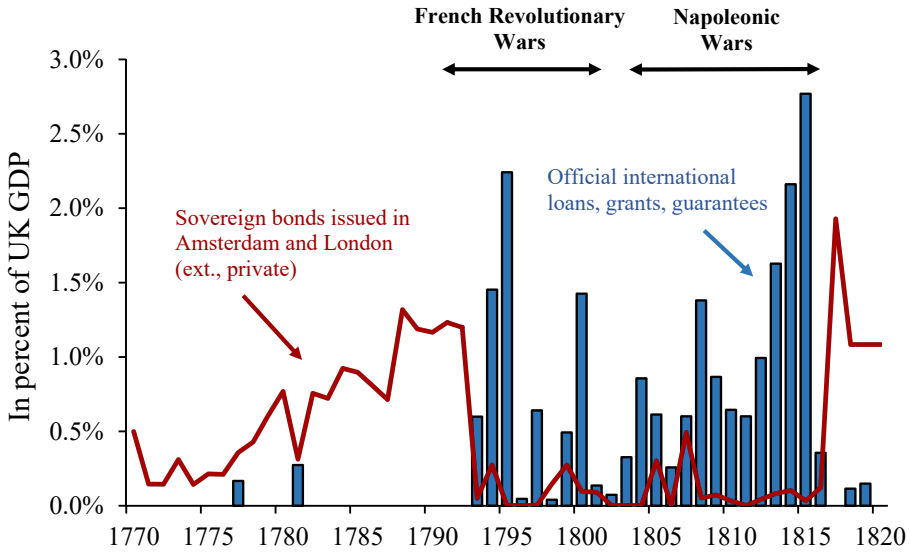
Capital flows in major wars: We start by showing the resulting case studies on the Napoleonic wars (Figure 9) as well as World War 1 and 2 (Figure 10). Prior to the French Revolutionary Wars of the mid 1790s there were ample cross-border private capital flows, as shown by the red line, which captures the sum of external bonds issued in Amsterdam and London and scaled by UK GDP. As the

[14] Our approach differs from a related macroeconomic literature that defines "macroeconomic disasters" as drops in consumption or GDP beyond a specific threshold (see e.g. Barro and Ursúa, 2008). The advantage of using event data on crises and wars is that this allows for much broader geographic and time coverage, given that long-run consumption and GDP data is only available for advanced countries and select emerging market countries.

war breaks out, these private flows come to an almost complete halt for more than 20 years, while official lending surges and remains high in subsequent years, driven largely by lending by Great Britain to its allies on the continents as well as lending by France. Only after Waterloo and the Congress of Vienna official flows drop again, while private international lending re-emerges. The picture is very similar for the two World Wars. Private capital flows collapse after the outbreak of WW1 in 1914 and only start to recover after the war ends in 1918. The international bond issuance boom of the roaring 1920s ends with the start of the Great Depression in 1931, with no signs of recovery for the following 20 years. Official flows, in contrast, spike in both WW1 and WW2, with volumes clearly surpassing those of the pre-war private lending boom.

Figure 11 confirms these basic patterns across all 29 Great Power Wars. GDP data is not available for several of these, so that we scale lending flows with an episode and country-specific average of the recipient country's imports.[15] On average, private international lending starts to decline steeply prior to the start of the war, while official flows spike once the war breaks out. Note the markedly different scales, however, as average official flows exceed private flows by a factor of 10 or more (see the different scales on the right and the left vertical axes).

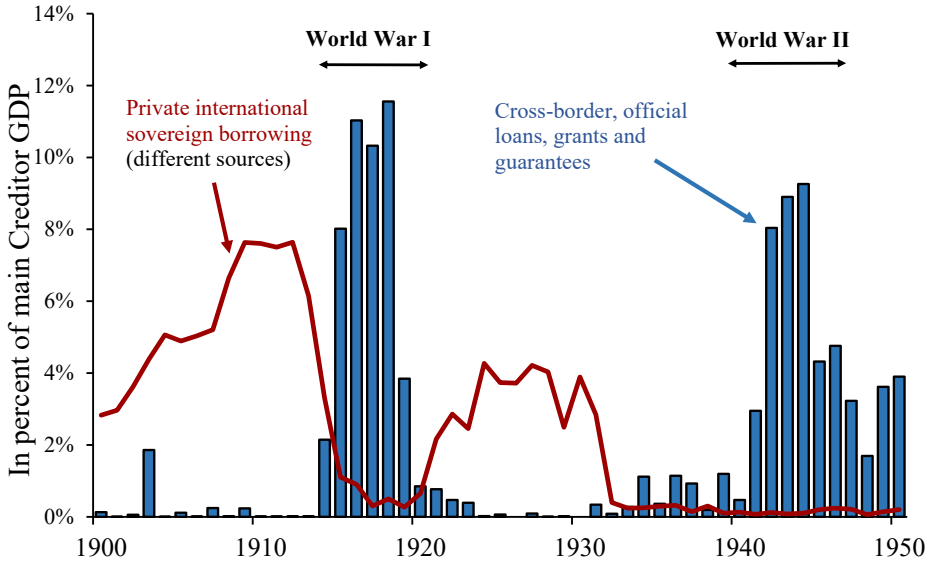
Figure 9: "WW0" - private vs official flows



Note: The blue bars shows official international lending through grants, loans and guarantees. The red bold line shows external sovereign bonds issued in the Amsterdam and London capital market. Both series are scaled by UK GDP. See Appendix Sections B.3 and D for details.

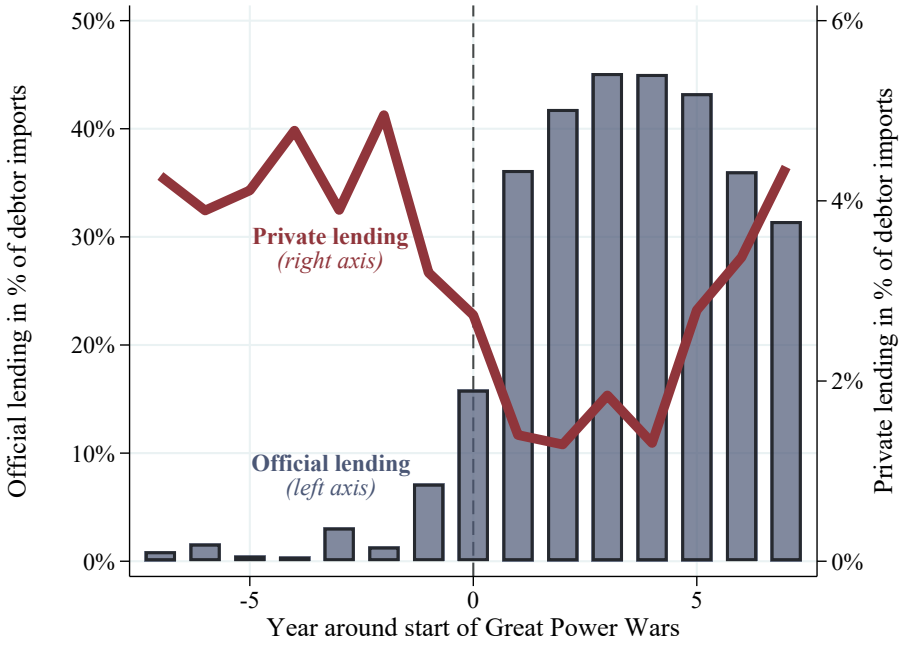
[15] Taking an average value over the entire 15-year episode ensures that time variation is not driven by fluctuations in the denominator. We use imports instead of other commonly used scales such as GDP, because trade data is much more widely available in the 19th century.

Figure 10: WW1 and WW2 - private vs official flows



Note: The blue bars shows official international lending through grants, loans and guarantees. The red bold line shows external sovereign bonds issued in the London and US capital market. Both series are scaled by UK GDP. See Appendix Sections B.3 and D for details.

Figure 11: International lending flows in Great Power Wars, 1790-2020



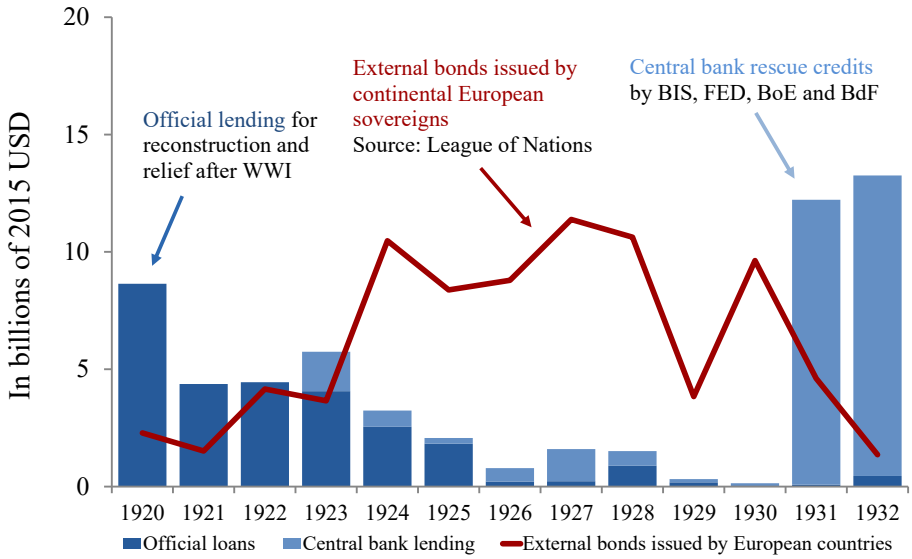
Note: This figure shows average cross-border official and private lending flows across 15-year windows around the start of Great Power Wars during the past 200 years. See Appendix Section C for a full list of all 60 war and crisis episodes and details on historic sources.

We conclude that there are striking parallels in the capital flows patterns around Great Power Wars, with private flows declining and official flows surging considerably. Another illustrative example is Ukraine since 2022, which is not a Great Power War in the sense of Levy, but still a pressing ongoing conflict. As shown in Appendix Figure A10, private capital inflows ceased almost entirely after 2022, while official inflows spike.

The picture becomes somewhat less clear once we broaden our analysis to the full sample of external wars, including smaller, more regionally constrained wars. In some of these events, for example the Russian-Japanese War of 1905, we observe an increase rather than a decline in private lending inflows as foreign investors de facto helped to finance the war (Kindleberger, 2006; Zielinski, 2016; Queralt, 2022). We also find numerous smaller wars with little or no official flows. Taken together, however, official flows appear to play the far more dominant role in the financing of foreign wars than private flows.

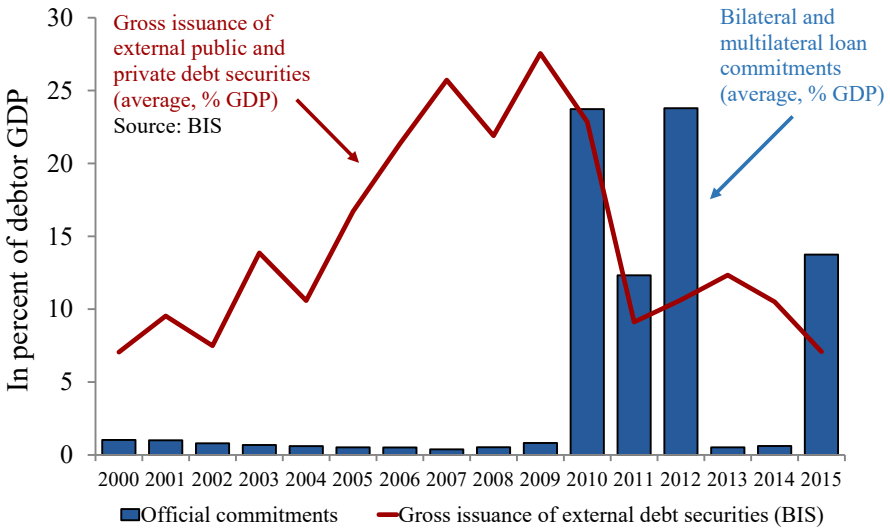
Capital flows in global financial crisis: We now move to major financial crises, starting with a case study of the Great Depression. Figure 12 confirms that private flows collapsed in the Great Depression years, while there are substantial official flows, both in the years immediately after WW1 as well as after 1931. Interestingly, however, there are almost no bilateral (government to government) grant and loan flows during the Great Depression years. The sole official lenders in this period were central banks lending to other central banks, while governments shunned away from foreign rescue lending. In the bigger historical picture, the Great Depression can thus be interpreted as a global disaster with comparatively little official international lending.

Figure 12: The Great Depression (Europe) - private vs official flows



Note: The blue bars shows official international lending through grants, loans and guarantees (dark blue) and Central Bank credits (light blue). The red bold line shows external sovereign bonds issued by continental European sovereigns. See Appendix Sections B.3 and D for details.

Figure 13: Eurozone crisis (Greece, Ireland, Portugal Spain) - private vs official flows



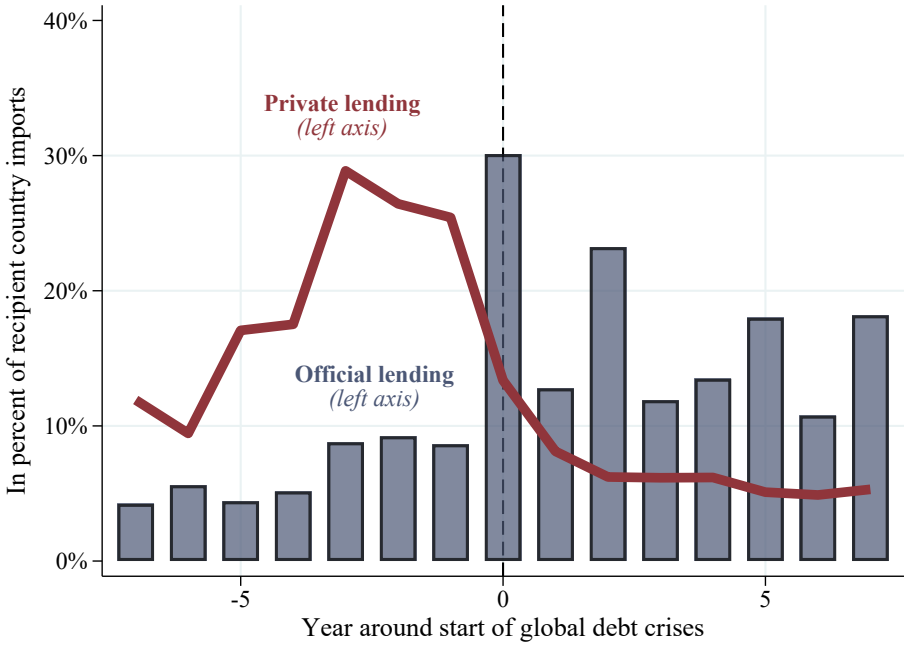
Note: The blue bars shows official international lending through grants, loans and guarantees. The red bold line shows external sovereign bonds issued by continental European sovereigns. Both series show averages in percent of debtor country GDP. See Appendix Sections B.3 and D for details.

Further notable case studies include the Asian Financial crisis after 1997 (see Appendix Figure A11), as well as the Eurozone crisis after 2010 (Figure 13). In the Eurozone case, it is not obvious how to measure external public debt issuance, given that most bonds were denominated in Euros. We therefore follow the BIS and use their data, which categorizes external bonds as those issued under foreign law or in a foreign marketplace. The resulting graphs shows that, while private capital inflows see an abrupt drop, official flows spike, and at a similar scale.

Figure 14 again takes a more systematic approach and summarizes lending flows around all 32 major global debt crisis events. As for the case of wars, we scale both private and official flows by the average episode- and country-specific imports. The result is clear: private flows see a notable boom pre-crisis and then decline substantially in the first crisis year. The opposite is true for official flows, which surge only after the crisis breaks out.

Summary on wars and financial crises: What do we learn from these case studies? Arguably, the most important insight is the contrasting dynamics of private and official flows. During disasters, private flows typically retrench, while official flows often spike. This new stylized fact is observable both in wars and financial crises, and, in fact, the dynamics of capital flows look remarkably similar across disaster events. At closer inspection, however, there are profound differences between wars and financial crises. During wars, belligerent countries typically stem against capital flight and preserve currency reserves by closing their capital account altogether. The halt in private capital flows is therefore a predetermined policy outcome. In contrast, during financial crises, capital accounts typically remain open, so that official inflows partly replace the "sudden stop" and reversal of private capital flows.

Figure 14: International lending flows in global debt crises, 1790-2020

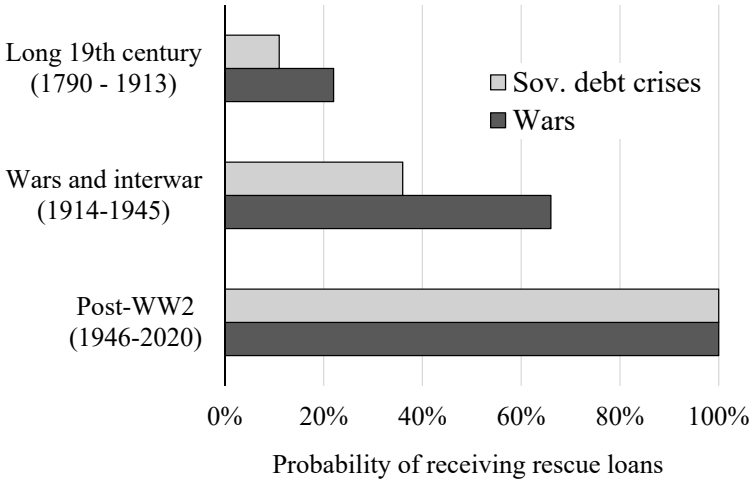


Note: This figure shows average cross-border official and private lending flows across 15-year windows around the start of global debt crises during the past 200 years. See Appendix Section C for a full list of all 60 war and crisis episodes and details on historic sources.

Lastly, to conclude the analysis of disaster events, we move beyond the worst crises and wars. We thus study official flows in *all* inter-state wars and sovereign debt crises over the past 200 years, building on the definitions and data explained in Appendix Section C. Due to a lack of data on private flows over the full 200-year period, we focus this exercise on official flows only, but this is highly informative on its own right.

The main result is that the international response to disaster events has become more systematic over time, both in the extensive and intensive margin. Figure 15 shows that likelihood of receiving at least one financial assistance package from foreign states during and external war or debt crisis has grown from around 20% during the 19th century to 100% in the post-WW2 period. But also the size of financial support has grown, especially for international bailouts in financial crises (see Table A1 in the Appendix). The average bail-out package in a debt crisis has almost doubled - from 65% of imports in the 19th century to more than 100% in recent decades. For wars, the time trend is less clear, because the massive official support flows during the two World Wars remain unmatched. Either way, the evidence clearly show that official rescue finance is a much more prevalent phenomenon today.

Figure 15: Not just major crises – official rescue loans have become the norm



Note: This figure shows the probability of receiving foreign official lending in all inter-state wars and sovereign debt crises across different eras of the past two centuries. See Appendix Section C for definitions of wars and debt crises.

4.3 Lending terms: official finance is highly concessional

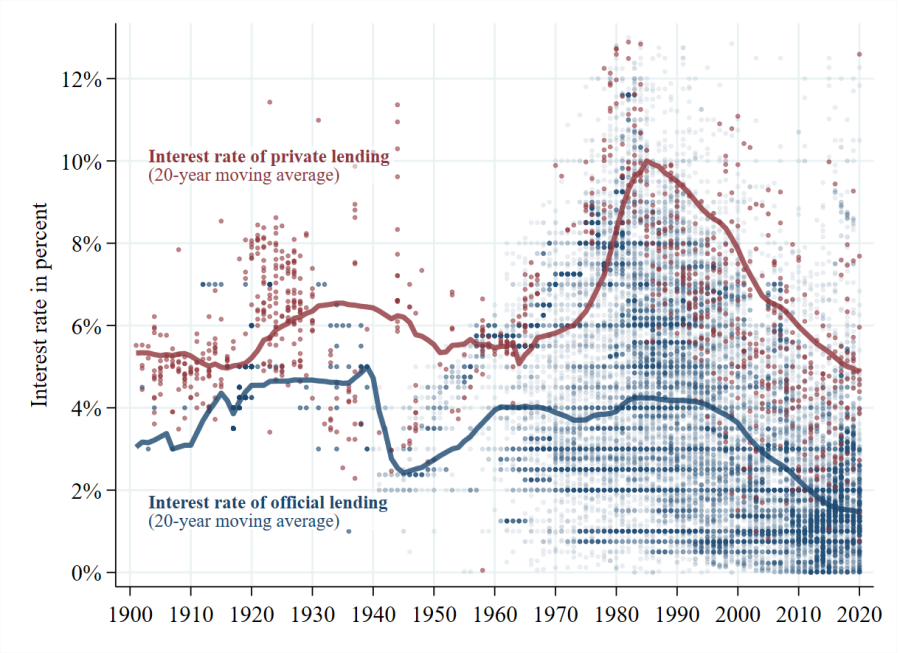
This section focuses on lending terms, in particular interest rates. Panel A of Figure 16 shows the evolution of private versus official interest rates, based on 120 years of instrument-level data. Each red dot represents the interest rate of an individual bond or private bank loan at issuance, with bond coupons over 200 years coming from Meyer et al. (2022) as well as syndicated loan interest rates from the World Bank International Debt Statistics. The blue dots show interest rates on each newly granted official loan, taken from our international official flow database. The thick red and blue lines show smoothed (10-year) moving averages of these instrument-level rates.

There are large differences in lending rates between the two markets. Foreign bondholders and banks charge a substantial premium when lending to sovereigns (in line with Meyer et al., 2022). In contrast, official lending is priced at substantially lower rates, with potentially large subsidy elements for recipient countries.

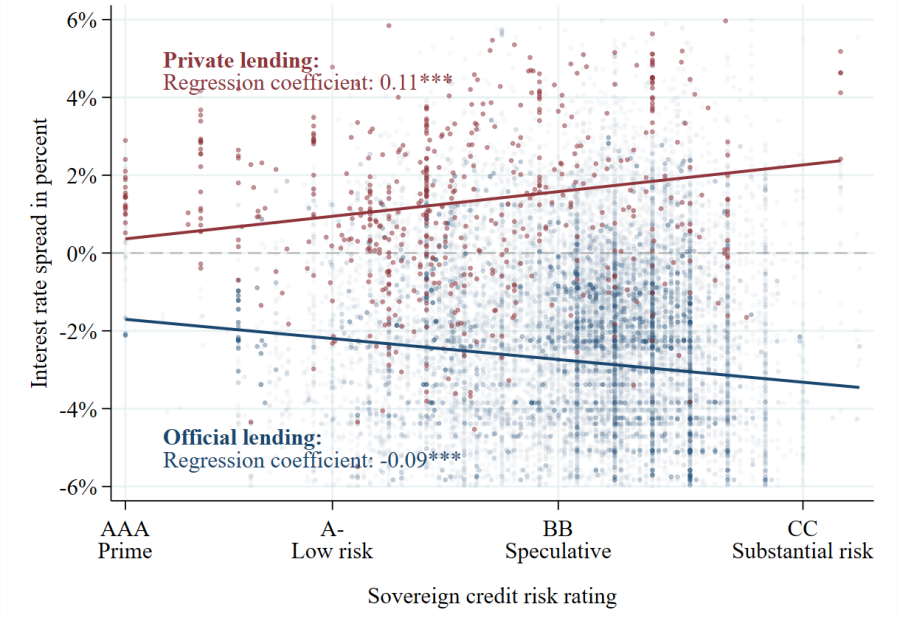
Panel B expands the comparison by accounting for credit risk. To measure credit risk in history and today, we compile the most comprehensive database of sovereign credit risk ratings available thus far, drawing on modern as well as archival sources by Moody's and S&P. The resulting long-run sovereign ratings dataset covers more than 100 years and up to 100 governments around the world (see Appendix Section E.3 for details). Moreover, we now focus on interest rate spreads, which we construct by subtracting safe benchmark rates (US government bond yields from Meyer et al., 2022).

Figure 16: Official versus private lending terms

Panel A. Long-run average interest rates



Panel B. Interest rate spreads and debtor risk



This figure shows instrument-level interest rates on private international lending (red dots) and official international lending (blue dots) from our novel international lending database. Interest rates for private bonds are measured as issuance yields. In Panel A, the blue and red lines show 20-year moving averages of private and official interest rates. In Panel B, the blue and red lines show simple bivariate regressions of the interest rate on sovereign credit risk ratings, which we compile for years 1920 to 2020 (see Appendix Section E.3 for details). Official grants, which account for around 20 percent of official sovereign flows, are excluded (see Appendix Figure A3 for details).

As expected, we find that the interest rate on external sovereign bonds has a positive yield spread throughout, and increases in the default risk of the sovereign borrower. On average, high-risk sovereigns with low ratings pay a premium of 2 or more percentage points compared to better rated sovereigns. Strikingly, however, the opposite is true for official lending. Not only are official loans considerably cheaper on average, with negative spreads vis-a-vis the benchmark US rate, on average, but we also find that the interest rate spread *decreases* with counterparty risk. Lower rated sovereigns borrow more cheaply from official creditors than higher rates sovereigns. This suggests that official creditors provide highly concessional terms, in particular to countries with elevated risk of default.

In Appendix Section A, we show that these results are robust to proxying country risk through per capita income levels and analyzing longer-run samples (see Appendix Figures A6 and A7). Furthermore, we show that similar patterns hold for maturity (see Appendix Figure A5). High risk countries borrow at shorter maturities in private debt markets, but at longer maturities when it comes to official creditors.

4.4 Summary: How private and official international finance compare

Table 1 summarizes key properties of private and official external debt markets, focusing on three main stylized facts. First, official external debt is larger than commonly known, accounting for between a third and two thirds of total external debt stocks worldwide, depending on the weighting approach.

Second, private capital flows tend to be pro-cyclical and retrench in times of crises, geopolitical turmoil, and war, while the opposite holds for official lending flows, which tend to be counter-cyclical and spike in disasters and severe economic downturns. This stylized fact is documented in the case studies above but further illustrated in Table 2. We show that aggregate private flows are negatively correlated with (i) the number of financial crises worldwide (using the Reinhart and Rogoff, 2009, tally of bank, debt, currency, and inflation crises), (ii) the number of macroeconomic disasters (using disaster event data by Barro and Ursúa, 2008), (iii) global geopolitical risk (using the aggregate index by Caldara and Iacoviello, 2023), and (iv) the number of external wars worldwide (using Correlates of War data). In each case, the correlation coefficient is negative for private capital flows on a global level, but positive and highly statistically significant for official flows.

Third, official financing contains substantial subsidy elements, with negative risk spreads. Moreover interest rates on official debt decline, rather than increase, with the riskiness of the recipient. This stands in contrast to the well-documented result for external private creditors, which charge higher risk premia for high-risk debtor countries.

Table 1: Key properties of official and private external lending

	Private international lending	Official international lending
Share of external public debt (in %)		
Unweighted mean (all countries and years)	39.6	60.4
GDP-weighted mean (all countries and years)	71.9	29.1
Global shocks and crises - corr. coeff.		
Financial crisis tally (Reinhart & Rogoff)	-0.12*	0.31***
Macroeconomic disasters (Barro & Ursua)	-0.10	0.47***
Geopolitical risk (Caldara & Iacoviello)	-0.34***	0.81***
Incidence of war (Correlates of War)	-0.25***	0.46***
Lending terms		
Interest rate spread over risk-free rate	177 bps.	-305 bps.
Correlation of spread and sov. credit risk	0.11***	-0.15***

Note: This table shows key statistics on official and private external lending. The first two rows give weighted and unweighted cross-country averages e of the share of official and private debt in percent of total public external debt. Rows 3 to 7 show correlation coefficients between aggregate private and official lending and the incidence of major global shocks and crisis events. The final two rows gives the average interest rate spread over the US risk free rate in basis points and the correlation between the spread and sovereign credit risk.

5 The gravity of official finance

Why do governments extend cross-border official loans? As suggested in Section 3, the motives likely depend on the context and purpose of lending, but self-interest is likely to play a role in each case.

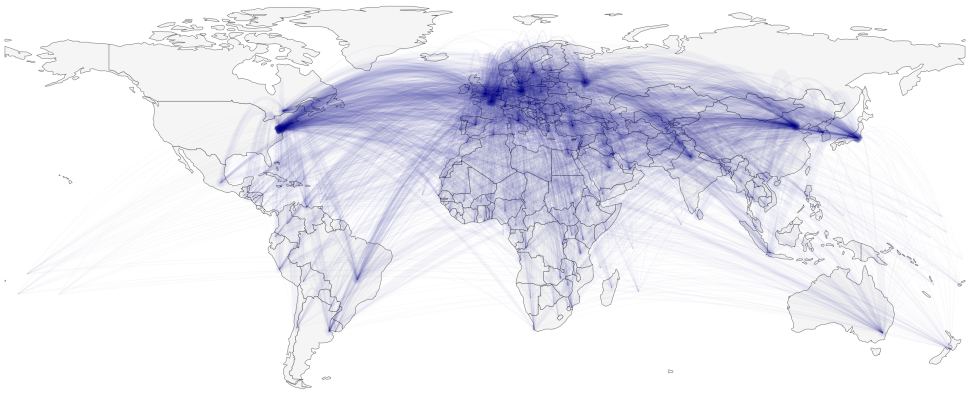
With a view to financial crises, Bulow and Rogoff (1988), Tirole (2015), Farhi and Tirole (2018) and Gourinchas et al. (2019), all point to one driver of official lending and bailouts: the concern about cross-border spillovers. If two countries are closely integrated, a crisis in a foreign country A can motivate the government of country B to assist that crisis country through loans and grants, so as to limit the collateral damage to its own economy. In this view, the rescuer country's solidarity is largely driven by economic self-interest, i.e. motivated by the aim to reduce negative externalities on its own exporters and investors exposed abroad. The larger this externality is expected to be, the higher the likelihood and volumes of rescue lending. One channel could be the replacement of private debt exposure with official debt, as foreign currency inflows form official loans and grants can help to repay private creditors abroad. If these priors are correct, then the intensity of trade and banking linkages pre-crisis should predict why some governments choose to extend large bailouts in a crisis, while others do not.

In wars, a similar logic applies, although there is likely less replacement of private with official flows, as capital accounts are often closed down. We expect countries that are militarily and politically aligned to support each other financially in times of war, because the military defeat of an ally can have large negative externalities on your own country. In addition, military aid and war loans can

be seen as compensation to your warring ally, who fights on your behalf and suffers from the massive costs of fighting on her own soil (Federle et al., 2024).

In the following, we bring these priors to the data and study the correlates of official lending in a 200-year gravity model framework. This section thereby builds on the bilateral, dyadic nature of the official flows (country to country), a feature of our data that so far we have not made use of and that is illustrated in Figure 17.

Figure 17: Bilateral official lending, 1790 - 2020



Note: The width of the blue lines increases with the amount of bilateral lending through loans and grants extended between 1790 and 2020. Data is from our international official lending database (see Section 2 and Appendix B).

5.1 A 200-year gravity model of bilateral lending

To study the correlates of bilateral official flows, we follow the state of the art approach in international trade (Head and Mayer, 2014). Gravity models have been found to have high explanatory power for the geography of private international capital flows (e.g. Portes and Rey, 2005; Niepmann, 2015). Building on this literature, the model of bilateral official flows takes the following form:

$$\begin{aligned}\ln(Bil.Lending_{i,j,t}) = \beta \ln(Econ.Exposure_{i,j,t}) + \delta \ln(Alliances_{i,j,t}) + \\ \gamma \ln(Distance_{i,j}) + \theta' Controls_{i,j,t} + \upsilon_i + \sigma_t + \mu_j + \varepsilon_{i,j,t}\end{aligned}$$

where subscript i refers to the debtor country, j denotes a potential creditor country and t is the year. The dependent variable, $Bil.Lending_{i,j,t}$, captures the size of official bilateral commitments in real US$ received by debtor country i from creditor country j in year t.

$Econ.Exposure_{i,j,t}$ is a bilateral measures of trade and/or financial linkages, while $Alliances_{i,j,t}$ is a measure of military agreements and joint war fighting. As the baseline measure of bilateral economic ties we use trade shares, specifically the share of trade (exports plus imports) between a creditor and a debtor country, computed as percent of total trade of the creditor economy with the rest of the world. This variable captures the weight of the recipient economy in total external trade of the creditor economy. The reason we focus on trade shares is that data on bilateral trade is available

for almost our full 200-year sample and for a broad cross-section of countries from the comprehensive TRADHIST database (Fouquin and Hugot, 2016). Data on bilateral financial linkages does not go as far back, but still cover 50 years, and we use this measure for robustness checks.[16]

To capture military alignment, we code a dummy capturing a formal military agreement between two countries or joint fighting in wartime. Specifically, countries are coded as close military allies if (i) they have signed a formal defense pact or entente agreement as measured by Singer and Small (1966), Gibler and Sarkees (2004) and Gibler (2009)[17] or if (ii) they fight on the same side of an inter-state war as measured by Sarkees and Wayman (2010).

As is standard in the literature on international trade, we further use bilateral measures of cultural proximity, in particular binary variables on whether a country pair has a shared colonial history, shares the same religion, or shares the same official language Fouquin and Hugot (2016). We expect the extent of official financial assistance to be higher among countries that share cultural origins and political histories. This builds on the idea that cultural proximity can help to overcome enforcement problems and information asymmetries (see e.g. Townsend, 1994; Portes and Rey, 2005).

The time-varying controls include a dummy variable for sovereign default events as well as inter-state wars (see Appendix Section C). We further include creditor and debtor country GDP, population size and a measure of institutional strength (Polity V democracy index). All explanatory variables enter with a lag to reduce reverse causality concerns. As a measure of cultural proximity we focus on colonial ties as baseline measure, but the results are similar if use common language or religion instead. In addition, we include debtor and creditor fixed effects to account for time-invariant creditor and debtor characteristics (and check results using other sets of fixed effects, see below).

Our dyadic analysis starts with descriptives, summarized in Appendix A.3.1, which give first support for the priors we are testing here. For estimation, we build on he trade gravity literature. The gold standard is to use a Poisson Pseudo Maximum Likelihood (PPML) estimator that has the desirable properties of being consistent under heteroskedastic error terms and that naturally incorporates zero observations (Head and Mayer, 2014). PPML can be used to estimate the parameters of a constant elasticity model in its multiplicative form and thus avoids the dropping of zeros. Santos Silva and Tenreyro (2006) further show that the PPML estimator leads to the same set of first-order conditions as an efficient and consistent non-linear least square estimator. For the PPML estimator to be consistent and efficient, it is therefore not necessary for the data generating process to follow a Poisson likelihood function.

[16] As explained in Appendix Section E.2, we construct a measure of bilateral financial exposure by drawing on the World Bank's International Debt Statistics, which now offers comprehensive data of private sector debt claims towards foreign sovereigns at the bilateral level since 1970. We calculate bilateral financial exposure analogously to bilateral trade shares, meaning that we use the size of private creditor claims in the creditor country towards a debtor country government, divided by the total private claims in the creditor country towards foreign sovereigns. This measure captures how strongly private creditors in a creditor country are exposed to a given debtor government, i.e. the relative importance of the crisis country for the banking and financial sector of a creditor country. As an alternative, we also use BIS data on bilateral financial sector linkages between countries. This measure has the drawback of being available only for a limited number of country pairs and only since the late 1980s. Our main results are robust to using these alternative measures.

[17] In a defense pact, states commit to intervene militarily on the side of any treaty partner that is being attacked. In an entente agreement, countries pledge consultation and / or cooperation in a national emergency such as an armed attack Gibler and Sarkees (2004).

For robustness, we also show results with alternative estimation methods. Most importantly, we estimate the extensive margin of official lending a binary model. For this purpose, we code a binary dependent variable that captures whether in a given year the creditor country extends a loan to the debtor country or not. Moreover, we show results using plain OLS with log bilateral commitments as the dependent variable (which results in a truncated sample and likely heteroskedasticity bias). The results remain very similar, as shown in Appendix Section A.3. The Appendix further shows that the results do not change substantially when adding year fixed effects, country pair fixed effects and/or debtor country-year or creditor country-year fixed effects.

Table 2: The gravity of official finance, 1820 - 2010

	Dep. variable: Bilateral official lending, 1830-2010				
	(1) Full sample	(2) Full sample	(3) Full sample	(4) History	(5) Modern
Trade exposure	0.19***	0.20***	0.15***	0.19***	0.28***
	(0.02)	(0.02)	(0.03)	(0.06)	(0.10)
Distance	0.11	0.11	-0.26*	0.15	-0.19
	(0.09)	(0.09)	(0.14)	(0.34)	(0.20)
Alliance	0.71***	0.77***	1.00***	1.58***	0.29
	(0.23)	(0.24)	(0.23)	(0.38)	(0.36)
Former Colony	1.41***	1.42***	1.13***	1.33**	1.17***
	(0.41)	(0.40)	(0.27)	(0.54)	(0.32)
War		2.07***	1.08***	1.56**	0.47*
		(0.28)	(0.31)	(0.65)	(0.26)
Sovereign Debt Crisis		0.65***	0.45***	-0.88	0.39***
		(0.18)	(0.11)	(0.57)	(0.12)
Observations	104249	104249	104249	22272	77432
Sample	1820 - 2010	1820 - 2010	1820 - 2010	1820 - 1945	1946 - 2010
Controls	✓	✓	✓	✓	✓
Debtor FE			✓	✓	✓
Creditor FE			✓	✓	✓

Notes: PPML regression results using gross bilateral lending commitments as dependent variable (in real USD). All explanatory variables enter with lagged values. The models include creditor and debtor fixed effects and additional time varying controls (debtor and creditor GDP, democracy, population). Robust standard errors, clustered at the creditor-debtor dyad, are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% level.

Table 2 shows our main results, both in the full 200-year sample and broken down by historical era. In line with our main hypothesis, bilateral economic and financial exposure is significantly correlated with bilateral lending. A one percent increase in bilateral exposure is associated with a 0.15 percent increase in bilateral lending flows. We also find that the estimated coefficient become stronger over time. In the post-WW2 era (Column 5), the estimated elasticity of trade exposure is almost twice as high as for the full sample.

We also find a large and statistically significant coefficient for military alliances as well as for cultural proximity (shared colonial history or alternatively common language/religion). Across the 200-year sample, military allies see a 100 percent higher volume of bilateral official flows. However, this result seems to be driven largely by historical events. The coefficient for military alliances in the post-WW2 period is much smaller in size and not statistically significant.

The results also clearly confirm that official lending spikes in major wars and financial crises. Across the 200-year sample, inter-state wars are associated with a 108 percent increase in official assistance. Similarly, sovereign debt crises come with a 45 percent increase in official lending across the full sample. The model also confirms that the international response to disaster events has shifted over time. Wars were associated with significantly higher official flows in the 19th and early 20th century, but less so in the post-WW2 era. The opposite trend is visible for financial crises. The coefficient for sovereign debt crises is not significant in the historical sample, but highly significant since then (post-WW2).

5.2 When alliances pay off: the gravity of official finance during wars

This section focuses on official lending patterns during major wars. For this purpose, we supplement our augmented 200-year gravity model with interaction terms of the incidence of war with our main dyadic explanatory variables. Table 3 presents the results in the full sample.

Table 3: Official lending during wars

	Dep. variable: Bilateral official lending, 1830-2010			
	(1) Full sample	(2) Full sample	(3) Full sample	(4) Full sample
Trade exposure	0.15***	0.15***	0.14***	0.15***
	(0.03)	(0.03)	(0.03)	(0.03)
Alliance	1.01***	0.77***	1.03***	0.99***
	(0.22)	(0.25)	(0.22)	(0.22)
Former Colony	1.14***	1.21***	1.14***	1.21***
	(0.28)	(0.26)	(0.28)	(0.26)
War	1.04***	0.29	2.05**	1.20***
	(0.31)	(0.27)	(0.91)	(0.36)
Sovereign Debt Crisis	0.47***	0.39***	0.46***	0.47***
	(0.11)	(0.12)	(0.11)	(0.11)
Alliance * War		2.16***		
		(0.45)		
Trade exposure * War			0.22	
			(0.16)	
Former colony * War				-0.94*
				(0.56)
Constant	2.33	1.34	1.99	2.37
	(2.43)	(2.34)	(2.69)	(2.38)
Observations	104626	104626	104626	104626
Sample	1820 - 2010	1820 - 2010	1820 - 2010	1820 - 2010
Controls	✓	✓	✓	✓
Debtor FE	✓	✓	✓	✓
Creditor FE	✓	✓	✓	✓

Notes: PPML regression results using gross bilateral lending commitments as dependent variable (in real USD). All explanatory variables enter with lagged values. The models include creditor and debtor fixed effects and additional time varying controls (debtor and creditor GDP, democracy, population). Robust standard errors, clustered at the creditor-debtor dyad, are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% level.

The findings confirm that military alliances are a dominant driver of lending during wars. In wars, military alliances are associated with an extra increase in official lending of 220 percent (see the coefficient of the respective interaction terms in Column 2). In contrast, we find no significant interaction term of wars and bilateral trade exposure (Column 3), which suggests that economic linkages play less of a role in wartime. Similarly, colonial ties are associated with less rather than more official lending during war (Column 4).

5.3 Benign self-interest: economic linkages and bail-outs

In a next step, we focus on sovereign debt crises and in particular on the role of pre-crisis financial linkages for the incidence and magnitude of official lending. As for the case of war, we augment our gravity model by adding interaction terms with the binary crisis event dummies.

Table 4: Bilateral exposure, cross-border bail-outs and benign self-interest

	Dep. variable: Bilateral official lending, 1830-2010			
	(1) Full sample	(2) Full sample	(3) Full sample	(4) Full sample
Trade exposure	0.15***	0.15***	0.14***	0.15***
	(0.03)	(0.03)	(0.03)	(0.03)
Alliance	1.01***	0.97***	1.00***	1.01***
	(0.22)	(0.23)	(0.22)	(0.23)
Former Colony	1.14***	1.14***	1.14***	1.17***
	(0.28)	(0.28)	(0.28)	(0.28)
War	1.04***	1.03***	1.03***	1.05***
	(0.31)	(0.31)	(0.31)	(0.31)
Sovereign Debt Crisis	0.47***	0.34**	1.32***	0.52***
	(0.11)	(0.15)	(0.36)	(0.12)
Alliance * Sov Debt Crisis		0.33		
		(0.33)		
Trade exposure * Sov Debt Crisis			0.17***	
			(0.07)	
Former colony * Sov Debt Crisis				-0.58*
				(0.31)
Constant	2.33	2.29	2.18	2.31
	(2.43)	(2.42)	(2.46)	(2.43)
Observations	104626	104626	104626	104626
Sample	1820 - 2010	1820 - 2010	1820 - 2010	1820 - 2010
Controls	✓	✓	✓	✓
Debtor FE	✓	✓	✓	✓
Creditor FE	✓	✓	✓	✓

Notes: PPML regression results using gross bilateral lending commitments as dependent variable (in real USD). All explanatory variables enter with lagged values. The models include creditor and debtor fixed effects and additional time varying controls (debtor and creditor GDP, democracy, population). Robust standard errors, clustered at the creditor-debtor dyad, are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% level.

The results show that pre-crisis economic linkages are a key predictor of official assistance during financial crises. The interaction term between trade exposure and sovereign debt crisis is highly significant. During crises, a one percent increase in economic exposure towards the crisis economy is associated with a 0.31 percent increase in bilateral official assistance (adding the coefficients of trade exposure with the coefficient of the interaction term in Column 3). This elasticity is twice as large as in the full sample (line 1 in Column 1). In contrast, we do not find statistically significant interaction effects of military alliances and debt crises, or for cultural linkages (Columns 2 and 4).

Our findings are consistent with Tirole (2015), Gourinchas et al. (2019) and Azzimonti and Quadrini (2023). A straightforward interpretation is that bilateral rescue lending is primarily motivated by "benign self-interest", as creditor countries are most likely to lend to crisis economies to which they are most exposed. In Appendix A.3, we show that these results also hold when using different exposure measures such as private sector holdings of foreign government debt and banking exposure from BIS statistics.

6 Conclusion

This paper studies international capital flows over two centuries, contrasting private and official lending. We show that official lending has been and continues to be an important force in global finance. Official capital flows are larger than previously known and strikingly counter-cyclical, with lending spikes during downturns and adverse shocks – precisely when private cross-border flows tend to dry out. The largest official lending surges occurred during the big macroeconomic disasters of the past two centuries, including in the Napoleonic wars, WW1, WW2, and the crises of 2008-2012. These findings suggest that official international lending acts a "great stabilizer" for the world economy.

Against this background, more work is needed to understand the drivers and implications of official lending at the global, regional, and national level. There are many more questions for future research for which our data could form the basis. How do international lenders of last resort emerge and why are hegemons the biggest official lenders? What is the role of official (hegemonic) finance for global financial stability and the investment decision of private investors? What is the impact of large-scale official grants and loans on welfare, consumption and asset prices? What is the role of central bank cross-border lending in crisis management and resolution – both today and in history? What explains the proliferation of regional safety nets and regional official lending flows? Indeed, should official loans and bailout packages be extended via bilateral, regional or multilateral institutions, or father by central banks? What are the effects of policy conditionality that is so often attached to official loans? What are the geopolitical drivers and returns of official lending? And how important has official finance been for the outcome of wars?

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Appendix

A Additional results

A.1 A short history of official lending institutions

Throughout the 19th century and up until the 1920s, official international loans were exclusively extended by bilateral creditors, namely by the treasuries, foreign and colonial offices and war ministries of nations, as well as by national central banks. These institutions were not specialized on providing foreign loans, but took up the task when special circumstances required them to do so, very often under considerable political controversy.

The practice of official sovereign lending across borders changed profoundly with the onset of World War I. European sovereigns established a new type of official creditor institution: state-owned export banks that guaranteed private trade credits and directly extended buyer credits to foreign sovereigns, in particular to the Soviet Union that had lost access to private capital markets (Margold, 1934). In addition, the League of Nations, founded in 1920, started to cooperate with national treasuries to mobilize rescue loans for crisis countries in need, especially in Central and Eastern Europe where governments tried to stabilize their currencies after the war (Flores Zendejas and Decorzant, 2006). In doing so, they were supported by increasingly active central banks, which extended record amounts of rescue loans to other central banks facing capital and gold outflows in an effort to support the interwar gold standard. This era of central bank cooperation peaked during the crisis of 1931 and quickly receded afterwards. Guided by the newly founded Bank of International Settlements (BIS), central banks mobilized significant emergency credits to Central Europe and Britain to stem the turmoil caused by the retrenchment of private flows, with limited success (Accominotti and Eichengreen, 2015).

The crisis of 1931 and its aftermath mark a turning point in the development of official international lending. The crisis highlighted the volatile nature of private capital flows and led leading policy-makers and academics to acknowledge the importance of counter-cyclical official lending Nurske (1944). During the course of the 1930s, the United States joined European states in extending official loans to states with balance-of-payments problems, in particular through the US Export-Import Bank and the US Treasury's Exchange Stabilization Fund, which was established in 1934.

The lessons learned during these operations turned out to have great effect on the design of the post-World War II Bretton Woods System Bordo and Schwartz (2001). In 1944, the IMF was founded with the aim of providing short-term official funds to countries with temporary balance-of-payments problems, alongside with the World Bank that was intended to provide long-term development and reconstruction funds. However, official lending during the post-war decades continued to be dominated by bilateral creditors. The US, in particular, engaged in large scale lending, e.g. via the Marshall Plan and EXIM Bank funds. Also the Soviet Union became an active official lender. Furthermore, outside the convertible dollar and sterling areas, sovereigns financed their current account deficits with the reciprocal extension of clearing credits.

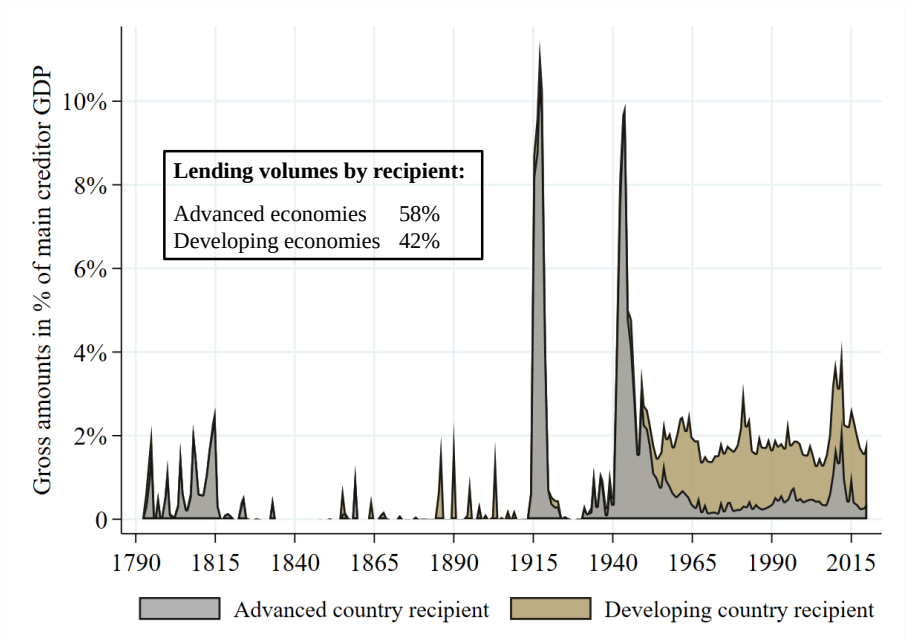
Starting from the late 1950s, the practice of official lending began to gradually shift from bilateral to multilateral creditor institutions, driven by a remarkable increase in the number and variety of

multilateral lending institutions. Regional development banks first emerged in the late 1950s with the establishment of the European Development Fund and the Inter-American Development Bank and have spread to all regions of the globe since. In parallel, new Regional Financial Arrangements (RFAs) were set up, typically focused on providing emergency funds during balance-of-payments crises of member states. Early examples include the European Monetary Agreement founded in 1958 and the Central American Monetary Stabilization Fund of 1970. More recently, the European Stability Mechanism (ESM) founded in 2012, is just one manifestations of this long-run trend towards regional rescue facilities Scheubel and Stracca (2019). Beyond regional and multilateral arrangements, central bank swap lines have become an additional main source of official emergency finance. Starting with the defense of the Bretton Woods system in the 1960s, a network of bilateral swap lines has been in place that connects the major central banks of the world. More recently, these networks have been expanded in size and scope. They now include the central banks of main emerging markets and, driven by China's central bank, also a growing number of developing countries.

Taken together, these institutional developments have transformed the practice of official sovereign lending from occasional instances of ad hoc cooperation between two states into a multi-layered, global financial safety net composed of a broad range of specialized institutions.

A.2 Additional figures and descriptive statistics

Figure A1: Recipients of official sovereign lending 1790 - 2020



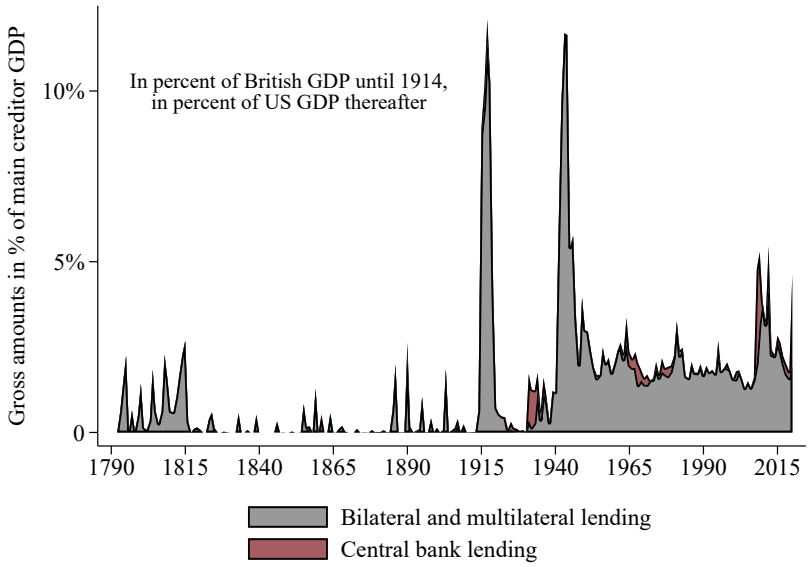
Note: This figure shows gross official commitments through grants, loans and guarantees in percent of British GDP (until 1914) and in percent of US GDP thereafter. The graph excludes central bank lending. All data is from our new official international lending database.

Table A1: Incidence and size of international official rescue lending, 1790 - 2020

	Wars		Sovereign debt crises	
	Probability of external rescue lending *(in percent)*	Average size of external rescue lending *(in % of imports)*	Probability of external rescue lending *(in percent)*	Average size of external rescue lending *(in % of imports)*
Long 19th century (1790 - 1913)	22%	69%	11%	65%
Inter-War (1914 - 1945)	66%	542%	36%	77%
Post-World War II (1946 - 2020)	100%	180%	100%	102%

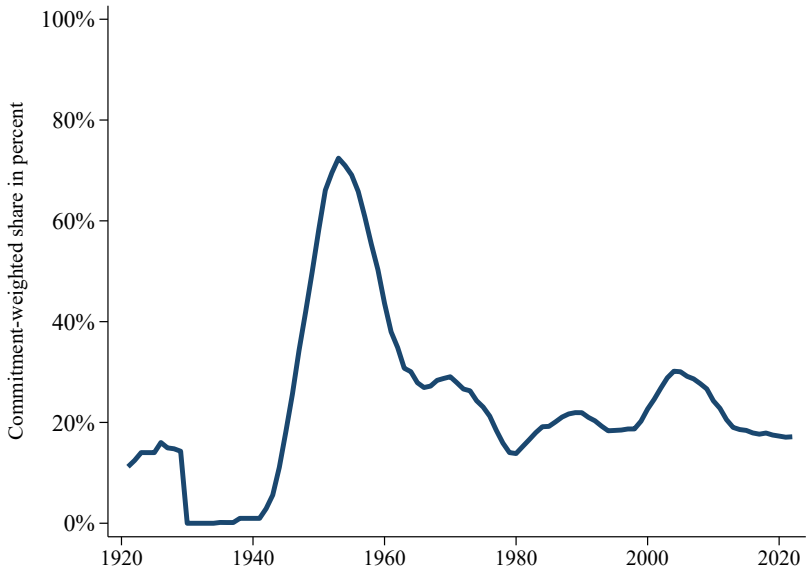
Note: This table the incidence and size of international official lending during defensive inter-state wars and sovereign debt crises as defined in Section 4.1. Columns (1) and (3) show the probability of receiving any form of foreign official lending during the first 3-years after the onset of a war or a debt crises. Columns (2) and (4) show the average size of foreign official lending during the 3-year window in percent of the country's pre-crisis imports, conditional on the existence of foreign financial support.

Figure A2: Government and central bank cross-border lending, 1790-2020



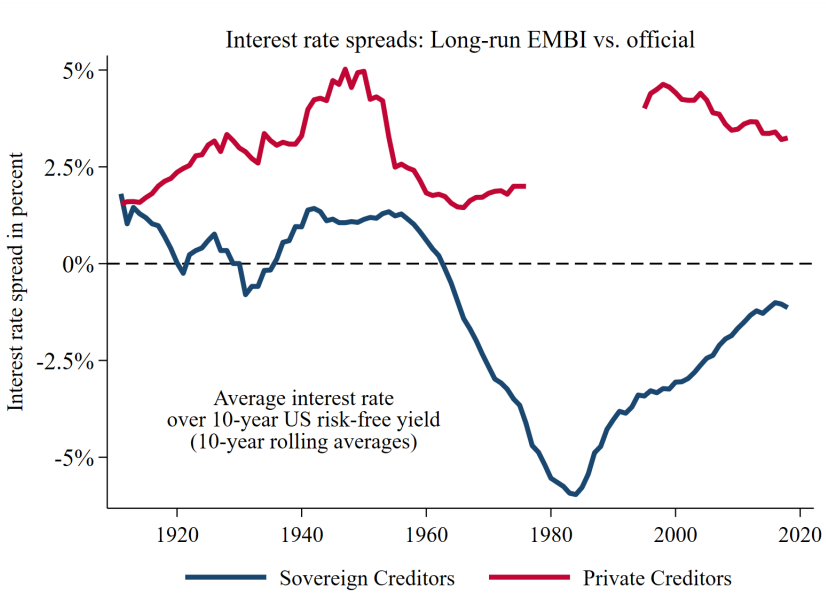
Note: This figure shows all gross official commitments through grants, loans and guarantees in grey and cross-border lending by central banks in red. The series are expressed in percent of British GDP until 1914 and in percent of US GDP thereafter.

Figure A3: Share of grants in total official lending, 1920 - 2020



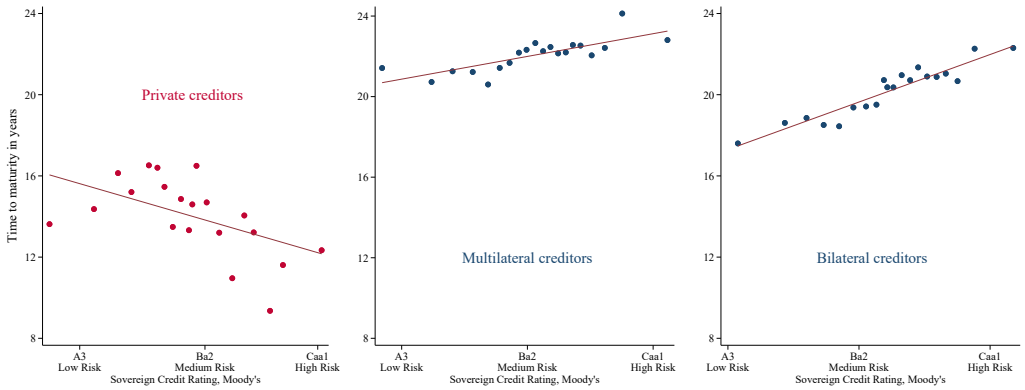
Note: This figure shows the share of grants in total official lending since 1920. The series is a commitment-weighted average and has been smoothed by applying a five-year moving average.

Figure A4: Interest rate spreads: Long-run EMBI vs. official



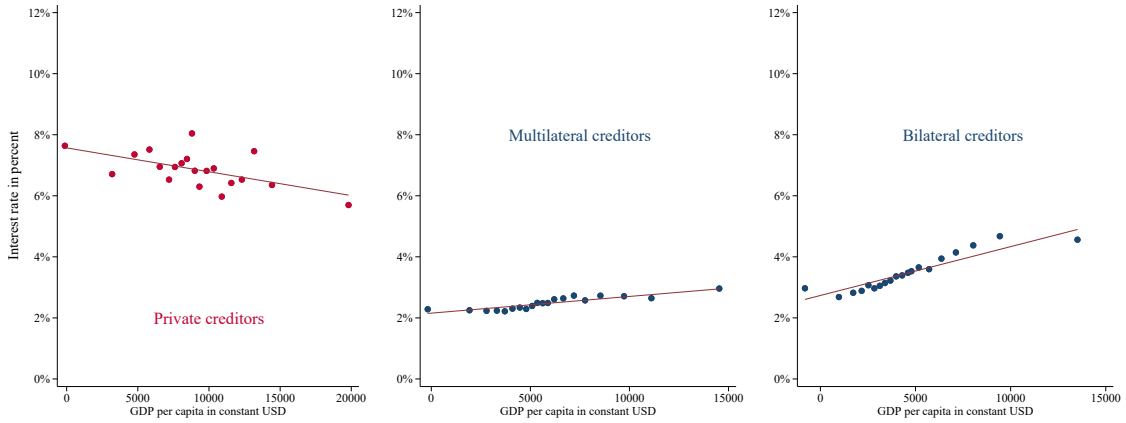
Note: This figure shows the long-run evolution of official and private interest rate spreads. Spreads are derived by subtracting the 10-year US and UK risk-free rate from interest rates on official and private lending instruments.

Figure A5: Official vs private loan maturity by debtor credit risk



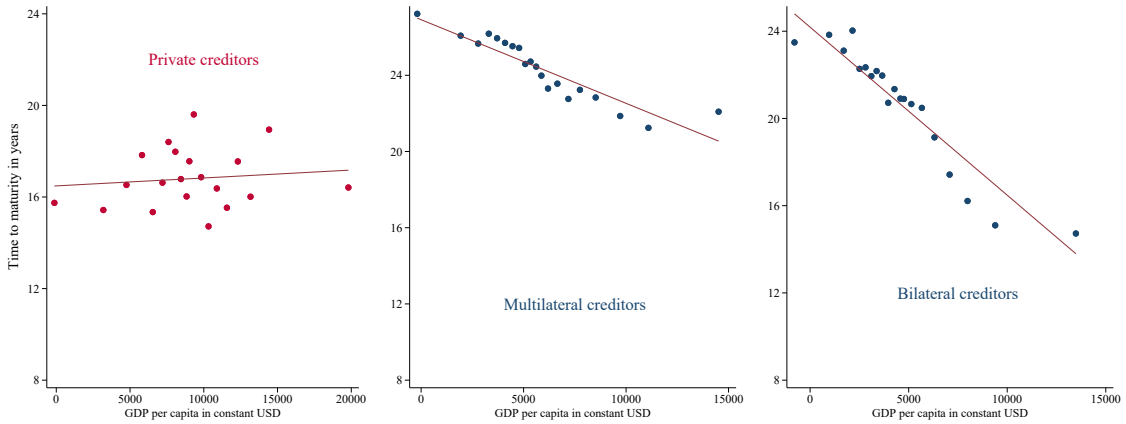
Note: This figure shows binscatter plots of the years to maturity of sovereign bonds as well as years to maturity of multilateral and bilateral loans by debtor risk rating. The binscatter plots show the average maturity in years for 20 equally sized bins of sovereign risk, as measured by credit risk ratings from different credit rating agencies (see Section E.3).

Figure A6: Official vs private interest rates by debtor country income



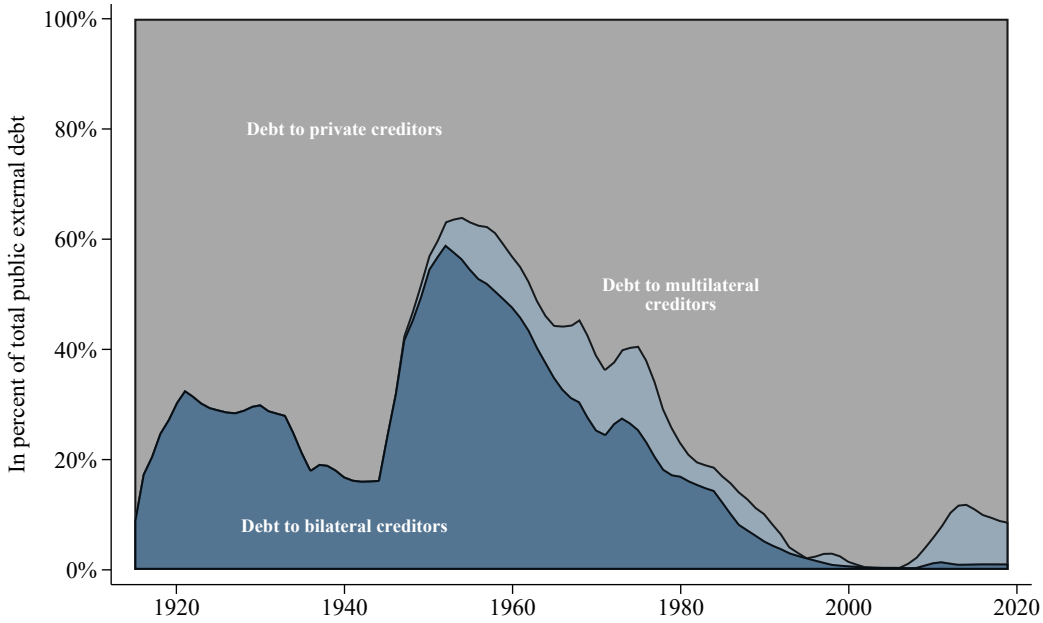
Note: This figure shows binscatter plots of interest rates on sovereign bonds (issuance yields) as well as interest rates on multilateral and bilateral loans by debtor income. The binscatter plots show the average interest rate in percent for 20 equally sized bins of recipient country GDP per capita.

Figure A7: Official vs private maturity by debtor country income



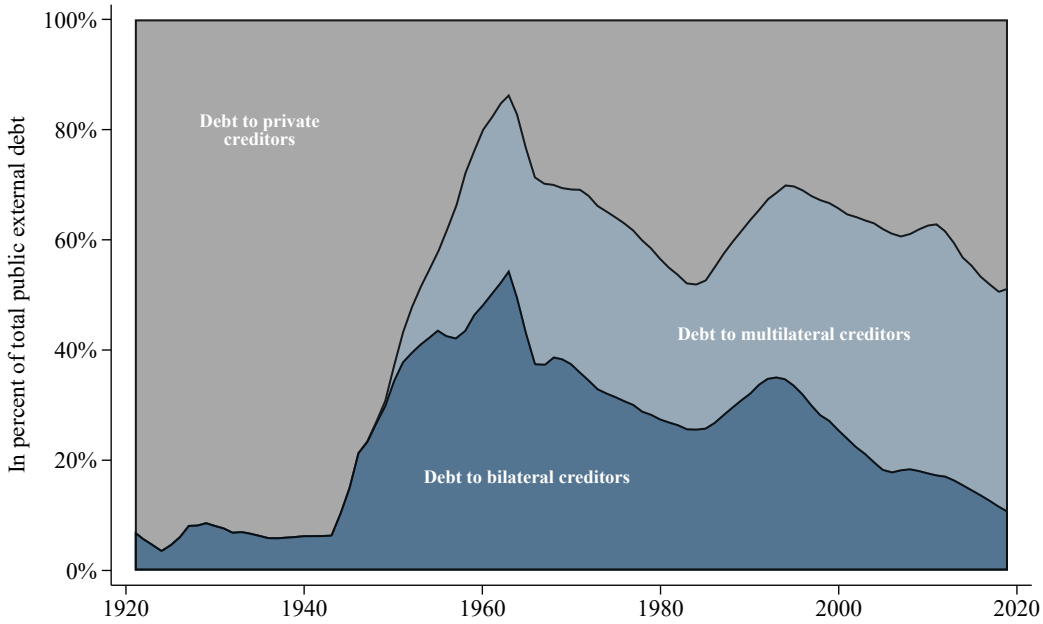
Note: This figure shows binscatter plots of the years to maturity of sovereign bonds as well as years to maturity of multilateral and bilateral loans by debtor risk rating. The binscatter plots show the average maturity in years for 20 equally sized bins of recipient country GDP per capita.

Figure A8: External public debt composition in AEs – unweighted averages



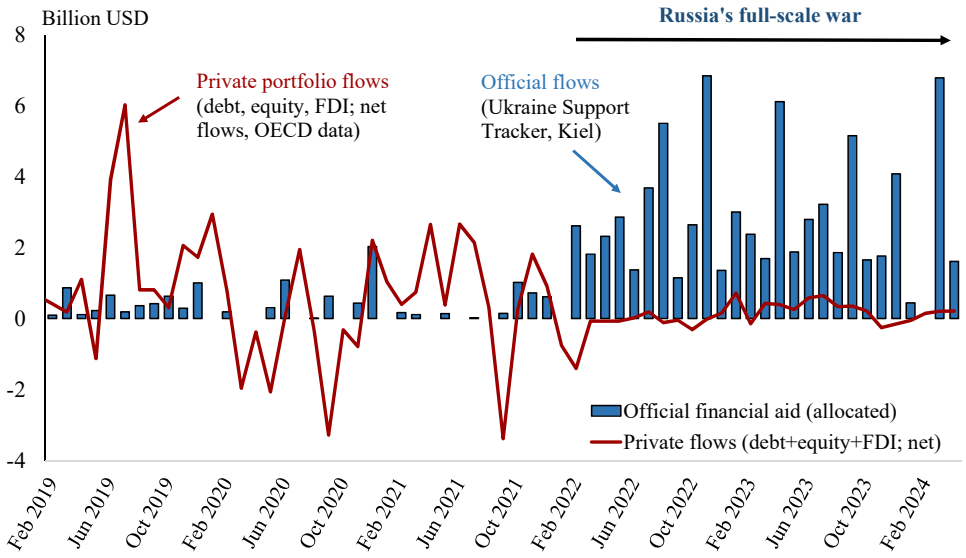
Note: This figure shows the average share of external public debt owed to private, bilateral and multilateral creditors since 1910 and for the full sample of 28 advanced countries, for which we have collected data. See Appendix Section B.6 for details.

Figure A9: External public debt composition in EMDEs – unweighted averages



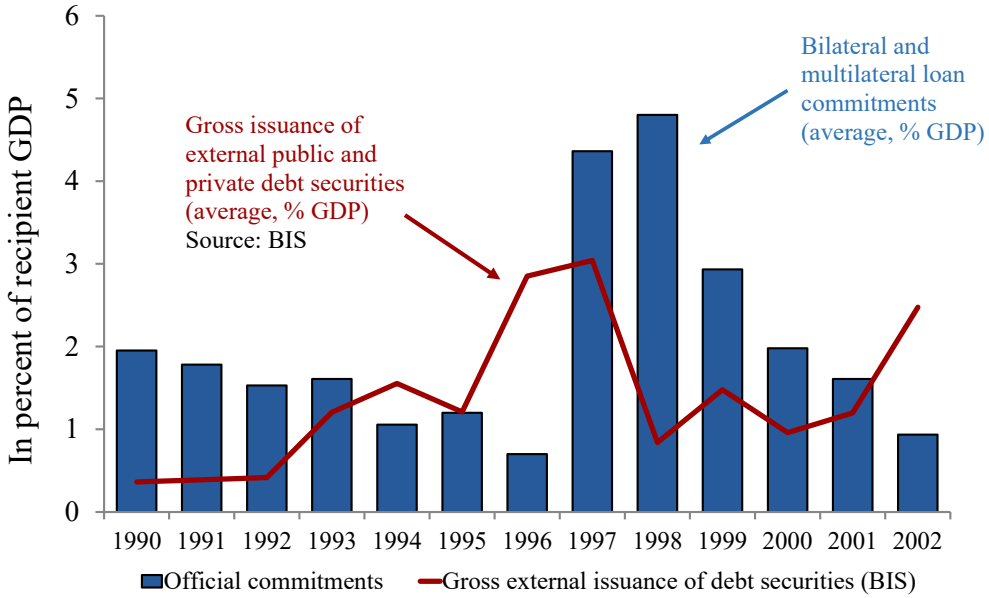
Note: This figure shows the average share of external public debt owed to private, bilateral and multilateral creditors since 1910 and for the full sample of 112 advanced countries, for which we have collected data. See Appendix Section B.6 for details.

Figure A10: Official and private capital flows during Russia's war on Ukraine



Note: This figure shows private capital flows (debt, equity and FDI flows from the OECD, in red) and official flows (allocated financial aid from Trebesch et al. (2023), in blue) to Ukraine during the months before and after Russia's full scale War. Both series are given in billions of USD.

Figure A11: Official and private capital flows during the Asian Crisis 1997



Note: This figure shows average private international lending (gross issuance of external public and private debt securities from the BIS International Debt Securities Statistics, in red) and official international lending (bilateral and multilateral commitments from our database, in blue) during the Asian Crises. The sample includes Korea, Malaysia, Thailand and Indonesia. The series provide average lending amounts in percent of recipient country GDP.

A.3 Robustness tests for gravity model

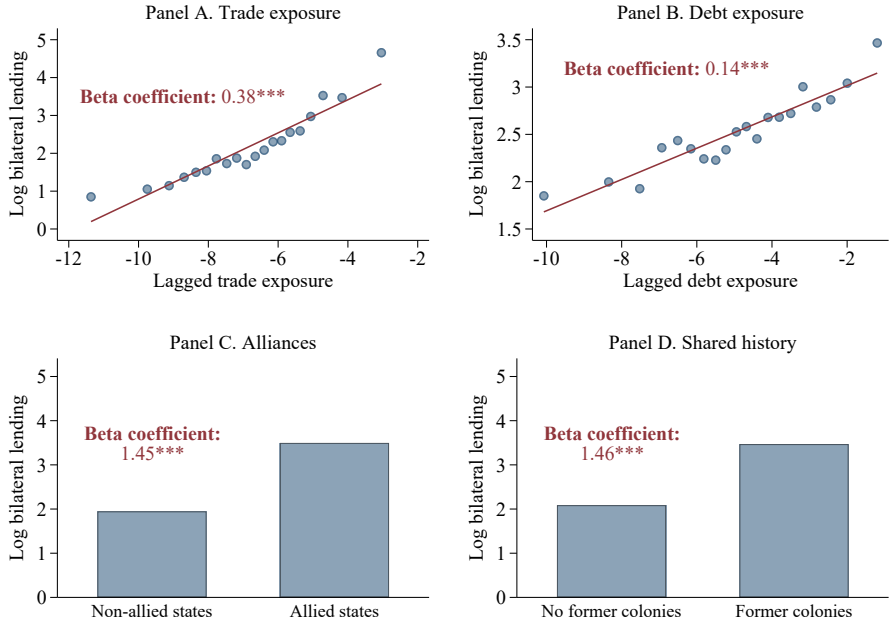
This appendix section provides descriptive evidence (i) and three different types of robustness checks for the results obtained from the 200-year augmented gravity model shown in Section 5. We confirm that the use of (ii) alternative model specifications, (iiI) alternative event horizons for wars and sovereign debt crises, and (iV) alternative exposure measures do not significantly alter our main conclusions.

A.3.1 Descriptive evidence

Figure A12 takes a preliminary look at the data. Panels A and B shows a bin scatter plot between official lending flows and the bilateral measures of economic and financial exposure (in logs and lagged by one year). We also show beta coefficients from linear regressions of bilateral lending on the lagged exposure variable. The figure shows that - in line with our regression results and theoretical priors - higher trade (higher debt exposure) is associated with higher bilateral lending flows. Also, military alliances and a shared colonial history come with significantly more official assistance.

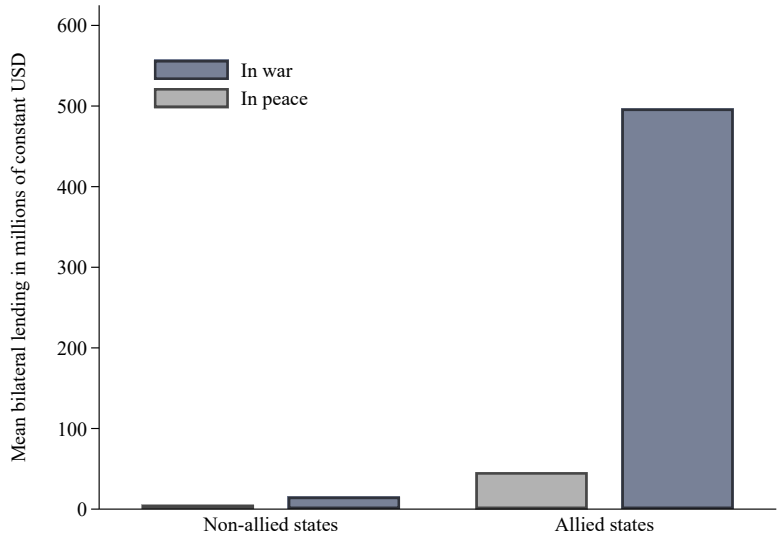
Figures A13 and A14 provides further descriptive evidence with a focus on how alliances and economic exposure drive drive bilateral lending during wars and debt crisis. In line with the interaction terms estimated in Table 3 and Table 4, we see in the raw data that lending by allies is particularly high during war and that lending by high-exposure creditors is particularly high during debt crises.

Figure A12: Correlates of official lending – political and financial ties



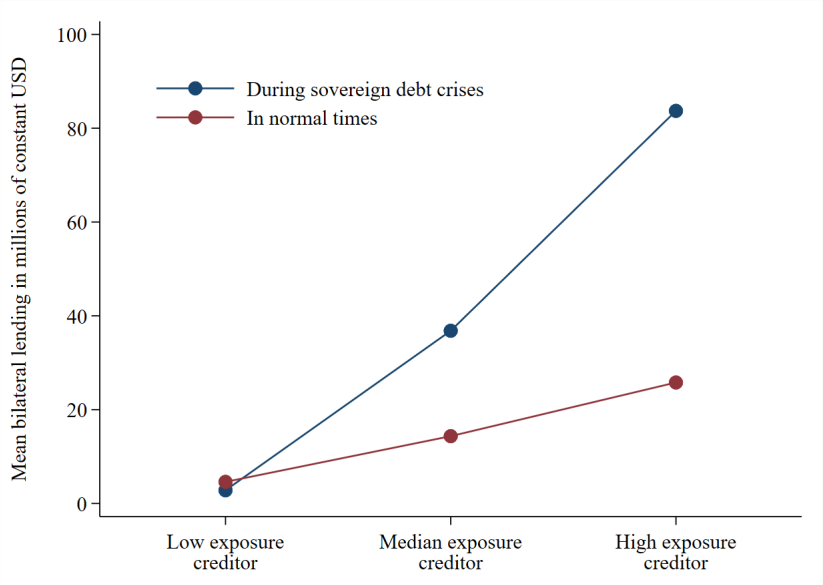
Note: This figure shows correlates between the (log) of bilateral lending and lagged bilateral economic and financial ties. Fitted lines and regression coefficient show the results of simple bivariate OLS regressions.

Figure A13: Official lending, wars, and alliances, 1820-2020



Note: This figure shows conditional average bilateral lending amounts through loans, grants and guarantees in millions of constant USD by allied and non-allied countries and in war and peace

Figure A14: Private exposure and official lending, 1820-2020



Note: This figure shows conditional average bilateral lending amounts through loans, grants and guarantees in millions of constant USD by creditors with different levels of trade exposure. To derive the different levels of trade exposure we divide the data set into three equally sized bins. Blue dots give conditional averages for sovereign debt crisis years, while red dots give conditional average in non-crisis years.

A.3.2 Alternative model specifications

This appendix subsection analyzes the robustness of the main results from our augmented gravity model of official lending. Tables A2, A3 and A4 present results from our main gravity model when estimating OLS or logit models instead of the PPML model presented in the main text (columns 1 and 2) and when including more extensive sets of fixed effects (columns 3 to 6). Table A2 focuses on the main specification, Tables A3 and A4 add interaction effects between inter-state wars and alliances and economic exposure and sovereign debt crises.

Table A2: Alternative model specifications I

	Dep. variable: Bilateral official lending, 1830-2010					
	(1) OLS	(2) Logit	(3) PPML	(4) PPML	(5) PPML	(6) PPML
Trade exposure	0.13***	0.01	0.15***	0.16***	0.16***	0.32***
	(0.03)	(0.03)	(0.03)	(0.05)	(0.03)	(0.04)
Alliance	-0.02	0.84***	1.00***	0.85***	0.66*	0.48***
	(0.16)	(0.17)	(0.23)	(0.22)	(0.36)	(0.13)
Distance	-0.68***	-0.25***	-0.26*	-0.18		-0.16**
	(0.10)	(0.08)	(0.14)	(0.15)		(0.08)
Former Colony	1.91***	1.05***	1.13***	1.06***		0.98***
	(0.16)	(0.14)	(0.27)	(0.24)		(0.15)
War	0.37**	0.30**	1.08***	0.62***	1.00***	
	(0.15)	(0.13)	(0.31)	(0.21)	(0.32)	
Sov. Debt Crisis	-0.06	0.16***	0.45***	0.70***	0.38***	
	(0.06)	(0.05)	(0.11)	(0.13)	(0.11)	
Constant	24.65***	-50.47***	2.36	-56.33***	-0.47	10.90***
	(2.63)	(2.08)	(2.50)	(12.20)	(2.87)	(0.64)
Observations	23034	104249	104249	94204	72486	53578
Controls	✓	✓	✓	✓	✓	✓
Debtor FE	✓	✓	✓	✓		
Creditor FE	✓	✓	✓	✓		
Year FE				✓		
Country Pair FE					✓	✓
Debtor-Year FE						✓
Creditor-Year FE						✓

Notes: Model 1 uses the log of real bilateral lending commitments as the dependent variable. Model 2 uses a dummy variable that is equal to one for non-zero lending amounts as the dependent variable. Models 3 to 6 use real bilateral lending in constant USD as the dependent variable. All explanatory variables enter with lagged values. All models include additional time varying controls (debtor and creditor GDP, democracy, population) and different types of creditor and debtor fixed effects. Robust standard errors, clustered at the creditor-debtor dyad, are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% level.

Table A3: Alternative model specifications II

	Dep. variable: Bilateral official lending, 1830-2010				
	(1) OLS	(2) Logit	(3) PPML	(4) PPML	(5) PPML
Trade exposure	0.13***	0.01	0.16***	0.18***	0.17***
	(0.03)	(0.03)	(0.02)	(0.05)	(0.03)
Alliance	-0.04	0.79***	0.77***	0.59***	0.52
	(0.16)	(0.18)	(0.25)	(0.22)	(0.38)
Distance	-0.67***	-0.24***	-0.24*	-0.15	
	(0.10)	(0.07)	(0.13)	(0.14)	
Former Colony	1.92***	1.05***	1.20***	1.15***	
	(0.16)	(0.14)	(0.26)	(0.24)	
War	0.20	0.13	0.36	0.04	0.39
	(0.15)	(0.12)	(0.26)	(0.26)	(0.26)
Sov. Debt Crisis	-0.06	0.16***	0.38***	0.67***	0.38***
	(0.06)	(0.05)	(0.12)	(0.13)	(0.11)
Alliance * War	1.61***	3.41***	2.09***	1.90***	1.85***
	(0.53)	(0.49)	(0.45)	(0.44)	(0.54)
Constant	24.51***	-50.83***	1.41	-54.70***	-0.80
	(2.62)	(2.08)	(2.42)	(10.79)	(2.87)
Observations	23034	104249	104249	94204	72486
Controls	✓	✓	✓	✓	✓
Debtor FE	✓	✓	✓	✓	
Creditor FE	✓	✓	✓	✓	
Year FE				✓	
Country Pair FE					✓

Notes: Model 1 uses the log of real bilateral lending commitments as the dependent variable. Model 2 uses a dummy variable that is equal to one for non-zero lending amounts as the dependent variable. Models 3 to 6 use real bilateral lending in constant USD as the dependent variable. All explanatory variables enter with lagged values. All models include additional time varying controls (debtor and creditor GDP, democracy, population) and different types of creditor and debtor fixed effects. Robust standard errors, clustered at the creditor-debtor dyad, are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% level.

Table A4: Alternative model specifications III

	Dep. variable: Bilateral official lending, 1830-2010				
	(1) OLS	(2) Logit	(3) PPML	(4) PPML	(5) PPML
Trade exposure	0.12***	0.00	0.15***	0.14***	0.16***
	(0.03)	(0.03)	(0.03)	(0.05)	(0.04)
Alliance	-0.03	0.84***	0.99***	0.83***	0.66*
	(0.16)	(0.17)	(0.23)	(0.21)	(0.36)
Distance	-0.67***	-0.25***	-0.25*	-0.17	
	(0.10)	(0.08)	(0.14)	(0.15)	
Former Colony	1.91***	1.04***	1.12***	1.06***	
	(0.16)	(0.14)	(0.27)	(0.24)	
War	0.35**	0.29**	1.07***	0.63***	0.98***
	(0.15)	(0.13)	(0.31)	(0.22)	(0.32)
Sov. Debt Crisis	1.55***	0.79***	1.31***	1.74***	1.76***
	(0.26)	(0.21)	(0.37)	(0.35)	(0.38)
Trade exposure * Sov Debt Crisis	0.24***	0.09***	0.17**	0.21***	0.28***
	(0.04)	(0.03)	(0.07)	(0.06)	(0.07)
Constant	24.59***	-50.48***	2.20	-56.48***	-0.46
	(2.62)	(2.08)	(2.52)	(12.15)	(2.88)
Observations	23034	104249	104249	94204	72486
Controls	✓	✓	✓	✓	✓
Debtor FE	✓	✓	✓	✓	
Creditor FE	✓	✓	✓	✓	
Year FE				✓	
Country Pair FE					✓

Notes: Model 1 uses the log of real bilateral lending commitments as the dependent variable. Model 2 uses a dummy variable that is equal to one for non-zero lending amounts as the dependent variable. Models 3 to 6 use real bilateral lending in constant USD as the dependent variable. All explanatory variables enter with lagged values. All models include additional time varying controls (debtor and creditor GDP, democracy, population) and different types of creditor and debtor fixed effects. Robust standard errors, clustered at the creditor-debtor dyad, are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% level.

A.3.3 Alternative event horizons for wars and sovereign debt crises

As discussed in Section C, we construct dummy variables for the first three years of inter-state wars and sovereign debt crises. Here we show that our main results are robust to using different timing conventions. Table A5 shows that that results are highly similar when we limit our disaster dummies to a 2-year or a 4-year horizon. Results are also qualitatively similar when we are including the full war and sovereign default spell. In this set-up, however, the dummy variable for sovereign debt crisis looses its statistical significance. This is not surprising given that the final resolution of a sovereign default can take multiple decades.

Table A5: Alternative event window definitions

	Dep. variable: Bilateral official lending, 1830-2010			
	(1) PPML	(2) PPML	(3) PPML	(4) PPML
Trade exposure	0.15***	0.15***	0.15***	0.16***
	(0.03)	(0.03)	(0.03)	(0.03)
Alliance	0.93***	0.99***	1.00***	1.02***
	(0.18)	(0.22)	(0.23)	(0.22)
Distance	-0.28**	-0.27*	-0.26*	-0.25*
	(0.13)	(0.14)	(0.14)	(0.14)
Former Colony	1.12***	1.13***	1.13***	1.13***
	(0.26)	(0.27)	(0.27)	(0.27)
War - all years	2.49***			
	(0.50)			
Sov. Debt Crisis - all years	0.19			
	(0.15)			
War - 2 years		0.85**		
		(0.35)		
Sov. Debt Crisis - 2 years		0.48***		
		(0.12)		
War - 3 years			1.08***	
			(0.31)	
Sov. Debt Crisis - 3 years			0.45***	
			(0.11)	
War - 4 years				1.50***
				(0.28)
Sov. Debt Crisis - 4 years				0.40***
				(0.11)
Constant	-1.01	2.67	2.36	1.63
	(1.94)	(2.50)	(2.50)	(2.34)
Observations	104249	104249	104249	104249
Controls	✓	✓	✓	✓
Debtor FE	✓	✓	✓	✓
Creditor FE	✓	✓	✓	✓

Notes: PPML regression results using gross bilateral lending commitments as dependent variable (in real USD). All explanatory variables enter with lagged values. The models include creditor and debtor fixed effects and additional time varying controls (debtor and creditor GDP, democracy, population). Robust standard errors, clustered at the creditor-debtor dyad, are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% level.

A.3.4 Alternative exposure measures

The augmented 200-year gravity model presented in the main text relied on bilateral trade flows to measure the economic exposure of the creditor economy to the recipient country. Bilateral trade data has the key advantage of being available for a broad cross-section of countries and for nearly two centuries. For more recent decades, more granular data is available to measure the financial and economic exposure of creditor economies to the recipient economy and therefore the potential spillover

effects that could emerge from a sovereign debt crisis. In Appendix Section E.1, we provide details on how we construct alternative exposure measures that focus on exposure through debt holdings (from the World Bank's International Debt Statistics) and on exposure through bank linkages (from the BIS Consolidated Banking Statistics). Tables A6 and A7 shows show that our main results hold, when we integrate these alternative exposure measures into our gravity model.

Table A6: Sovereign debt crisis, bailouts and debt exposure, 1970-2010

	Dep. variable: Bilateral official lending, 1970-2010			
	(1) PPML	(2) PPML	(3) PPML	(4) PPML
Debt Exposure	0.14***	0.25***	0.16***	0.15***
	(0.05)	(0.05)	(0.02)	(0.02)
Distance		-0.27**	-0.72***	-0.71***
		(0.12)	(0.12)	(0.12)
Former Colony		0.38**	1.08***	1.08***
		(0.16)	(0.20)	(0.20)
Sov. Debt Crisis		0.31**	0.50***	0.85***
		(0.13)	(0.15)	(0.27)
Debt exposure * Sov. Debt Crisis				0.11*
				(0.06)
Constant	5.04***	-19.09***	-13.55	-13.13
	(0.27)	(3.62)	(15.54)	(15.63)
Observations	21212	17563	17306	17306
Controls		✓	✓	✓
Debtor FE			✓	✓
Creditor FE			✓	✓

Notes: PPML regression results using gross bilateral lending commitments as dependent variable (in real USD). All explanatory variables enter with lagged values. The models include creditor and debtor fixed effects and additional time varying controls (debtor and creditor GDP, democracy, population). Robust standard errors, clustered at the creditor-debtor dyad, are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% level. For details on the debt exposure variable see Appendix Section E.1.

Table A7: Sovereign debt crisis, bailouts and banking exposure, 1984-2010

	Dep. variable: Bilateral official lending, 1984-2010			
	(1) PPML	(2) PPML	(3) PPML	(4) PPML
Bank Exposure	0.31***	0.46***	0.24***	0.22***
	(0.05)	(0.09)	(0.06)	(0.06)
Distance		-0.53***	-1.14***	-1.12***
		(0.13)	(0.14)	(0.14)
Former Colony		-0.00	1.19***	1.21***
		(0.22)	(0.21)	(0.21)
Sov. Debt Crisis		0.51***	0.38**	-1.61***
		(0.11)	(0.15)	(0.48)
Bank exposure * Sov Debt Crisis				0.24***
				(0.06)
Constant	1.74***	-0.33	16.92	16.68
	(0.28)	(4.40)	(33.95)	(33.36)
Observations	15887	11947	10547	10547
Controls		✓	✓	✓
Debtor FE			✓	✓
Creditor FE			✓	✓

Notes: PPML regression results using gross bilateral lending commitments as dependent variable (in real USD). All explanatory variables enter with lagged values. The models include creditor and debtor fixed effects and additional time varying controls (debtor and creditor GDP, democracy, population). Robust standard errors, clustered at the creditor-debtor dyad, are shown in parentheses. ***, **, and * indicate statistical significance at the 1%, 5% and 10% level. For details on the bank exposure variable see Appendix Section E.1.

B Construction of the International Official Lending Database

This appendix section provides a detailed description of our new International Official Lending database. We begin by introducing the main definitions and concepts, present the general coding approach and provide information on the scope and limitations of the database. This section also gives a detailed account of all sources used and discusses country-, era- or source-specific details.

B.1 Definitions and concepts

We define official sovereign lending by following the widely used OECD definition according to which *"official transactions are those undertaken by central, state or local government agencies at their own risk and responsibility, regardless of whether these agencies have raised the funds through taxation or through borrowing from the private sector. This includes transactions by public corporations i.e. corporations over which the government secures control by owning more than half of the voting equity securities or otherwise controlling more than half of the equity holders' voting power; or through special legislation empowering the government to determine corporate policy or to appoint directors"* (OECD, 2018).

Which creditors? Our definition of official lending includes both bilateral and multilateral lending. Bilateral lending is directly channeled from the creditor country to the recipient country. In contrast, multilateral lending is extended by international financial institutions that are established through political agreements among multiple member countries (IMF, 2014; OECD, 2018). Over the past 200 years the set of official creditor institutions has changed profoundly and now includes an ever growing number of bilateral and multilateral creditor institutions. Figure 1 provides a stylized representation of the evolution of the official creditor universe and maps out the different types of creditors that our data collection effort focuses on. During the 19$^{\text{th}}$ century, official lending was almost exclusively extended by bilateral creditors, in particular by the treasuries and foreign ministries of nations, as well as by their central banks. Since World War I, most official lending has been extended by specialized creditor institutions, such as development agencies and export credit banks at the bilateral level and by a growing number of multilateral financial institutions with diverse lending mandates. These include not only the UN, the IMF and the World Bank Group but a large number of regional or plurilateral development banks and safety nets (see Appendix Section B.4 for a full list and Appendix Section A.1 for a detailed historic account of the institutional evolution of official lending over the past two centuries).

Which debtors? We aim to capture all official lending transactions with non-residents as defined in IMF (2014), i.e., all instances of *cross-border* official lending.[18] While the creditor entity, by definition, needs to be a state or state-owned entity, we do not impose a similar restriction on the debtor entity. In principle, our data set captures both government-to-government and government-to-private lending transactions. In practice, however, by far the largest share of official lending transactions are taken up by public sector debtor entities. To avoid double counting, we do not include bilateral contributions to international financial organizations in the data set.

Defining the country sample: To define the set of creditor and debtor countries, we follow the widely used definition of the international state system provided by the Correlates of War database. According to this classification, all political entities are considered sovereigns states under two conditions (i) prior to 1920, state membership requires that the entity has a population above 500,000 and diplomatic missions at or above the rank of chargé d'affaires with Britain and France (ii) after 1920, the entity must be a member of the UN or League of Nations, or have population greater than 500,000 and receive diplomatic missions from two major powers (see for example Small and Singer (1982). We include all states that fulfil these criteria in the sample, starting from the year of their formal independence with data on independence years taken from Reinhart and Rogoff (2009).[19] An important implication of this sample definition is that we exclude from the data set all official lending to and by overseas colonies, dominions or territories. While sizeable, these flows are arguably more akin to domestic lending and do not share the same commitment and enforcement problems that characterize international cross-border lending between sovereign states. For a discussion of resource flows within colonial empires see for example Davis and Huttenback (1987) or Huillery (2014).

[18]Note that cross-border lending is defined exclusively by the residency of the recipient. An official cross-border lending transaction can therefore be denominated in local currency or can be governed by domestic law.

[19]By using the formal year of independence, most states enter our sample earlier than they enter the COW state system. In some cases, it takes years for a country to be formally recognized by major powers. During this time substantial amounts of official lending may be received, so we follow Reinhart and Rogoff (2009) independence years to opt for more comprehensive coverage of official flows.

Which instruments? We aim to capture all forms of direct lending between official creditors and foreign recipients and therefore trace a wide array of different debt instruments and transfers. Loans are defined as all transfers in cash or in kind for which the recipient incurs legal debt and the resulting liability is not traded in secondary markets (see for example OECD, 2018). This definition includes concessional and non-concessional instruments, trade advances and credits as well as drawdowns under standing credit lines and foreign currency swaps.[20] We also include in our database cases of private creditor lending that are explicitly guaranteed by the creditor government.[21] Finally, we trace cross-border grants which we define as transfers of cash, goods or services, for which no repayment needs to be made (OECD, 2018).

On the other hand, we are explicitly not trying to track the following forms of official capital transfers:

- **Official portfolio investments:** In addition to direct forms of lending, official entities can also invest in the secondary sovereign debt markets of foreign sovereigns, e.g. through central banks or sovereign wealth funds. While such investments are sizeable, no sufficiently detailed information is available to trace or quantify such investments at the granular level at which we compile our database (see Alfaro et al. (2014) for a discussion of these flows).
- **Reparation and indemnity payments:** Historically, reparation or indemnity payments constituted an important share of resource transfers between sovereign states, in particular in the aftermath of major wars such as the Napoleonic War, the Franco-Prussian War of 1871 or the First World War (see for example Kindleberger (2006) for an overview of reparation payments during the financial history of Europe). We do not consider reparation or indemnity payments in this project and database given that they do not conform to the consensual nature that characterizes direct forms of official loans and grants.
- **Debt relief:** Official resource transfers between sovereigns can also take the form of debt relief on existing claims. In this project, we focus entirely on the provision of new financing in the form of additional commitments or disbursements and therefore do not collect data on debt relief or restructuring of official debts.

Official lending versus development aid: Official lending is not equivalent to (development) aid, although both concepts overlap. The OECD defines aid or official development assistance (ODA) as official lending for development purposes to developing countries with a grant element of at least 25 percent (see OECD, 2018, for details). In contrast, our definition of official lending captures transactions with all foreign countries (including advanced recipients), for all purposes and through both concessional as well as non-concessional lending instruments. Development aid is therefore a subset of the much larger universe of official lending that we study in this paper.

[20] We follow standard practice and only count credit lines and foreign currency swap lines to the extent that they are being drawn down (IMF, 2014).

[21] The provision of creditor government guarantees on sovereign bonds issued in private markets were a common way to support foreign countries during the 19th century and the inter-war era. See Myers (1945), Flores Zendejas and Decorzant (2006), Esteves and Tunçer (2016).

B.2 Coding approach and data limitations

Our data construction approach proceeds in several steps.

1. **Identifying official creditor entities:** We begin by identifying relevant official creditor entities from the secondary literature. For bilateral creditors, the database of new bilateral donors by Budjan and Fuchs (2021) and the histories of international lending of last resort by Bordo and Schwartz (2001) and Kindleberger (1986) are particularly helpful resources. For multilateral creditors, the Oxford Handbook of International Organizations offers an excellent overview of the relevant institutions and the year of their foundation (Cogan et al., 2016).

2. **Identifying relevant sources and existing databases:** Once the set of relevant official creditor entities is identified, we proceed by searching for relevant data sources. As explained in much greater detail in subsections B.3 and B.6, sources generally fall into four categories: (i) international treaty series, (ii) creditor reports, (iii) recipient country debt statistics, and (iv) reports by international organizations and rating agencies.

3. **Data collection:** We systematically search our data sources for all transactions that qualify as official lending transactions under the definitions stated in Section B.1 above. Once identified, we collect all available transaction-level data including, whenever possible, the nominal commitment amount, financial terms of the loans, i.e., the interest rate, grace period and maturity year and the associated amounts outstanding (i.e., the debt stock).

4. **Data validation and reconciliation of conflicting information:** To validate our data, we compare the collected data across different sources and against the existing secondary literature. This procedure serves two functions. First, it helps to fill potential gaps in our coverage and helps to reconcile conflicting information. Second, and if conflicting information cannot be reconciled, in particular in historic contexts, we confirm that our main conclusions are robust to using different sources of data.

Limitations: Despite our best efforts to combine all available information, we note the following limitations to our data collection:

- **Completeness:** Our data collection needs to be considered a lower bound for the incidence and magnitude of official sovereign lending. In contrast to private debt securities that are traded on secondary markets, there is no centralized benchmark against which we can check the completeness of official lending transactions. Indeed, research has shown that bilateral lending is particularly prone to under-reporting in public debt statistics and government documents (Horn et al., 2024; Trebesch et al., 2023). Under-reporting in our database is likely most severe for official lending to non-government recipients and for non-repayable grants, for which no (granular) debt statistics exist.

- **Missing information and different levels of granularity:** Splicing data from different eras and different sources inevitably creates inconsistencies in the level of granularity at which the final data is available. Certain sub-samples of the data are not available at the transaction

level, but are aggregated to dyadic annual aggregates (i.e., we know the creditor country, the debtor country, the total amount and the commitment year, but do not have a break-down of individual transactions). This is the case for data sourced from the World Bank International Debt Statistics and partly also for lending during the two World Wars.

- **Inconsistencies in definitions over the very long run:** When constructing a 200-year database of international capital flows by splicing data from multiple sources, inconsistencies are inevitable. For example, and as explained in greater detail below, our long-run time series of debts owed to official creditors mix general government debt series with series that are based on broader public sector debt definitions. Inconsistencies between different data sources can also result from the application of different exchange rates. To avoid this issue, we code all amounts in the original currency of denomination whenever possible and then apply uniform exchange rates across all observations (see details in subsection C below).

Robustness: We rely on two distinct strategies to deal with these potential data issues. Whenever possible, we collect data from multiple sources and compare lending volumes and terms (step 4 of the coding approach described above; see Section B.5 for selected examples). Whenever conflicting information cannot be reconciled, we confirm through robustness tests that none of the discrepancies alter our main conclusions. Secondly, we repeat parts of the empirical analysis in a smaller data sample that only includes the subset of creditor, debtor countries and years, for which highly comprehensive and fully harmonized data exists (see for example Appendix Section A.3). All conclusions derived from the full data set are confirmed in the smaller, more recent sample.

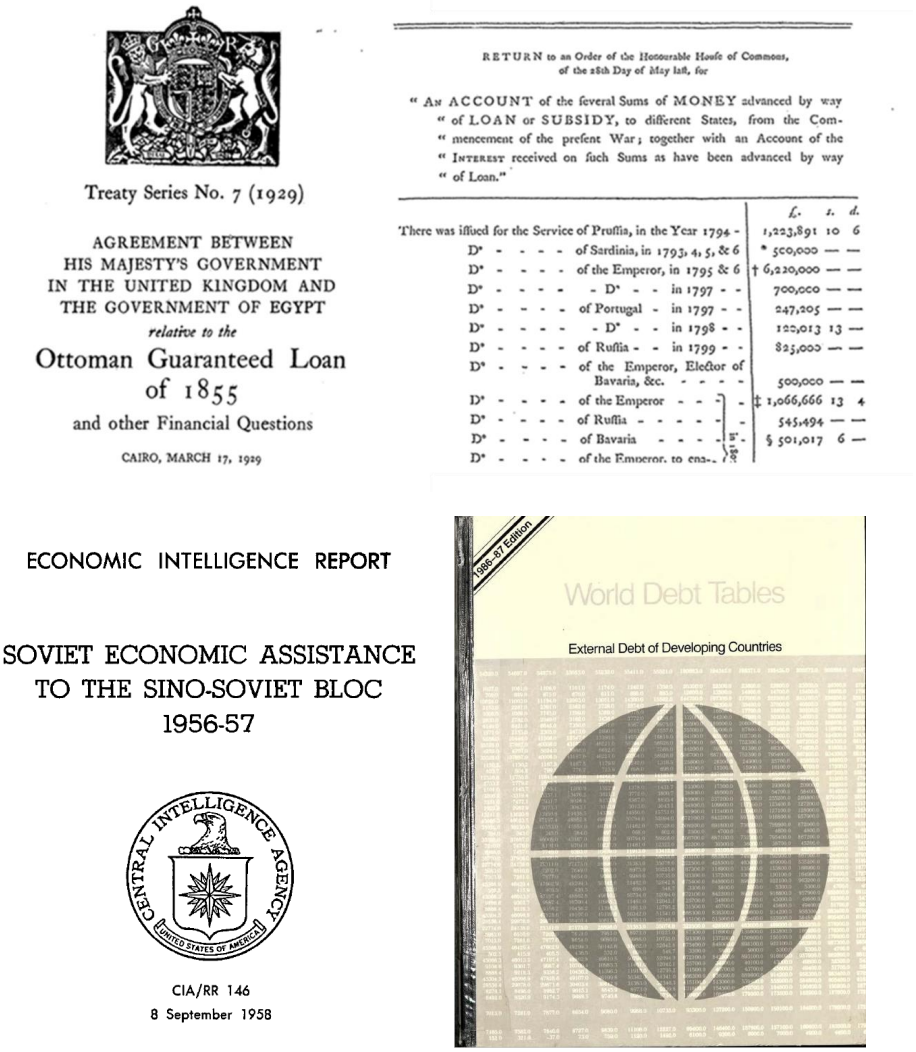
B.3 Sources for official loans, grants and guarantees (flows)

This subsection presents the sources that we use to compile transaction-level data on official loans, grants and guarantees. We proceed in chronological order and divide the sample into the four main eras: (i) The long 19th century (1790 to WW1), (ii) the Inter-War Period, (iii) the post-WW2 and Bretton Woods era and the (iv) the modern era (1970 - 2020). Additional creditor-specific sources that have been used for more than one historic era are listed separately by creditor country and organization (v).

B.3.1 The Long 19th century (1790-1913)

Our data set for the 19th century is mainly based on international treaty series. We search all available treaty collections for bilateral credit and subsidy agreements and code all available information on these financial transactions. The resulting data set therefore consists of loan-level information on loans, grants and guarantees extended by the United Kingdom, France, Germany, Italy, Russia, Austria-Hungary as well as various smaller states. We supplement this series with information from investor manuals, statistical year books and country-specific resources, in particular budget plans and national accounts. For lending by central banks, we have made use of existing research on central bank

Figure B15: Illustration of historical sources



Treaty Series No. 7 (1929)

AGREEMENT BETWEEN
HIS MAJESTY'S GOVERNMENT
IN THE UNITED KINGDOM AND
THE GOVERNMENT OF EGYPT
relative to the
Ottoman Guaranteed Loan
of 1855
and other Financial Questions

CAIRO, MARCH 17, 1929

RETURN to an Order of the Honourable House of Commons, of the 28th Day of May last, for

" An ACCOUNT of the several Sums of MONEY advanced by way " of LOAN or SUBSIDY, to different States, from the Com- " mencement of the present War; together with an Account of the " INTEREST received on such Sums as have been advanced by way " of Loan."

	£.	s.	d.
There was issued for the Service of Prussia, in the Year 1794 -	1,223,891	10	6
D° - - - - - of Sardinia, in 1793, 4, 5, & 6	* 500,000	—	—
D° - - - - - of the Emperor, in 1795 & 6	† 6,220,000	—	—
D° - - - - - - D° - - in 1797 - -	700,000	—	—
D° - - - - - of Portugal - in 1797 - -	247,205	—	—
D° - - - - - - D° - - in 1798 - -	122,013	13	—
D° - - - - - of Russia - - in 1799 - -	825,000	—	—
D° - - - - - of the Emperor, Elector of Bavaria, &c. - - - - -	500,000	—	—
D° - - - - - of the Emperor - - - -	‡ 1,066,666	13	4
D° - - - - - of Russia - - - - - -	545,494	—	—
D° - - - - - of Bavaria - - - - -	§ 501,017	6	—
D° - - - - - of the Emperor, to end-			

ECONOMIC INTELLIGENCE REPORT

SOVIET ECONOMIC ASSISTANCE
TO THE SINO-SOVIET BLOC
1956-57

CENTRAL INTELLIGENCE AGENCY
UNITED STATES OF AMERICA

CIA/RR 146
8 September 1958

1996–97 Edition
World Debt Tables
External Debt of Developing Countries

Notes: This figure illustrates the different types of historical sources that we use to construct the official international lending database: International treaties, creditor and debtor budget reports, reports by national agencies (e.g., by the CIA), and debt data collected by the World Bank and other international organizations.

cooperation during the 19th century and on archival research at the Bank of England and the Banque de France.

General Treaty Series

Bevans, Charles. Various Years. *Treaties and Other International Agreements of the United States of America.* Washington D.C.: Department of State.

De Martens, Georg Frederic. Various Years. *Recueil Des Principaux Traites d'Alliance, de Paix, de Treve, de Neutralite, de Commerce, de Limites, d'Echange et des plusieurs autres actes servant a*

la connaissance des relations etranges des puissances et etats de l'Europe. Gottingue: Libraire de Dieterich.

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B.3.2 The Inter-War Period (1914-1945)

Official lending surged with the onset of WW1 and its immediate aftermath. Debts owed to official creditors remained high throughout the 1920s and 1930s. This phenomenon was documented in policy reports by official institutions, in investor manuals and in the writings of contemporaneous observers. Our time-series splices together all these sources and supplements them with credit agreements from

international treaty series and creditor country budget plans. For central banks, we again make use of annual reports, existing academic work and archival research.

Treaty Series, Annual Reports and Statistical Compendia

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B.3.3 The Post-War Period (1946-1970)

Our collection of post-WW2 loans and grants builds on a large number of published and unpublished reports by the BIS, the IBRD, Moody's, the OEEC (renamed to OECD in 1961) and the UN. All of the reports listed in the following are available in the on-site or digital archives of these institutions. For ongoing data collection on cross-border central bank lending, we make use of the secondary literature and archival research at the Federal Reserve and the BIS.

Main Sources

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B.3.4 The Modern Period (1970-2020)

From 1970 onward data on official lending has been systematically collected by international organizations such as the World Bank and the OECD. Our database brings together data on official grants from the OECD's Creditor Reporting System (CRS) and the database compiled by Tierney et al. (2011) with data on official loans from the World Bank's debtor reporting system (DRS). In several instances, we complement these data sources with additional transaction-level data from annual reports of creditors, in particular for those creditor countries that do not voluntarily disclose their lending activities through the OECD's Creditor Reporting System. Lending by regional financial arrangements is taken from creditor organization annual reports and websites as well as from the database provided by Scheubel and Stracca (2019). For central bank lending, our collection of loans stems from central bank annual reports and from existing academic research.

This subsection provides details on how we extract all relevant information from these different data sources and how we alter the data to ensure consistent application of our official lending definition.

World Bank International Debt Statistics (IDS)

The World Bank's International Debt Statistics provide debtor reported data on outstanding public and publicly guaranteed debt stocks and lending for around 120 countries since 1970. Data is available at the dyadic level and by creditor type. This allows to extract both bilateral and multilateral lending, aggregated to the creditor-debtor-year level. More specifically, we make use of bilateral and multilateral commitment (series codes "DT.COM.OFFT.CD") and disbursement data (series codes "DT.DIS.BLAT.CD"). We also use the IDS to extract data on loan terms, including the interest rate (series code "DT.INR.OFFT"), the grace period ("DT.GPA.OFFT") and the time to maturity ("DT.MAT.OFFT").

To increase country and year coverage, we do not just extract data from the most recent release of the data, but also draw on earlier vintages of the World Bank's debt statistics, including the Global Development Finance reports and the World Debt Tables (using data collected by Horn et al. (2024)).

OECD Creditor Reporting System (CRS) and AidData Core Research Release

The World Bank's IDS only captures debt stocks and debt-creating flows and thereby does not contain information on (non-repayable) grant financing. To collect transaction-level grant data, we therefore draw on multiple additional sources. Our starting point is the database compiled by Tierney et al. (2011) (AidData Core Research Release Version 3.1), which covers grants from 46 different bilateral donor countries and 45 international organizations until 2014. The key source for this database is the OECD's Creditor Reporting System, which tracks creditor-reported data on official development assistance (ODA) and on other official flows (OOF). We can therefore draw on the latest releases of the OECD's CRS data to update overall coverage of bilateral and multilateral cross-border grant provision until 2020.

To integrate data from the OECD Creditor Reporting System and from AidData, several transformations are necessary to ensure the consistent application of our definitions of official sovereign lending. Both databases seek to identify development assistance and aid activities rather than official cross-border lending. In addition to tracking cross-border financial flows, these database therefore also include certain types of in-country expenditures that donor countries consider aid activities. These include, for example, administrative expenses, expenditures for asylum seekers or the provision of scholarships to students from developing countries. We drop such instances from our data. We also exclude all cases of debt relief (see B.1).

To avoid double-counting, we further drop all transactions that are classified as ODA loans or OOF loans from the OECD CRS data after confirming that the same transactions are already covered through data from the World Bank International Debt Statistics.[22] We also drop bilateral contributions to multilateral organizations, which would lead to double-counting of total official lending flows when bilateral and multilateral flows are aggregated.

B.3.5 Additional creditor-specific sources

Several creditor countries and multiple multilateral creditor organizations publish public accounts of their international lending activities at various levels of detail. For other creditors, detailed academic research exists that has documented lending activities. These accounts are not limited to one specific era, although the availability of creditor statistics has increased over time. The sources listed below have served a dual purpose for the construction of our database. (i) For those creditors, which are not well covered by the datasets from international organizations described above (e.g. the countries of the Soviet Bloc or China), these sources allow to complement our data and fill potential reporting gaps (see e.g., Horn et al., 2021, for a discussion of China's overseas lending). (ii) For those creditors, which are well covered by international organizations, in particular the members of the OECD Development Assistance Committee that voluntarily report to OECD's Creditor Reporting System, country-specific sources provide useful opportunities to cross-check and validate the our data construction and merging process. To this end, appendix subsection B.5 provides the results from selected validation checks.

Bilateral creditors

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B.4 Scope of the International Official Lending Database

This subsection summarizes the scope of the International Official Lending Database. Our final database covers around 1.1 million official lending transactions with total commitment amounts of 17.6 trillion constant USD.

The large majority of lending transactions is provided in the form of grants (90 percent), but the overall amounts of grant financing (20 percent) are much smaller than the amounts provided in the form of loans (80 percent). This in part reflects the smaller average lending amount of grants but is also due to different levels of granularity at which underlying sources report loans and grants. The OECD Creditor Reporting System, which is our main source for grant finance, for example, encourages creditors to report grant transactions at the project level, whereas loans are reported in more aggregate form in most of the underlying sources.

Official lending in our database is provided in roughly equal parts by bilateral and by multilateral creditors, although the average transaction size is much smaller for bilateral creditors, resulting in a larger number of observations. As explained in the main text, the large majority of transactions has been extended after WW2 and in particular since the 1970s. The strong increase in available transactions after the breakdown of the Bretton Woods System in 1973 reflects not just an increase in the magnitude and incidence of cross-border (official) lending but also the availability of more granular official lending records.

Tables B8 and B9 provide more detailed breakdowns of the transactions in our database for bilateral and multilateral lending respectively. Table B8 shows the total number of bilateral lending transactions that each country in our sample has received and extended over the course of the past 200 years. Table B9 focuses on multilateral lending and shows the number of extended grants and loans for each of the 69 multilateral lending entities covered in our dataset.

Table B8: Coverage of Bilateral Lending Transactions by Country

	Official lending transactions	
Country	Extended	Received
Afghanistan	0	20967
Albania	0	9855
Algeria	59	6485
Angola	17	9858
Antigua and Barbuda	0	618
Argentina	89	10874
Armenia	3	6841
Australia	44121	50

Table B8: Coverage of Bilateral Lending Transactions by Country

	Official lending transactions	
Country	Extended	Received
Austria	22983	244
Austria-Hungary	1	3
Austrian Empire	4	12
Azerbaijan	23	5634
Baden	0	2
Bahamas, The	1	156
Bahrain	1	434
Bangladesh	0	20356
Barbados	4	457
Bavaria	0	1
Belarus	4	5313
Belgium	47232	150
Belize	1	1609
Benin	0	10412
Bhutan	0	3480
Bolivia	1	23047
Bosnia and Herzegovina	2	14410
Botswana	0	4342
Brazil	142	22272
Brunei	3	94
Bulgaria	134	1782
Burkina Faso	0	17169
Burundi	1	9188
Cabo Verde	3	5488
Cambodia	0	20174
Cameroon	2	12038
Canada	53249	22
Central African Republic	0	4292
Chad	0	6768
Chile	3	8798
China	6947	24231
Colombia	7	21226
Comoros	0	1597
Congo, Dem. Rep.	3	22598
Congo, Rep.	5	3710
Cook Islands	0	1001
Costa Rica	11	6412
Cote d'Ivoire	7	8069
Crete	0	1

Table B8: Coverage of Bilateral Lending Transactions by Country

	Official lending transactions	
Country	Extended	Received
Croatia	560	2825
Cuba	16	9008
Cyprus	171	352
Czech Republic	4755	1053
Czechoslovakia	261	77
Denmark	12780	69
Djibouti	0	3089
Dominica	0	944
Dominican Republic	0	9851
Ecuador	1	16875
Egypt	13	15781
El Salvador	2	14002
Equatorial Guinea	3	1915
Eritrea	0	3284
Estonia	1260	1032
Ethiopia	0	30416
Fiji	0	5135
Finland	16556	99
France	106113	179
Gabon	2	2846
Gambia, The	1	3033
Georgia	0	10600
German States	2	2
Germany	129954	156
Germany, Dem. Rep.	191	13
Ghana	2	14510
Greece	8150	423
Grenada	0	730
Guatemala	5	19170
Guinea	0	6407
Guinea-Bissau	0	4452
Guyana	1	2145
Haiti	0	14907
Hanover	0	10
Hesse Cassel	0	9
Hesse D'Armstadt	0	4
Honduras	4	12457
Hong Kong SAR	3	2
Hungary	1609	1190

Table B8: Coverage of Bilateral Lending Transactions by Country

	Official lending transactions	
Country	Extended	Received
Iceland	529	80
India	330	33587
Indonesia	3	27750
Iran	16	4389
Iraq	64	16482
Ireland	27242	14
Israel	33	1626
Italy	54225	220
Jamaica	0	4608
Japan	187332	161
Jordan	0	11217
Kazakhstan	34	6805
Kenya	2	28079
Kiribati	0	2178
Korea, Dem. Rep.	0	2082
Korea, Rep.	66375	914
Kosovo	0	6501
Kuwait	1211	113
Kyrgyz Republic	1	8131
Laos	0	13859
Latvia	318	1039
Lebanon	1	11509
Lesotho	0	4195
Liberia	0	7107
Libya	96	2861
Liechtenstein	0	2
Lithuania	1306	973
Luxembourg	14732	3
Macedonia, FYR	1	7242
Madagascar	0	11399
Malawi	0	13472
Malaya	1	11
Malaysia	16	6791
Maldives	0	1866
Mali	0	17047
Malta	0	307
Marshall Islands	0	1615
Mauritania	0	6055
Mauritius	1	2114

Table B8: Coverage of Bilateral Lending Transactions by Country

	Official lending transactions	
Country	Extended	Received
Mexico	83	14672
Micronesia, Fed. Sts.	0	2051
Moldova	0	8351
Mongolia	0	11795
Montenegro	0	2641
Morocco	8	20815
Mozambique	0	25117
Myanmar	0	16396
Namibia	0	6715
Naples	0	1
Nauru	0	778
Nepal	0	18361
Netherlands	35926	132
New Zealand	6810	15
Nicaragua	0	20069
Niger	0	10653
Nigeria	10	12423
Norway	61937	85
Oman	3	710
Ottoman Empire	1	4
Pakistan	14	17686
Palau	0	1443
Panama	2	4562
Papua New Guinea	0	7073
Paraguay	0	8487
Persia	23	287
Peru	12	27358
Philippines	0	22773
Poland	3809	1847
Portugal	11321	224
Qatar	78	106
Romania	1106	2437
Russia	85	4952
Russian Empire	11	29
Rwanda	0	14803
Samoa	0	3429
Sao Tome and Principe	0	2450
Saudi Arabia	1324	522
Saxony	1	1

Table B8: Coverage of Bilateral Lending Transactions by Country

	Official lending transactions	
Country	Extended	Received
Senegal	0	20960
Serbia	5	8870
Serbia and Montenegro, FRY	0	6319
Serbia, Kingdom	0	12
Seychelles	0	1249
Sierra Leone	0	6665
Singapore	7	443
Slovakia	2037	938
Slovenia	884	511
Solomon Islands	0	4171
Somalia	0	8478
South Africa	79	19718
South Sudan	0	6068
Soviet Union	808	44
Spain	118365	257
Sri Lanka	0	15951
St. Kitts and Nevis	0	305
St. Lucia	0	1116
St. Vincent and the Grenadines	1	755
Sudan	0	15332
Suriname	0	1644
Swaziland	0	2663
Sweden	48245	24
Switzerland	46940	8
Syria	0	9093
Taiwan	15	433
Tajikistan	0	6742
Tanzania	3	27813
Thailand	113	13650
Timor-Leste	10	6553
Togo	3	6225
Tonga	0	3042
Transvaal	0	2
Trinidad and Tobago	18	730
Tunisia	8	11309
Turkey	6122	9391
Turkmenistan	2	2360
Tuvalu	0	390
Two Sicilies	0	9

Table B8: Coverage of Bilateral Lending Transactions by Country

	Official lending transactions	
Country	Extended	Received
USA	249208	2
Uganda	0	24271
Ukraine	0	16282
United Arab Emirates	2609	150
United Kingdom	59719	145
Uruguay	3	4512
Uzbekistan	2	7771
Vanuatu	0	3850
Venezuela	273	5575
Vietnam	4	29517
Vietnam, South	0	118
Yemen, Arab Rep.	0	542
Yemen, Kingdom	0	11
Yemen, People's Rep.	0	56
Yemen, Rep.	0	7306
Yugoslavia	94	288
Zambia	2	16368
Zimbabwe	1	14271

Notes: This table shows the number of bilateral lending transactions by country. Column 2 gives the number of official loans and grants that a given country has extend to other countries, whereas column 3 gives the number official loans and grants that a given country has received from other countries. Multilateral lending is not taken into account.

Table B9: Coverage of Multilateral Creditor Institutions

Creditor Entity	N	First year	Last year
African Capacity Building Foundation (ACBF)	101	1999	2008
African Development Bank (AFDB)	2191	1967	2020
African Development Fund (AFDF)	3604	1974	2020
African Export-Import Bank	14	2010	2020
Andean Development Corporation (CAF)	1639	1970	2020
Arab Bank for Development in Africa (BADEA)	1204	1974	2020
Arab Fund for Economic & Social Development	1314	1974	2020
Arab League	6	1974	1975
Arab Monetary Fund (AMF)	193	1978	2020
Asian Development Bank (ASDB)	11540	1968	2020
Asian Development Fund (ASDF)	1451	1968	2013
Asian Infrastructure Investment Bank (AIIB)	117	2016	2020
Bank for International Settlements (BIS)	62	1931	1995
Black Sea Trade & Development Bank (BSTDB)	8	2020	2020
Caribbean Development Bank (CDB)	1140	1971	2020
Central Bank of West African States (BCEAO)	13	1980	2016
Central Emergency Response Fund (UN CERF)	1538	2017	2020
Climate Investment Funds (CIF)	469	2012	2019
Council of Europe Development Bank	366	2010	2020
ECO Trade and Dev. Bank	10	2009	2020
EUROFIMA	10	1990	2010
Economic Community of West African States	99	1973	2020
Entente Council	39	1972	1997
Eurasian Development Bank (EDB)	14	2010	2020
Eurasian Fund for Stabilization and Development	22	2010	2020
European Bank for Reconstruction & Development	5966	1991	2020
European Coal and Steel Community (ECSC)	7	1978	1984
European Community (EC)	32546	1969	2020
European Financial Stability Facility (EFSF)	2	2011	2012
European Financial Stability Mechanism (EFSM)	2	2011	2015
European Investment Bank (EIB)	23953	1959	2020
European Monetary Fund (EMF)	38	1959	1972
European Payments Union (EPU)	5	1950	1958
European Stability Mechanism (ESM)	3	2012	2015
EU BOP Facility	7	1991	2013
EU Common Loan Mechanism	4	1976	1976
EU Macro-Financial Assistance Facility	92	1990	2020
EU Medium-Term Financial Assistance Facility	4	1974	1985
Fondo Latino Americano de Reservas (FLAR)	50	1978	2018
Food and Agriculture Organisation (FA0)	1285	2016	2019

Global Environment Facility (GEF)	4990	1991	2020
Global Fund to Fight Aids, Tuberculosis and Malaria	2085	2002	2020
Global Green Growth Institute (GGGI)	269	2013	2020
Green Climate Fund (GCF)	693	2015	2020
Inter-American Development Bank (IADB)	10612	1961	2020
IBRD (World Bank)	8432	1947	2022
IDA (World Bank)	9354	1961	2022
International Fund for Agricultural Development	2120	1978	2020
International Labour Organisation (ILO)	12452	2012	2020
International Monetary Fund (IMF)	1421	1952	2021
Islamic Development Bank (ISDB)	3848	1976	2020
Joint UN Programme on HIV/AIDS (UNAIDS)	8748	2001	2019
League of Nations	14	1923	1934
Fund for Implementation of Montreal Protocol	36	1992	2009
Nordic Development Fund (NDF)	264	1989	2020
Nordic Investment Bank (NIB)	96	1979	2015
North American Development Bank (NADB)	384	1996	2011
OPEC Fund for International Development (OFID)	2849	1976	2020
Organization for Security and Cooperation (OSCE)	731	2010	2020
Plata Basin Financial Dev. Fund (FONPLATA)	58	1979	2020
Trade and Development Bank (TBD)	12	1991	2020
United Nations Children's Fund (UNICEF)	71124	2000	2020
United Nations Development Programme (UNDP)	43756	1999	2020
United Nations Peacebuilding Fund (UNPBF)	1401	2007	2020
United Nations Population Fund (UNFPA)	38957	2001	2020
West African Development Bank (BOAD)	213	1977	2020
World Food Programme (WFP)	730	2019	2020
World Health Organization (WHO)	25054	2011	2020
World Trade Organization (WTO)	69	2020	2020

Notes: This table shows the number of multilateral lending transactions by multilateral creditor entity. Column 2 gives the number of official loans and grants that a given entity has extended, Column 3 and 4 show the first and the latest year with a transaction in our database.

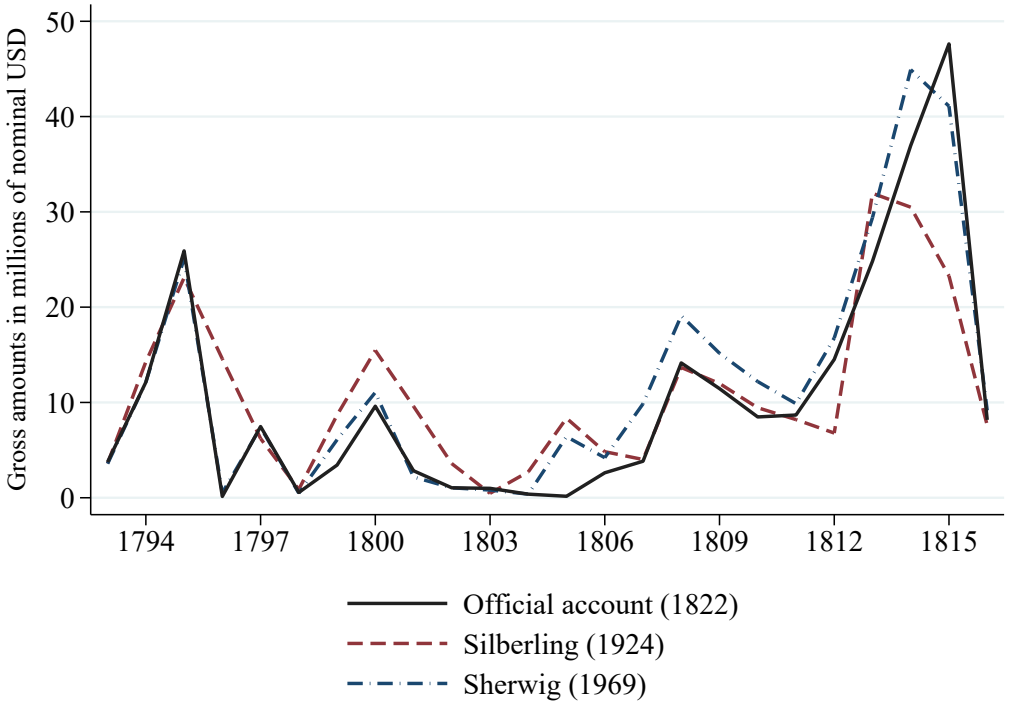
B.5 Selected data validation and robustness tests

An inevitable issue in the construction of long-run time series from different sources is the need to reconcile conflicting information across different sources. As part of our data collection strategy and as described above, we make use of different primary and secondary sources to cross-check our data collection for completeness and accuracy and to identify and fill potential coverage gaps. This subsection illustrates this procedure by presenting selected comparison and benchmarking exercises.

B.5.1 War Lending during the French Revolutionary and Napoleonic Wars, 1793-1816

Britain's foreign military aid to its Continental allies during the military campaigns against France has been documented in several historic accounts. Figure B16 illustrates measurement differences in the total annual provision of loans and subsidies across three of these accounts.

Figure B16: British foreign military aid, 1793 to 1816



Note: This figure shows gross official commitments through grants, loans and guarantees during the French Revolutionary and the Napoleonic Wars according to different academic and official sources.

The black solid line represents the official account as published by the House of Parliament in 1822, whereas the red and blue dashed lines show the measurement attempts by economic historians Silberling (1924) and Sherwig (1969) more than one century later. A close examination of the different sources reveals the most important reasons for the existing discrepancies: in addition to differences in the used exchange rates, Sherwig (1969) argues on the basis of comprehensive archival research

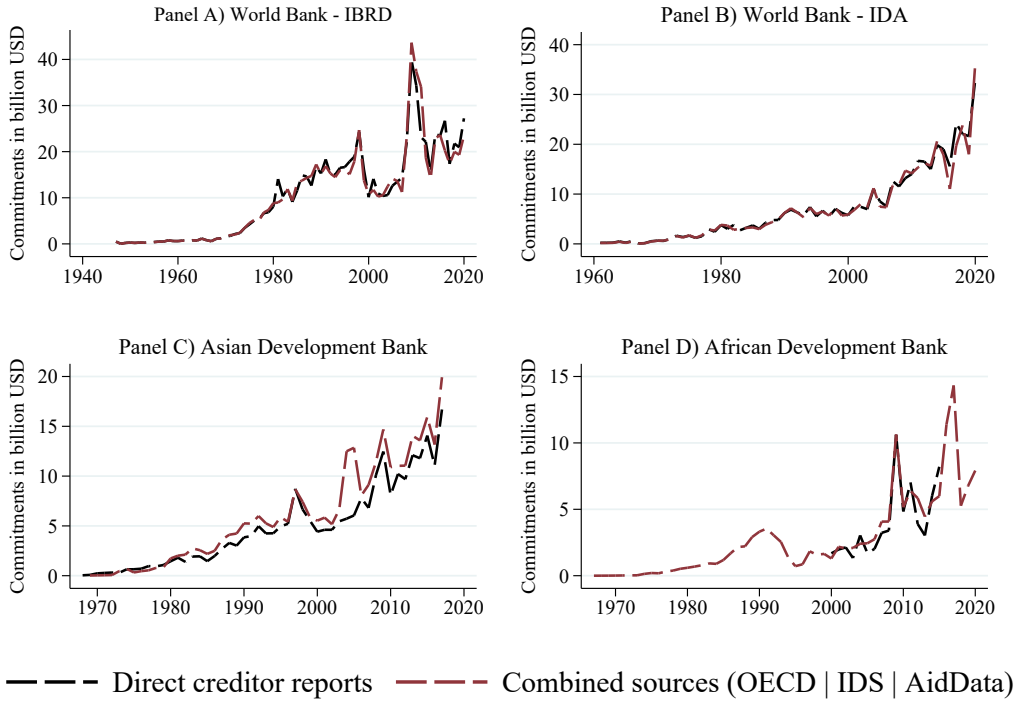
that the British government paid additional subsidies to foreign allies without obtaining parliamentary approval. Such lending, often financed through Secret Service funds, is omitted from the official parliamentary account that was published in 1822. Rather than relying on the official account, our own data compilation therefore closely follows the numbers compiled by Sherwig (1969). Most importantly, perhaps, the comparison of these sources shows that while discrepancies are sizeable in some years, the overall magnitude of lending is highly similar across the different sources. Indeed, we can confirm that all of the conclusions drawn in the paper are robust to using any of the three time series.

B.5.2 Multilateral development lending, 1970-2020

For selected creditor entities and starting from around 1970, there exist multiple primary of secondary data sources that allow to quantify official lending volumes. As described above, our preferred approach combines data on loans reported by debtor countries (in particular through the World Bank's IDS) with data on grants from the OECD Creditor Reporting System and existing academic research (Tierney et al., 2011). In addition, several development lenders disseminate detailed creditor statistics through their own websites and annual reports, for example the World Bank or regional development banks such as the Asian Development Bank or the African Development Bank. These additional creditor-reported sources allow to test our preferred approach for its accuracy and completeness. Figure B17 illustrates the corresponding comparison and confirms that both approaches yield highly similar time series.[23]

[23] Minor differences between the series can be caused by the use of different exchange rates and by different definitions of fiscal years, among other factors.

Figure B17: Multilateral development lending, 1970 to 2020



Note: This figure shows gross official commitments through grants, loans and guarantees by different multilateral creditors that publish sufficiently detailed lending data to allow for comparison with other sources. All series are given in billions of nominal USD.

B.5.3 Bilateral lending

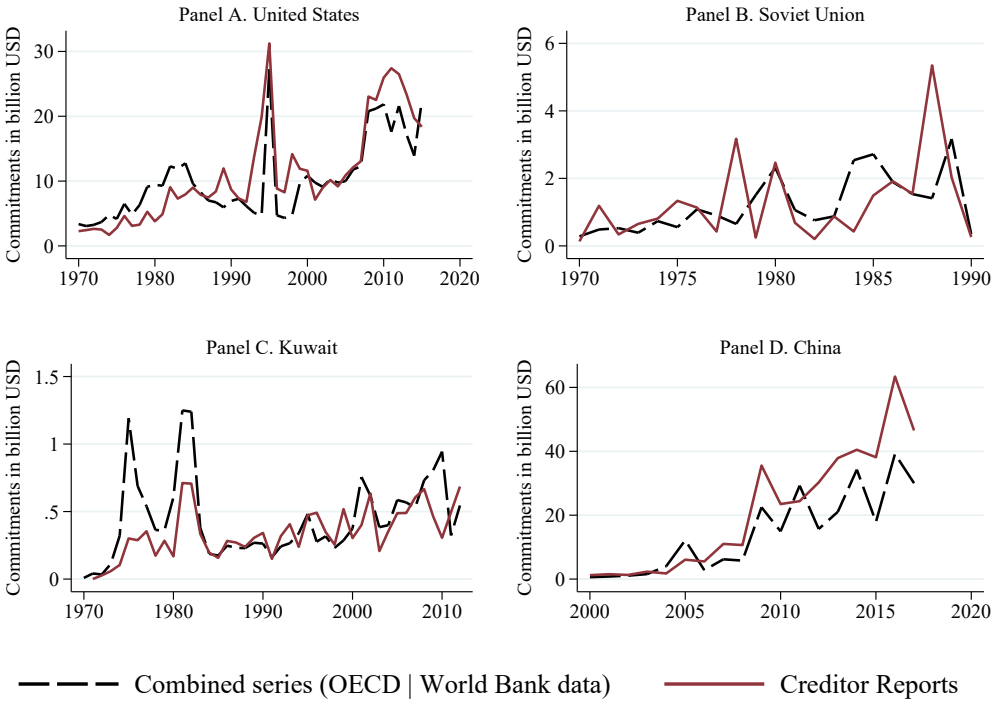
Similar comparison exercises can be carried out for a limited number of bilateral lenders. Again, our preferred approach of data collection is to combine data on loans reported by debtor countries through the World Bank International Debt Statistics with data on grants from the OECD Creditor Reporting System and existing academic research (Tierney et al., 2011). For several creditor countries, the resulting time series can be compared with direct creditor statistics and existing research by academic researchers or intelligence agencies.

For US bilateral lending, for example, there exist comprehensive creditor statistics published by US AID (the so-called GreenBook of Overseas Loans and Grants) and the US Treasury. Similarly, the Kuwaiti Government publishes detailed records of the overseas lending activities of its Kuwait Fund for Arab Economic Development. For countries of the Sino-Soviet Bloc and for China, official lending activities have been tracked by the US Central Intelligence Agency (CIA) and by academic researchers, e.g., by AidData.

Figure B18 shows the corresponding comparisons. In each panel, the alternative data series give highly similar orders of magnitude and highly correlated dynamics over time. This is in particular the case for the US and Kuwait that publish transparent debtor statistics. For those creditors that do not

disseminate official creditor statistics, such as China or the Soviet Union, larger discrepancies exist between debtor reported transactions and the reports of third parties. These discrepancies primarily reflect the incentives of debtor countries to under-report their external borrowing and debt stocks (see e.g. Horn et al. (2021) or Horn et al. (2024)). In such cases, and as described in Section B.2 above, we consult secondary sources to fill coverage gaps and to reconcile differences. We also confirm that none of our results are sensitive to the use of alternative data sources.

Figure B18: Bilateral lending, 1970 to 2020



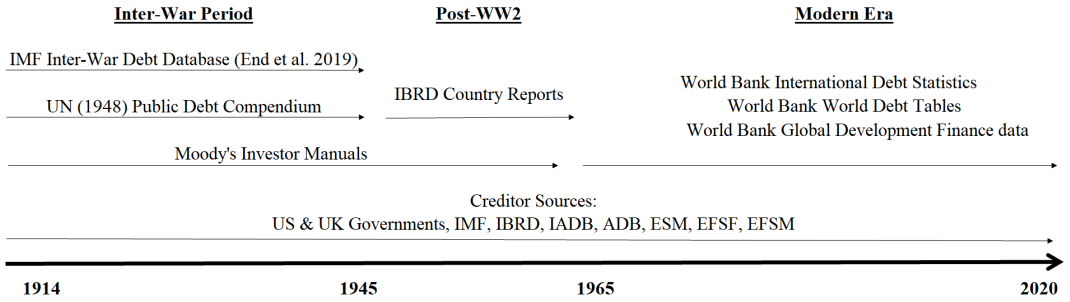
Note: This figure shows gross official commitments through grants, loans and guarantees by different bilateral creditors for which alternative data sources exist. Each panel compares a combined data series from the OECD Creditor Reporting System, and the World Bank Debtor Reporting System (red dashed line) with a creditor-specific alternative (black dashed line). Panel A depicts data from the US Greenbook and Treasury. Panel B shows data from the CIA's review of Communist Aid to developing countries. Panel C shows data published on the website of the Kuwait Fund for Arab Development and Panel D shows data collected by the AidData research lab. To make the series within each panel comparable we only show lending to recipient countries that are included in both data sources. All series are given in billions of nominal USD.

B.6 Sources for debt owed to official creditors (stocks)

Our data collection approach for the compilation of official debt *stock* data closely follows the approach outlined for official debt *flow* data above. Collecting data on outstanding debt stocks, however, is significantly more challenging given that a single lending transaction (commitment) translates into multiple years of outstanding debt, which needs to be quantified and tracked. For this reason and due to a lack of systematic data sources, we generally try to collect official debt stocks at the debtor country - year level instead of compiling loan-level data as we do for flows.

As for official lending *flows*, our database on outstanding debt *stocks* is spliced from hundreds of different data sources. While there exist several long-run datasets on total external sovereign debt stocks, none of them provides a systematic break-down into debts owed to official and private creditors (see for example Barrot (2023) or Abbas et al. (2010) for reviews of existing long-run sovereign debt datasets). The one notable exception is the World Bank's International Debt Statistics but this source is available only from 1970 onward and only covers developing and emerging market countries. For all other debtor countries and for all other decades, information on outstanding official debt stocks needs to be compiled from different historical reports and statistical compendia. This appendix subsection gives an overview of the sources used in the construction of official debt stocks and discusses data construction, coverage and the limitations of our approach. Figure B19 sets the stage by providing a stylized summary of the sources. As in the previous subsection, we proceed by introducing each source chronologically, starting with the early 20th century.

Figure B19: Sources used to construct the database of official debt stocks, 1910 - 2020



Note: This figure provides a stylized overview of the different primary and secondary sources that we use to quantify external public debt owed to official and private creditors.

B.6.1 The Inter-War Period (1914-1945)

For the early sample period, we quantify external debt owed to official and private creditors by aggregating granular loan-level data obtained from historic debt reports (Moody's Investor Manual, UN public debt compendium) and from existing academic research (End et al., 2019) as follows:

- **The Inter-War Debt Database by End et al. (2019):** Our preferred source for debt stocks disbursed and outstanding in the inter-war period is the excellent compilation of external

and domestic public liabilities by End et al. (2019). This source provides outstanding debt amounts at the instrument-year level for 18 mostly advanced debtor countries. We match this source with our own data collection on official lending transactions to identify all instruments in the database that are either extended or guaranteed by official creditors and then use the information on outstanding amounts to estimate outstanding debt stocks to official creditors at the debtor country-year level.

- **The United Nations' public debt compendium 1914 - 1946:** The UN compendium contains instrument-level data for 52 developing and advanced countries on both domestic and foreign debt and We use this source to supplement the information from End et al. (2019) for additional countries. As before, we use our own data collection on official lending transactions to identify all debt instruments that are either extended or guaranteed by foreign governments and aggregate the corresponding amounts outstanding to the debtor country-year level.

- **Moody's Manual of Investments:** The Moody's Manuals contain instrument-level data on domestic and external public debt liabilities and amounts outstanding for a large number of countries from WW1 to the 1970s. The manual was published annually and different vintages can be combined to create time series of outstanding debt at the instrument level. For the large majority of transactions, the manuals provide detailed information on the creditor entity and therefore allow to distinguish between official and private lending transactions. Systematic comparisons between our own data collection of official lending transactions and the Moody's Investment Manuals, however, suggest that coverage of debt to official creditors is incomplete, in particular for the post-WW2 era. When using this source, we therefore complement the information obtained from the Manuals with additional information from creditor sources (see below).

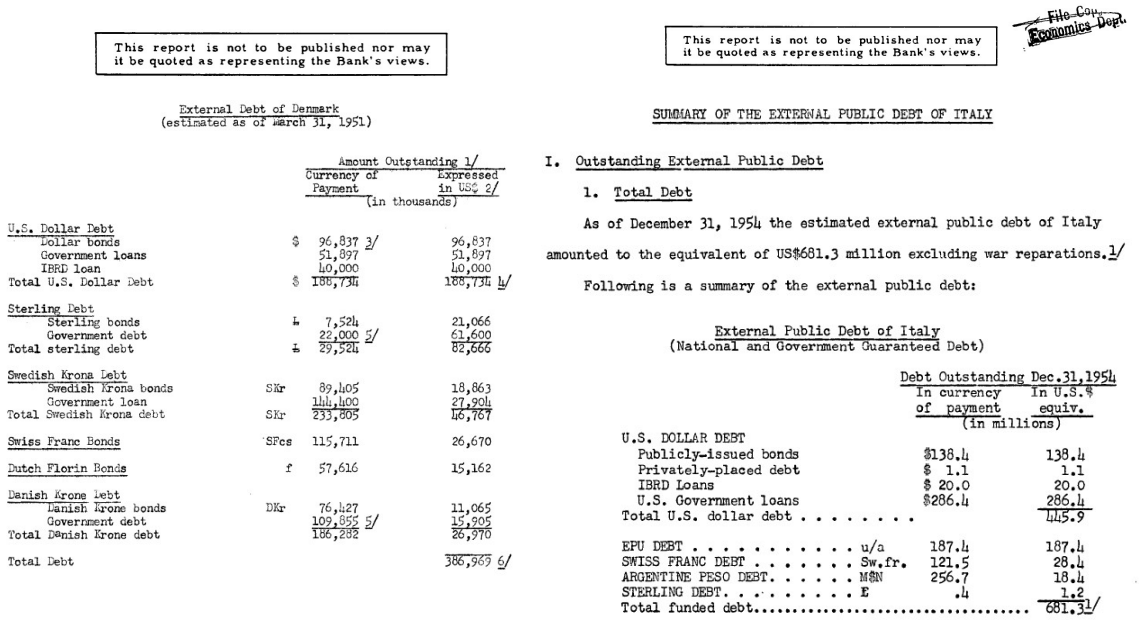
B.6.2 The Post-War Period (1946-1970)

To quantify the debt stocks to official creditors in the post-war period, we rely on the Moody's Investor Manuals described above and on a wide range of creditor sources described below. In addition, we consult a series of country-specific debt reports compiled by World Bank economists.

World Bank External Debt Reports and World Debt Tables: Between 1945 and 1970, World Bank economists compiled a series of around four dozen statistical reports that quantified and analyzed the external public debt position of advanced and developing countries. These reports were confidential at the time and intended for internal use only, but today are available through the Bank's digital and onsite archives. These reports later formed the basis for the World Bank's International Debt Statistics, our main source for developing country debt stocks during the past 50 years (see below). A key advantage of this source in comparison to other debt statistics for the 1950s and 1960s is that the reports provide detailed breakdowns of external public sector debt by creditor type and thus allow to identify the amount and share of debt owed to bilateral and multilateral creditors. Figure B20 illustrates the informational content and presentation of debt data in these reports by showing exemplary reports for the external debt of Italy and Denmark. We compile the full set of available reports from the World Bank archives and use the information to create an unbalanced panel dataset

of external debt to bilateral, multilateral and private external creditors for 102 countries during the period 1947 to 1970.

Figure B20: IBRD External Debt Reports - Illustration



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External Debt of Denmark
(estimated as of March 31, 1951)

		Amount Outstanding 1/ Currency of Payment	Expressed in US$ 2/
		(in thousands)	
U.S. Dollar Debt			
Dollar bonds	$	96,837 3/	96,837
Government loans		51,897	51,897
IBRD loan		40,000	40,000
Total U.S. Dollar Debt	$	188,734	188,734 4/
Sterling Debt			
Sterling bonds	£	7,524	21,066
Government debt		22,000 5/	61,600
Total sterling debt	£	29,524	82,666
Swedish Krona Debt			
Swedish Krona bonds	SKr	89,405	18,863
Government loan		144,400	27,904
Total Swedish Krona debt	SKr	233,805	46,767
Swiss Franc Bonds	SFcs	115,711	26,670
Dutch Florin Bonds	f	57,616	15,162
Danish Krone Debt			
Danish Krone bonds	DKr	76,427	11,065
Government debt		109,855 5/	15,905
Total Danish Krone debt		186,282	26,970
Total Debt			386,969 6/

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SUMMARY OF THE EXTERNAL PUBLIC DEBT OF ITALY

I. Outstanding External Public Debt

1. Total Debt

As of December 31, 1954 the estimated external public debt of Italy amounted to the equivalent of US$681.3 million excluding war reparations.1/

Following is a summary of the external public debt:

External Public Debt of Italy
(National and Government Guaranteed Debt)

		Debt Outstanding Dec.31,1954 In currency of payment	In U.S.$ equiv.
		(in millions)	
U.S. DOLLAR DEBT			
Publicly-issued bonds		$138.4	138.4
Privately-placed debt		$ 1.1	1.1
IBRD Loans		$ 20.0	20.0
U.S. Government loans		$286.4	286.4
Total U.S. dollar debt			445.9
EPU DEBT	u/a	187.4	187.4
SWISS FRANC DEBT	Sw.fr.	121.5	28.4
ARGENTINE PESO DEBT	M$N	256.7	18.4
STERLING DEBT	£	.4	1.2
Total funded debt			681.3 1/

Note: This figure shows excerpts from IBRD External Debt Reports for Denmark in 1951 and Italy in 1955 to illustrate the content and presentation of debt data in this source.

While these reports are the most systematic source for granular external debt data the during post-WW2 period, they come with two conceptual drawbacks that limit their consistency with sources from other eras. First, the aggregates in the reports often include undisbursed debt. While this does not lead to systematic biases in the relative shares of official and private debt, it may inflate aggregate debt stocks in comparison to the inter-war and the modern period. Second, reports were not published annually or according to a regular schedule and therefore only provide us with snapshots in different years for different countries. To account for these drawbacks, we cross-check, complement and correct the information from these sources by consulting other sources, in particular the Moody's Investor Manuals and the creditor statistics listed below.

Specifically, we make use of the following editions of the World Bank's country reports:

Andersen, Svend, and James Lynch. 1949. Summary Review of the External Debt of the United Kingdom. Report No. E 67A. Washington D.C.: International Bank for Reconstruction and Development.

Andersen, Svend, James Lynch, and William Pollock. 1949. The External Debt of Ecuador. Report No. E 66. Washington D.C.: International Bank for Reconstruction and Development.

Andersen, Svend, Martin Rosen, and Alexander Stevenson. 1947. Possibility of Foreign Lending by Countries other than the U.S. in the immediate Future. Report No. ERM 82. Washington D.C.: International Bank for Reconstruction and Development.

Beaufort, Carel de. 1953. Summary of the External Debt of Japan. Report No. EC 14. Washington D.C.: International Bank for Reconstruction and Development.

Beaufort, Carel de. 1953. Summary of the External Debt of West Germany. Report No. EC 18. Washington D.C.: International Bank for Reconstruction and Development.

Fraser, William. 1951. The History and Present Position of the External Debt of the Dominican Republic. Report No. E 137. Washington D.C.: International Bank for Reconstruction and Development.

Fraser, William. 1951. The External Debt of the Kingdom of Denmark. Report No. E 147e. Washington D.C.: International Bank for Reconstruction and Development.

Gaiola, Nicola. 1955. Summary of the External Public Debt of Peru. Report No. EC 46. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1950. Public External Debt of the Belgium and Luxembourg. Report No. E 105. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1950. Preliminary Survey of the External Debt of France. Report No. E 90. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1950. Public External Debt of Ethiopia. Report No. E 107. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1950. Public External Debt of Indonesia. Report No. E 119. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1950. Preliminary Review of The External Debt of Iceland. Report No. E 126. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1950. Public External Debt of Ceylon. Report No. E 129. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1950. The External Debt of Costa Rica. Report No. E 130. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1951. Public External Debt of the Belgian Congo. Report No. E 154. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1951. Review of the External Debt of Iceland. Report No. E 170. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1952. The External Debt of Nicaragua. Report No. E 224. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1952. Summary of the External Debt of Thailand. Report No. EC 1. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1952. Public External Debt of Luxembourg. Report No. EC 4. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1954. The Public External Debt of Austria. Report No. EC 26. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1954. The External Debt of Ethiopia. Report No. EC 27. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1954. External Public Debt of Greece. Report No. EC 28. Washington D.C.: International Bank for Reconstruction and Development.

Huang, Andrew. 1954. The Long-Term Public External Debt of Belgium and the Belgian Congo. Report No. EC 34. Washington D.C.: International Bank for Reconstruction and Development.

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B.6.3 The Modern Period (1970-2020)

Our primary source for debt stocks between 1970 and 2020 is the World Bank's International Debt Statistics (IDS) Database, which contains a balanced sample of 121 countries. This database has the key advantage of providing outstanding external debt stocks by creditor type and therefore allows

for direct identification of debt owed to official creditors. More specifically, in the IDS, public and publicly guaranteed external debt stocks are disaggregated into debt to bilateral creditors, multilateral creditors and private creditors (which equals the sum of debt to bondholders, commercial bank and suppliers). This source therefore gives us a readily available panel dataset of external debt to official and private creditors for 120 countries and for 50 years.

To further maximize country coverage, we do not only draw data from the latest vintage of the IDS, but also consult past vintages that contain data for additional debtor countries, in particular for several of today's advanced countries that borrowed heavily from the World Bank until the 1980s. These countries were required to report their external debt stocks as long as they had outstanding liabilities to the World Bank, but stopped reporting after having fully repaid their World Bank debt. External debt data from historic IDS vintages is taken from Horn et al. (2024) and allows to increase country coverage from 120 countries in the current version of the IDS to a total of 149 countries. Table B10 provides a list of the additional countries and of their first and final reporting year.

Table B10: Reporting countries added from historic vintages of the IDS

Reporting country	First year	Final year
Bahamas	1970	1988
Bahrain	1972	1979
Barbados	1970	2005
Chile	1970	2011
Croatia	1970	2007
Cyprus	1970	1991
Czech Republic	1970	2004
Equatorial Guinea	1970	2006
Estonia	1970	2005
Greece	1970	1988
Hungary	1970	2013
Iraq	1971	1981
Israel	1970	1987
Latvia	1970	2011
Lithuania	1970	2011
Malaysia	1970	2016
Malta	1970	2001
North Korea	1970	1987
Oman	1970	2006
Poland	1970	2008
Portugal	1970	1993
Saint Kitts and Nevis	1970	2010
Seychelles	1970	2013
Singapore	1970	1987
Slovak Republic	1970	2006
Slovenia	1970	1996

South Korea	1970	2001
Soviet Union	1970	1991
Spain	1971	1980
Taiwan	1973	1979
Trinidad and Tobago	1970	2005
Uruguay	1970	2011
Yemen Arab Republic	1970	1989
Yemen, People's Republic of	1970	1989

Notes: This table shows countries for which external debt data can be drawn from historic vintages of the IDS. The second and third column show the first and final reporting year. Data for these countries is obtained from digitized historic vintages collected by Horn et al. (2024).

B.6.4 Creditor Sources

For the reasons described above, we use creditor sources for the entire 100-year sample period to cross-check and complement the information obtained from debtor sources, international organizations and statistical compendia. We focus our efforts on the most important creditor entities and on those countries and years, where the above described source provide only partial coverage. Here we provide an overview of the sources by creditor entity and how we use them:

IMF: Debt to the International Monetary Fund is not included in the external debt stocks reported by the World Bank International Debt Statistics. We therefore use the IMF International Financial Statistics (IFS) to add this information. This data source spans all years between 1946 and 2020 and covers IMF claims on member countries both from GRA and from trust financed lending programs. Specifically, we make use of variable "Fund Accounts, UFC & Loans in US Dollars".

World Bank: For outstanding World Bank claims, we draw data from IBRD Annual Reports. For today's developing countries this data is readily available from the World Bank's International Debt Statistics for all years 1970 to 2020, so we focus our efforts on years 1947 to 1969, for which other sources only provide an incomplete picture. This source is also highly valuable for today's advanced countries which do not report their external debt to the World Bank IDS. Today's advanced countries were the most important debtors of the IBRD after it lent large amounts for the reconstruction of Europe following World War II and the annual reports of the IBRD allow to quantify the resulting official debts that often took until the 1980s to be fully repaid.

United States: For the largest part of the 20^{th} century, the US was the single most important bilateral creditor to both developing and advanced countries. We obtain information on the foreign indebtedness to the US Government and its various lending agencies from the following sources:

- Annual Report of the Secretary of the Treasury on the State of the Finance, 1915 - 1945
- National Advisory Council on International Monetary and Financial Policies: Semi-Annual Report to the President and to the Congress, 1946 - 1995
- U.S. Foreign Credit Reporting System - Amounts Due to the U.S. Government, 1996 to 2020

United Kingdom: We use creditor statistics for bilateral debt to the UK for the Inter-War period, when the UK was a key creditor to the countries of Continental Europe, and use this information to cross-check and supplement the data we obtain from the Inter-War data sources described above. Data for the UK is taken from the *Statement of all Loans by the British Government*, as published in the Finance Accounts of the United Kingdom of Great Britain and Ireland, 1920 to 1945.

Euro Zone creditor institutions: For the governments of Cyprus, Greece, Ireland, Portugal and Spain, the new regional financial creditor institutions set up in response to the Euro Zone debt crisis became the most important official creditors. Since these countries do not report their indebtedness to the World Bank International Debt Statistics, we again rely on creditor sources to measure official debt to these institutions. Outstanding debt stocks to the ESM and the EFSF are readily available from the websites of these institutions.

B.6.5 Data on external public debt to private creditors

In several applications we are interested not just in outstanding debt to official creditors but in comparing dynamics and magnitudes with outstanding debt to private creditors. In order to quantify debt owed to private creditors, we follow two distinct procedures:

1. Our preferred approach is to construct debt stocks owed to private creditors in the exact same way as we construct debt to official creditors. That is, we aggregate granular, loan-level debt stocks from End et al. (2019), the UN Compendium of Public Debt and from the Moody's Investor Manual for the Inter-War Period and use World Bank debt reports and the International Debt Statistics starting from World War II. This approach gives us external public debt stocks to private creditors for X percent of or debt stock observations.

2. For some debtor countries and years (X percent of observations), our data collection of official debt stocks relies heavily on creditor sources and it is therefore not feasible to replicate the data collection for external debt to private creditors from the same sources. In these instances, we derive external public debt owed to private creditors as a residual by subtracting external public debt owed to official creditors from the total external public debt stock of a country.

B.6.6 Data on total external public debt

Data on total external public debt serves two functions in our data collection. For those sources, where we can extract both debt to official and to private creditor entities, we use data on total external public debt to compare and benchmark our external debt aggregates. For those countries, where we are only able to build series on debt to official creditor entities, we use total external public debt data to derive debt stocks to private creditors as a residual.

We use two different data sources to measure total external government and public sector debt. First, we make use of the Debt Database compiled by Reinhart and Rogoff (2009). This covers the total external general government debt for 70 countries since 1800. Second, we use the Debt of Nations

database compiled by Barrot (2023). This database covers a shorter time span and only commences in 1900 but has the advantage of covering a larger cross-section of 130 countries and of providing data series not just on general government but also on external public sector debt.

B.6.7 Scope of official debt stock data and data limitations

Once data from all the individual sources is collected and cleaned, we merge the individual data sources into a long-run panel dataset of external public debt stocks by creditor type. Table B11 summarizes the resulting country and time coverage and Figures B21, B22 and B23 illustrate some of the long-run time series for advanced, emerging and low-income countries.

Table B11: Sample coverage for external public debt stocks by creditor type

Debtor Country	First year	Final year	Gaps?
Afghanistan	2006	2020	0
Albania	1926	2020	0
Algeria	1970	2020	0
Angola	1989	2020	0
Argentina	1920	2020	0
Armenia	1993	2020	0
Australia	1914	2020	1
Azerbaijan	1993	2020	0
Bangladesh	1972	2020	0
Belarus	1993	2020	0
Belgium	1920	2020	1
Belize	1981	2020	0
Benin	1970	2020	0
Bhutan	1981	2020	0
Bolivia	1920	2020	0
Bosnia and Herzegovina	1999	2020	0
Botswana	1966	2020	0
Brazil	1920	2020	0
Bulgaria	1981	2020	0
Burkina Faso	1970	2020	0
Burundi	1970	2020	0
Cabo Verde	1981	2020	0
Cambodia	1981	2020	0
Cameroon	1970	2020	0
Canada	1920	2020	1
Central African Republic	1968	2020	0
Chad	1968	2020	0
Chile	1920	2011	0
China	1981	2020	0

Table B11: Sample coverage for external public debt stocks by creditor type

Debtor Country	First year	Final year	Gaps?
Colombia	1922	2020	0
Comoros	1976	2020	0
Congo, Dem. Rep.	1970	2020	0
Congo, Rep.	1970	2020	0
Costa Rica	1921	2020	0
Cote d'Ivoire	1970	2020	0
Cuba	1915	1958	0
Cyprus	1965	2020	1
Denmark	1917	2020	1
Djibouti	1977	2020	0
Dominica	1981	2020	0
Dominican Republic	1965	2020	0
Ecuador	1920	2020	0
Egypt	1920	2020	0
El Salvador	1923	2020	0
Eritrea	1994	2020	0
Ethiopia	1965	2020	0
Fiji	1971	2020	0
Finland	1918	2020	1
France	1914	2020	1
Gabon	1965	2020	0
Gambia, The	1970	2020	0
Georgia	1992	2020	0
Ghana	1970	2020	0
Greece	1928	2020	1
Grenada	1975	2020	0
Guatemala	1921	2020	0
Guinea	1970	2020	0
Guinea-Bissau	1975	2020	0
Guyana	1966	2020	0
Haiti	1970	2020	0
Honduras	1920	2020	0
Iceland	1950	2020	1
India	1967	2020	0
Indonesia	1967	2020	0
Iran	1980	2020	0
Ireland	1949	2020	1
Israel	1960	2020	1
Italy	1917	2020	1
Jamaica	1965	2020	0

Table B11: Sample coverage for external public debt stocks by creditor type

Debtor Country	First year	Final year	Gaps?
Jordan	1965	2020	0
Kazakhstan	1992	2020	0
Kenya	1965	2020	0
Korea, Rep.	1965	2020	1
Kyrgyz Republic	1992	2020	0
Laos	1970	2020	0
Lebanon	1970	2020	0
Lesotho	1967	2020	0
Liberia	1965	2020	0
Macedonia, FYR	1993	2020	0
Madagascar	1970	2020	0
Malawi	1967	2020	0
Malaysia	1967	2016	0
Maldives	1978	2020	0
Mali	1967	2020	0
Mauritania	1967	2020	0
Mexico	1920	2020	0
Moldova	1992	2020	0
Mongolia	1992	2020	0
Montenegro	2007	2020	0
Morocco	1965	2020	0
Mozambique	1984	2020	0
Myanmar	1970	2020	0
Nepal	1970	2020	0
Netherlands	1920	2020	1
Nicaragua	1915	2020	0
Niger	1968	2020	0
Nigeria	1965	2020	0
Norway	1913	2020	1
Pakistan	1965	2020	0
Papua New Guinea	1975	2020	0
Paraguay	1965	2020	0
Persia	1917	1945	0
Peru	1920	2020	0
Philippines	1965	2020	0
Portugal	1914	2020	1
Russia	1992	2020	0
Rwanda	1967	2020	0
Samoa	1970	2020	0
Sao Tome and Principe	1977	2020	0

Table B11: Sample coverage for external public debt stocks by creditor type

Debtor Country	First year	Final year	Gaps?
Senegal	1965	2020	0
Serbia	2007	2020	0
Serbia and Montenegro, FRY	1993	2006	0
Sierra Leone	1965	2020	0
Solomon Islands	1979	2020	0
South Africa	1994	2020	0
Spain	1914	2020	1
Sri Lanka	1972	2020	0
St. Lucia	1981	2020	0
St. Vincent and the Grenadines	1980	2020	0
Sudan	1965	2020	0
Sweden	1949	2020	1
Tajikistan	1992	2020	0
Tanzania	1965	2020	0
Thailand	1965	2020	0
Togo	1968	2020	0
Tonga	1985	2020	0
Tunisia	1965	2020	0
Turkey	1966	2020	0
Turkmenistan	1993	2020	0
USA	1948	2020	1
Uganda	1965	2020	0
Ukraine	1992	2020	0
United Kingdom	1915	2020	1
Uzbekistan	1992	2020	0
Vanuatu	1981	2020	0
Venezuela	1965	2020	0
Vietnam	1981	2020	0
Yemen, Arab Rep.	1971	1990	0
Yemen, Rep.	1991	2020	0
Yugoslavia	1965	1992	0
Zambia	1965	2020	0
Zimbabwe	1970	2020	0

Notes: This table shows all debtor countries and years for which we have collected external public debt data by creditor type.

Combining data from multiple historic sources to create long-run series inevitably comes with the consistency challenges given that different historic sources rely on different methodological approaches

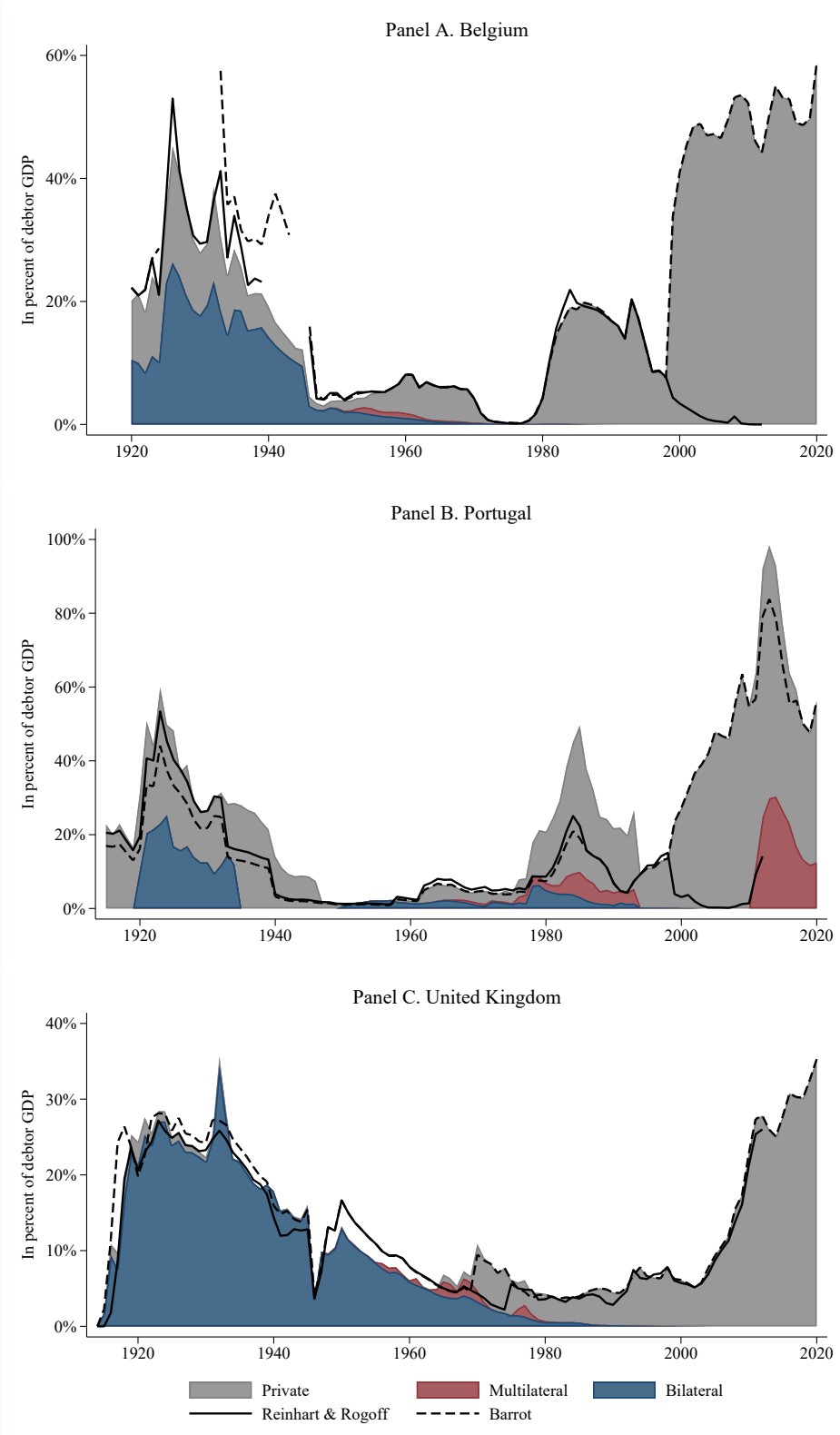
and have different underlying definitions of what constitutes external public debt. Here, we flag two important limitations of our long-run series and discuss how we ensure robustness of our core results.

- **Institutional coverage of debt:** Given that the core of our database is constructed from the World Bank's International Debt Statistics database and its predecessor reports, the majority of observations in our debt stock data set measure *public and publicly guaranteed external debt.*[24] When we draw data from other sources, we therefore target public sector debt coverage whenever possible. For historic periods, however, external debt tends to be reported at the general or central government level, e.g. in the UN public debt compendia or in the statistical reports of the League of Nations. And when debt is compiled from loan-level data, e.g. from the Moody's Investor Manual or from creditor sources, coverage may be difficult to ascertain altogether.
- **Discrepancies between debtor and creditor sources:** Discrepancies also emerge when combining data from debtor and creditor reported sources and may reflect incentives of debtor countries to under-report their liabilities as well as measurement error resulting from limited statistical and institutional capacity of debtor countries (see for example Horn et al., 2024).

The potential discrepancies across time and across sources that result from these inconsistencies are wide-spread issues in the construction of long-run data series on sovereign debt (also see Reinhart and Rogoff, 2009; Abbas et al., 2010; Barrot, 2023, for discussions). To assess the potential implications of these issues, we again follow the data validation steps outlined in Sections B.1 and B.5 above. First, we compare data across sources and try to fill gaps and reconcile information whenever possible. Where discrepancies persist, we ensure that our main results are robust to using different data sources. In the context, we further emphasize that different extents of institutional debt coverage only affect the absolute magnitude of debt to official and private creditors but not their relative shares, on which our analysis in Section 4.1 is based.

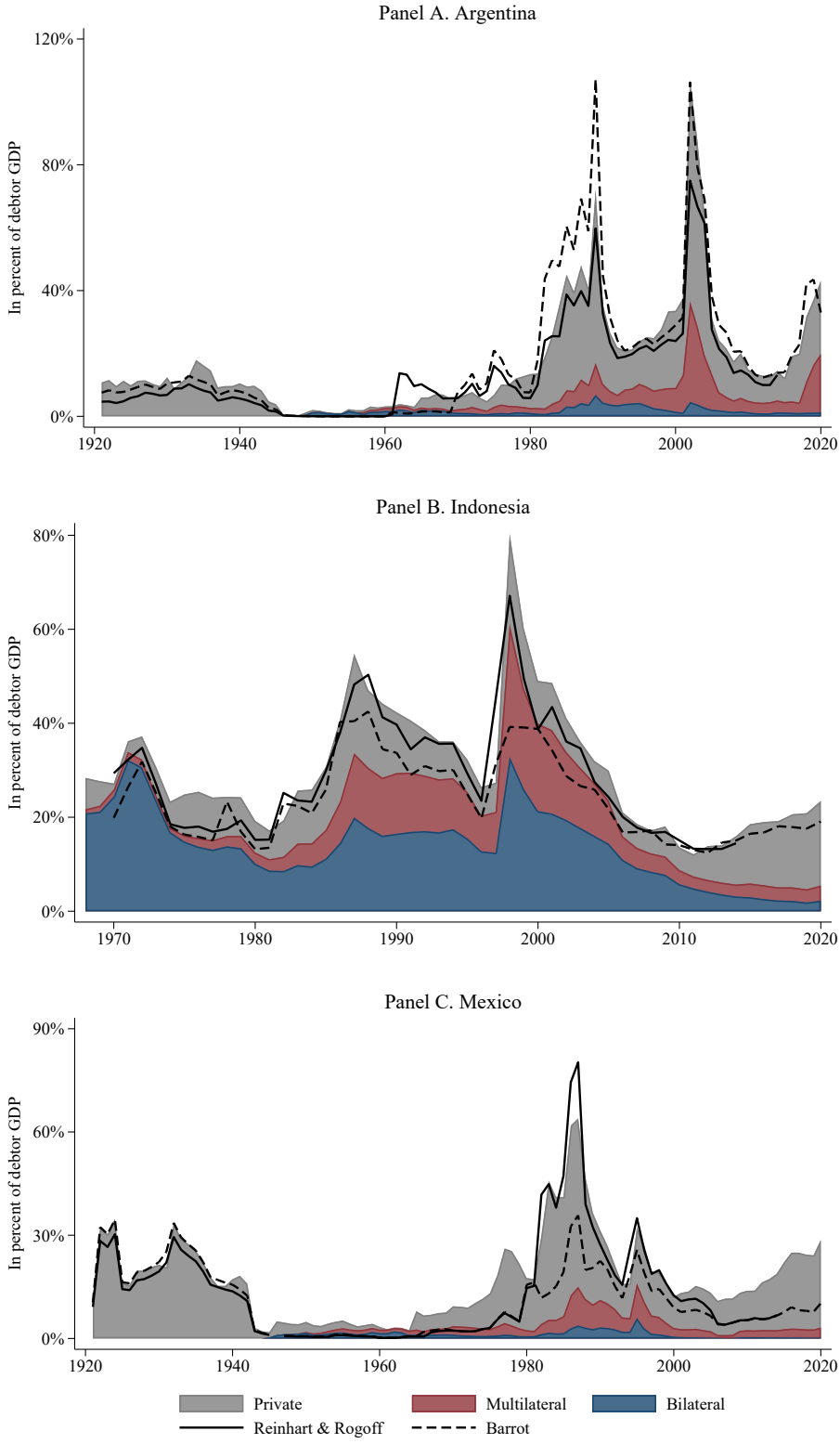
[24] Public and publicly guaranteed debt includes general government debt plus all liabilities of the public sector, i.e., liabilities of state-owned corporations, and private liabilities guaranteed by the government.

Figure B21: External public debt stock composition in selected advanced economies



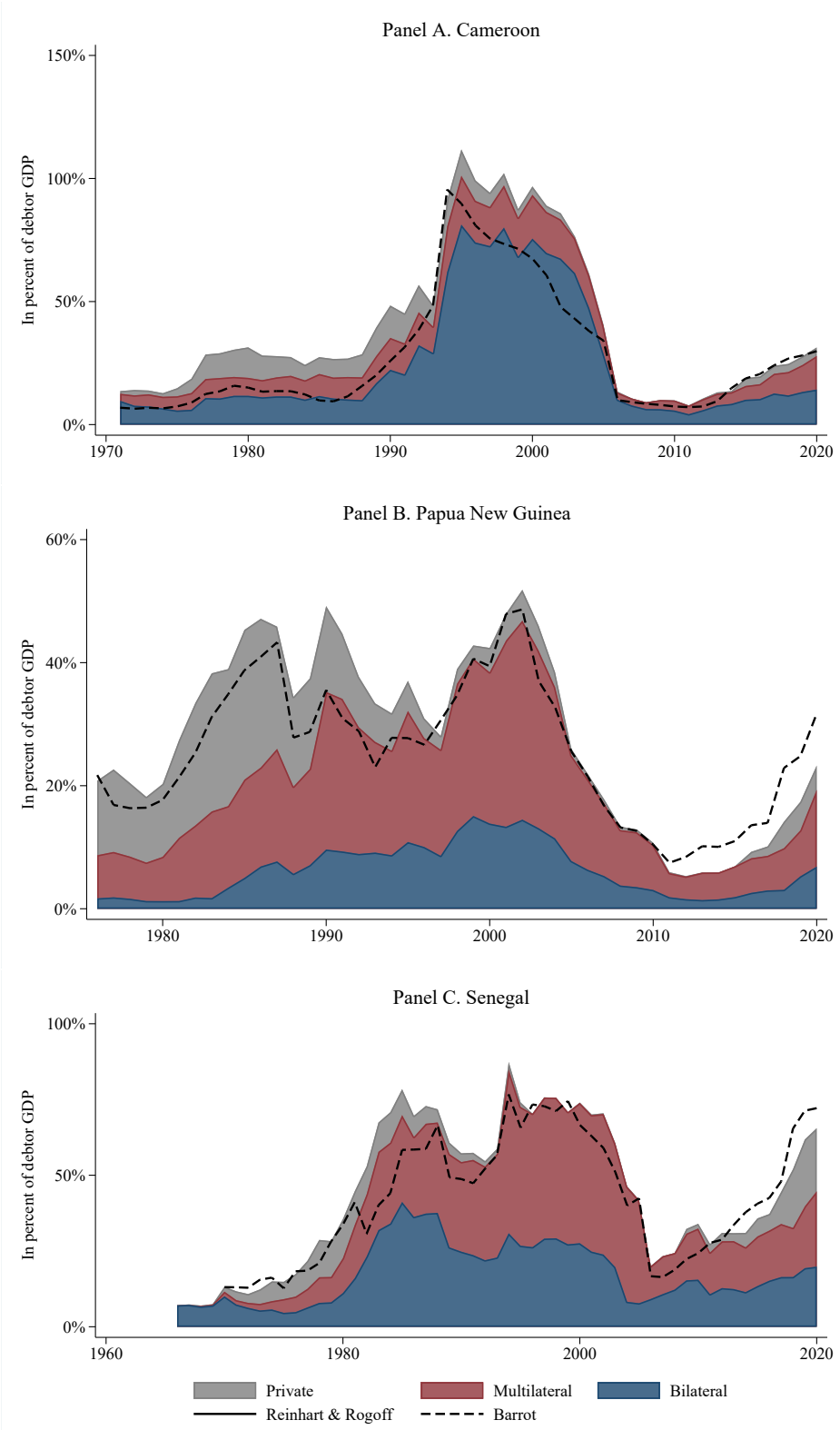
Notes: This figure shows the decomposition of external public debt in percent of debtor GDP for selected advance economies. Blue, red and grey shaded arrears show aggregate debt to bilateral, multilateral and private external creditors according to our data collection. The black solid and dashed lines present total external public debt stocks from Barrot (2023) and Reinhart and Rogoff (2009) and are shown as benchmarks.

Figure B22: External public debt stock composition in selected EMs



Notes: This figure shows the decomposition of external public debt in percent of debtor GDP for selected emerging market economies. Blue, red and grey shaded arrears show aggregate debt to bilateral, multilateral and private external creditors according to our data collection. The black solid and dashed lines present total external public debt stocks from Barrot (2023) and Reinhart and Rogoff (2009) and are shown as benchmarks.

Figure B23: External public debt stock composition in selected low-income countries



Notes: This figure shows the decomposition of external public debt in percent of debtor GDP for selected low-income countries. Blue, red and grey shaded arrears show aggregate debt to bilateral, multilateral and private external creditors according to our data collection. The black solid and dashed lines present total external public debt stocks from Barrot (2023) and Reinhart and Rogoff (2009) and are shown as benchmarks.

C Identifying and dating wars and financial crises, 1790-2020

This appendix section describes how we define and compile data on inter-state wars and financial crises over the course of our 200-year sample horizon.

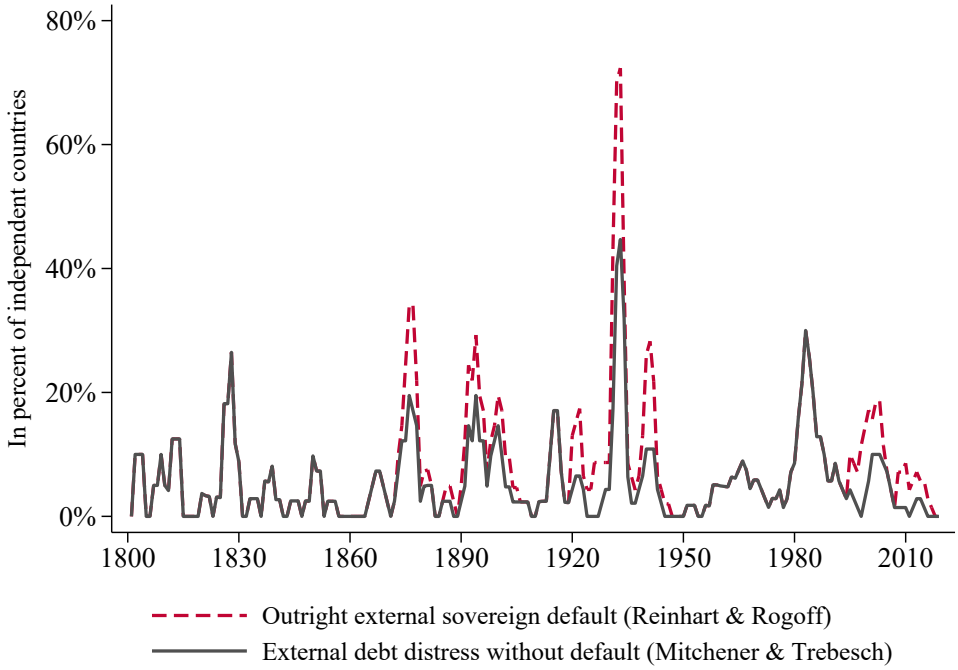
C.1 External sovereign debt crises

In line with the literature, our identification of external sovereign debt crises rests on two distinct criteria. First, we consider cases of outright default, i.e., missed principal and interest payments on external creditors, as measured by Reinhart and Rogoff (2009) and updated by Meyer et al. (2022). In addition, we also consider episodes of severe sovereign debt distress, measured by sharp and strong increases in sovereign bond spreads (Krishnamurthy and Muir, 2017; Aguiar et al., 2016). Specifically, we use data from Mitchener and Trebesch (2023) for 30 developing and advanced countries since 1830. Mitchener and Trebesch (2023) define a "spread crisis" if one of the following two criteria is fulfilled: (i) the sovereign bond spread of a country over US Treasuries surpasses 1000 bps. in a given quarter, (ii) the speed of a spread increase is at least in the 99^{th} percentile of quarterly spread increases. So called "spread crisis" without default have become much more prevalent over time and have come to constitute an important share of sovereign debt distress events (Mitchener and Trebesch, 2023).

While the onset of external sovereign debt crisis is thereby clearly defined, in a large number of cases the resolution of distress is much harder to date and can drag on for decades until a final resolution with creditors is reached (Reinhart and Rogoff, 2009). Of course, it is hardly credible to characterize such long default spells as disaster events and therefore seems implausible to expect persistent international support throughout such a long spell. In our main analysis, we therefore follow Reinhart and Rogoff (2009) and focus on the first three years after the onset of the default. In robustness tests presented in Appendix Section A.3, we show that none of the main conclusions of the paper is sensitive to this duration assumption.

Figure C24 shows the resulting incidence figure and plots the share of independent countries in external sovereign debt distress episodes since 1800 according to our combined default and spread crisis measure.

Figure C24: 200 years of external sovereign debt distress



Note: This figure shows the share of countries in an external sovereign debt distress episodes. Data is from Mitchener and Trebesch (2023), Reinhart and Rogoff (2009) and from Meyer et al. (2022). Distress episodes are assumed to last for three years.

Global financial crises: In Section 4.2, we focus our analysis on global financial crisis as defined by Reinhart and Rogoff (2009) which are considered among the most synchronous and costly crisis events. Global financial crises are distinguished from more idiosyncratic and less virulent crises by four criteria:

1. At least one global financial center is mired in a severe crisis.
2. The crisis involves two or more distinct regions.
3. The number of countries in crisis in each region is three or greater.
4. The composite GDP-weighted crisis index developed by Reinhart and Rogoff (2009) is at least one standard deviation above normal.

By this definition, global financial crisis include the Crisis of 1825, the Panic of 1907, the Great Depression of 1929, the Debt Crisis of the 1980s, the Asian Crisis of 1997 and the Global Contraction of 2008 with the subsequent Eurozone Debt Crisis.

C.2 Inter-state War

Identifying and dating inter-state wars: Our starting point for the identification and dating of inter-state wars is the widely used Correlates of War database, which defines inter-state wars as episodes of sustained combat between two or more territorial states that are members of the international state system that involve organized armed forces and that result in a minimum of 1000 battle-related fatalities over the course of a 12 months period (Sarkees and Wayman, 2010).[25] In the CoW database, war begins with the onset of sustained military combat and ends with the cessation of sustained military combat. Formal declarations of war and armistice agreements are only used as the beginning and end dates of war if they coincide with the beginning and end of military combat. Data on inter-state military conflicts is available from the Correlates of War Project since 1816 and until 2006.

As the coding of inter- and intra-state military conflicts does not cover the early 19$^{\text{th}}$ century and in particular the Napoleonic Wars, we extend coverage back to 1790 and update the data to 2020.

- For the late 18$^{\text{th}}$ and the early 19$^{\text{th}}$ century we rely on the Conflict Catalogue compiled by Brecke (1999). Similar to the Correlates of War database, conflict in Brecke (1999) begins and ends with the onset and conclusion of military action. In contrast to the CoW database, however, the Conflict Catalogue lists all instances of violent conflicts with more than 32 fatalities. To ensure consistency across the sample, we therefore only include those inter-state conflicts from this source where we find evidence of a minimum of 1000 battle-related fatalities over the course of a 12 month period.
- To update the dataset to 2020, we rely on the data collected by the Uppsala Conflict Data Program (UCDP) (Davies et al., 2023). To align the definition of war with the other sources, we again only focus on conflicts with a minimum of 1000 battle-related fatalities over the course of a 12 month period.

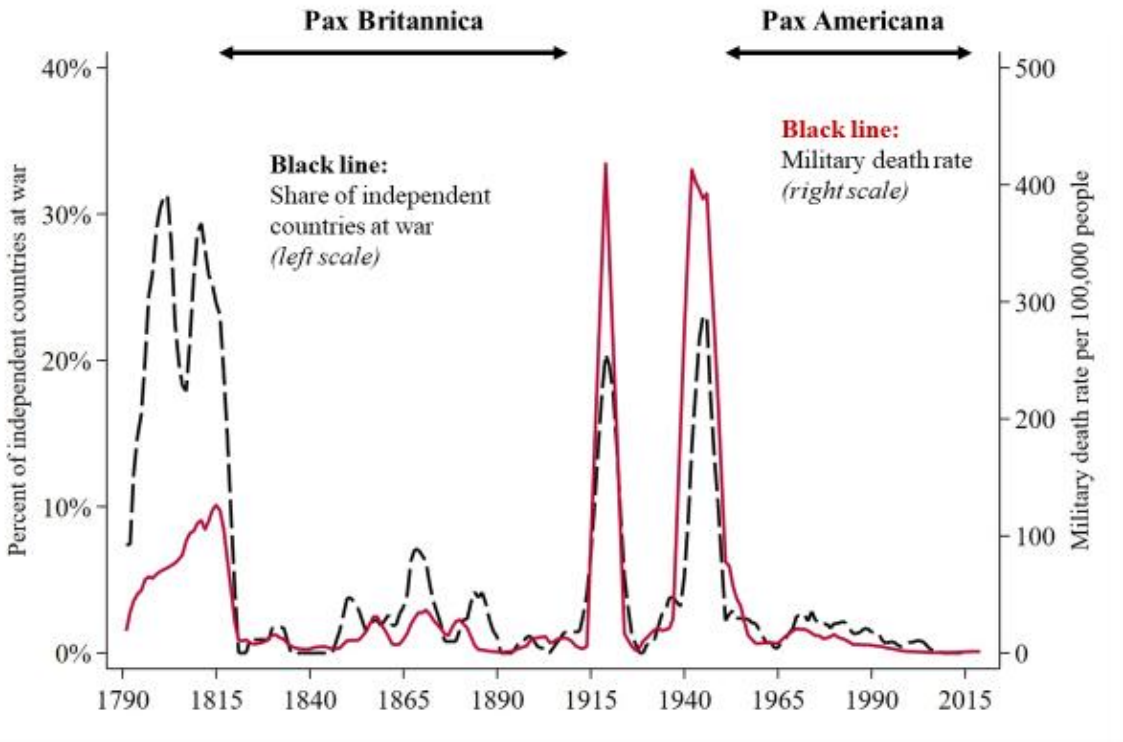
Figure C25 illustrates our compiled data on inter-state wars by plotting the incidence of war and associated fatalities over the 200 year horizon of our sample.

Defensive wars: In our analysis of international capital flows, we further limit the sample of inter-state wars to defensive wars, since these episodes most closely mimic the concept of national emergencies, the response to which we are trying to analyze. In order to qualify as a *defensive war*, a war needs to fulfil the following two conditions for a participating country:

- The war needs to be initiated by the opponent.
- The war needs to be fought on the country's own territory, i.e. its territory is attacked during the course of the war.

[25] The CoW database also provides data on intra-state (or civil) wars, which are defined by sustained military combat within a state and with active participation of the national government. Due to their primarily domestic character, we do not consider civil wars in our study of international official flows.

Figure C25: Incidence of inter-state military conflict, 1790 - 2020



Note: This figure shows the share of sovereign countries involved in inter-state wars for any given year since 1790 (black dashed line, left scale) as well as the military death rate, i.e. the number of military death per 100,000 people. See text for sources.

During the Korean War, for example, we are interested in studying international lending to Korea, but not to the United States or France, although both countries were also formal parties to the conflict. Data on both conditions can be inferred from the Correlates of War Database and the Conflict Catalogue by (Brecke, 1999).

Great Power Wars: In Section 4.2, we focus our analysis on Great Power Wars, which historically have been the most destructive and deadly instances of inter-state warfare. To measure Great Power involvement in inter-state conflicts, we follow the definition of Great Powers introduced by Levy (1983). According to this widely used definition, Great Powers are those states which *"possess a high level of power capabilities, which provide for reasonable self-sufficiency in security matters and permit the conduct of offensive as well as defensive military operations; participation in international congresses and conferences; de facto identification of a Great Power by an international conference or organization; admission to a formal or informal organization of Powers; participation in Great Power guarantees, territorial compensation, or partitions; and, generally, treatment as a relative equal by other Great Powers (for example, protocols, alliances, negotiations, and so forth)."*

During our sample period, the following sovereigns qualify as Great Powers:

- Austria / Austria-Hungary (1790-1918)
- China (1950-2020)
- France (1790-2020)
- Prussia / Germany (1790-2020)
- Japan (1905-2020)
- Russia / Soviet Union (1790 - 2020)
- United Kingdom (1790 - 2020)
- United States (1898 - 2020)

On the basis of this list, Great Power Wars can be defined as all inter-state wars with direct warfare between two or more Great Powers. Great Power Wars are rare. Since 1790, there have been nine cases of Great Power War: The French Revolutionary Wars (1792-1802), the Napoleonic Wars (1803-1815), the War of Italian Unification (1859), the Austro-Prussian War (1866), the Franco-Prussian War (1870-1871), the First World War (1914-1918), the Second World War (1939-1945) and the Korean War (1950-1953).

D Data on private capital flows

Our paper also gathers rich new data on private capital flows and bond issuances since 1790 in order to facilitate the comparison of official and private lending with a focus on major disaster episodes. Specifically, we focus on 32 global financial crisis episodes and 29 Great Power Wars since 1790 that we analyze in detail in Section 4.2.

To identify and select cases, we follow the definitions of Great Power Wars and Global Financial Crisis presented in Appendix Section C and collect private international lending data for each defensive inter-state war and each sovereign debt crisis within these disaster episodes (see Tables D12 and D13). For each of the identified war or crisis episode, the two tables list the main sources from which we collect data on cross-border lending by private creditors. Data from these main sources are cross-checked and supplemented with information from several country or episode-specific sources. We list these sources below and provide detailed information on the content and coverage of our main data sources.

Table D12: Global Debt Crises

	Crisis onset	Sources for private capital flows
The Crisis of 1825		
Spain	1824	Reinhart et al. (2016, 2017)
Colombia	1826	London Stock Exchange Yearbooks
Chile	1826	(multiple years)
Greece	1826	Kaminsky and Vega-García (Kaminsky and Vega-García)
Peru	1826	Reinhart and Trebesch (2015)
Argentina	1828	Fenn's Compendium (multiple years)
Mexico	1827	Fortune's Epitome (multiple years)
The Great Depression 1931		
Austria	1931	League of Nations (1943)
Germany	1931	United Nations (1948)
Hungary	1931	Moody's Investor Manual (multiple years)
Poland	1931	
Finland	1931	
Greece	1931	
Bulgaria	1931	
Estonia	1931	
Debt crisis of the 1980s		
Mexico	1982	World Bank International Debt Statistics
Argentina	1982	(multiple vintages)
Brazil	1983	Horn et al. (2024)
Ecuador	1982	
Nigeria	1982	
Philippines	1982	
Bolivia	1980	
Egypt	1984	
Costa Rica	1981	
Cote d'Ivoire	1983	
Morocco	1983	
Asian Crisis 1997-1998		
Indonesia	1998	World Bank International Debt Statistics
Brazil	1998	(multiple vintages)
Philippines	1998	
Russia	1998	
Ukraine	1998	
Ecuador	1998	
The Global Crisis of 2008 (with Eurozone Crisis)		
Russia	2008	BIS International Debt
Greece	2010	Securities Statistics
Ireland	2010	
Portugal	2011	

Table D13: Great Power Wars

	Onset of War	Sources for private capital flows
French Revolutionary & Napoleonic Wars		
Austrian Empire	1792	Riley (1980)
Russian Empire	1798	Buist (1974)
Sweden	1805	London Stock Exchange Yearbooks (multiple years)
		Fenn's compendium (multiple years)
Crimean War		
Ottoman Empire	1853	SEY (multiple years)
		Fenn's compendium (multiple years)
		Fortune's Epitome (multiple years)
War of Italian Unification		
Italy	1859	SEY (multiple years)
		Fenn's compendium (multiple years)
		Fortune's Epitome (multiple years)
Austro-Prussian War		
Austrian Empire	1866	SEY (multiple years)
		Fenn's compendium (multiple years)
		Fortune's Epitome (multiple years)
Franco-Prussian War		
Prussia	1870	SEY (multiple years)
		Fenn's compendium (multiple years)
		Fortune's Epitome (multiple years)
		Saling's Börsenpapiere (multiple years)
World War I		
Yugoslavia	1914	League of Nations (1943)
Russia	1914	Moody's Investor Manual (multiple years)
United Kingdom	1914	United Nations (1948)
Portugal	1916	Strachan (2004)
Belgium	1914	Stone (1999)
Greece	1917	Fisk (1924)
Romania	1916	
France	1914	
Italy	1915	

	Onset of War	Sources for private capital flows
World War II		
United Kingdom	1939	League of Nations (1943)
United States of America	1941	Moody's Investor Manual (multiple years)
USSR	1941	United Nations (1948)
China	1937	
Mongolia	1945	
Greece	1940	
Yugoslavia	1941	
Ethiopia	1941	
France	1940	
Belgium	1940	
Norway	1940	
Netherlands	1940	
Poland	1939	
Hungary	1941	
Finland	1939	
Korean War		
South Korea	1950	IBRD country reports (multiple years)
		Moody's Investor Manual (multiple years)

RRT Global Capital Flow Database: Reinhart et al. (2017) offers the most comprehensive compilation of long-run private capital flow data. Their dataset covers years 1815 to 2015 and therefore a similar time horizon than our study of official capital flows. Their measure of total global net and gross capital flows builds on different data sources and concepts. For the 19th century, their measure aggregates gross bond issuances in the main financial centers of the time and gross capital exports from the UK, as measured by Stone (1999). For all years post-WW1 they construct a net capital flow measure by combining data on current account balances and the accumulation of foreign exchange reserves.

Meyer, Reinhart, and Trebesch (2022): To compare the loan terms of official and private cross-border lending, we rely on the 200-year study of international sovereign bond markets by Meyer et al. (2022). Their data set covers all 1,552 sovereign bonds issued by foreign governments in London and New York with fixed interest rates and maturities of at least one year. Our measure of interest rates on private cross-border lending is constructed as the issuance yield, that is the yield to maturity at the time of issuance.

Primary sovereign bond issuance in Amsterdam and London 1780 - 1820: In our case study of private and official capital flow movements prior and during the French Revolutionary and Napoleonic Wars, we examine the foreign sovereign bond issuance in the Amsterdam Capital Market between 1780 and 1820. For this market and period, no readily available data on capital exports is

available. A time series of annual capital exports to European sovereigns, however, can be estimated from the rich historic accounts of the Amsterdam Capital Market written by Riley (1980) and Buist (1974). Specifically, we code all instances of primary sovereign bond issuance from the detailed case studies that Riley (1980) presents on government borrowing by Austria, Denmark, France, Germany, Poland, Russia, Spain and Portugal and the detailed data appendix presented in Buist (1974).

BIS International Debt Securities Statistics: For several modern episodes, we rely on the International Debt Securities Statistics compiled by the Bank for International Settlements. This dataset captures gross security issuance by non-residents and comes closest to our definition of official cross-border lending. This data source, however, is only available since the 1990s and can therefore not be used for a longer run comparison of official and private capital flows. More specifically, we construct our measure of private capital flows by considering all issuer types, i.e., including private and official sector entities, all currencies, all interest rate types and all maturities larger than one year.

League of Nations (1943): To compare official and private capital flows in the inter-war era, we rely on a statistical report on capital movements in Europe published by the League of Nations (1943). This report provides estimates of the aggregate annual bond issuance by 28 European debtor countries in the financial centers of the main capital exporting countries of the inter-war period (the US, the UK, France, the Netherlands, Switzerland and Sweden). These statistics include bond issuance by both the private and the public sector, namely by central and provincial governments, by municipalities and by private corporations and covers years 1919 to 1932.

E Control variables and other measures of interest:

E.1 Economic and financial exposure measures

Our gravity model of official cross-border lending relies on three distinct measures of bilateral exposure that proxy the economic and financial importance of the debtor country to private agents in the creditor economy. More specifically, we define our exposure measure as

$$Bil.Exposure_{i,j,t} = \frac{Exposure_{i,j,t}}{\sum_{i=1}^{N} Exposure_{i,j,t}}$$

where $Exposure_{i,j,t}$ denotes the bilateral exposure between debtor country i and creditor country j in year t. Our measure therefore captures creditor country j's claims towards debtor country i as a share of creditor country j's claims towards all debtor countries. In other words, our measure captures the relative importance of debtor country i to creditor country j at a given point in time. We use three distinct data series to construct our measure.

Trade exposure from TradeHist: Our primary measure uses nominal trade flow data to measure the importance of the debtor economy to the creditor economy. Bilateral exposure is defined as the sum of imports and exports and all data is from the Tradhist project (Fouquin and Hugot, 2016). In line with the above definition, this variable measures the bilateral trade between debtor country i and creditor country j as a share of country j's total trade with all countries. Data is available since 1827.

Private creditor exposure from World Bank IDS: In the regressions presented in Appendix Section A.3, we construct private sector exposure to a sovereign debtor from the World Bank's International Debt Statistics. Our exposure measure is defined as the total disbursed and outstanding public and publicly guaranteed liabilities of debtor country i to all private creditors in creditor country j (series code DT.DOD.PRVT.CD). In the IDS, private creditors include bondholders, commercial banks and other private credits from manufacturers, exporters, and other suppliers of goods and services. Debt includes long-term instruments with initial maturities of more than one year, denominated in all currencies and is given at nominal values. This series is available since 1970.

Banking exposure from BIS Consolidated Banking Statistics: Our third measure of bilateral economic exposure focuses on the exposure of the banking sector and comes from the Bank for International Settlements Consolidated Banking Statistics. Our variable measures the bilateral claims of the domestic banking sector in creditor country j on all counterparties (banks and non-banks) in debtor country i. We include claims from all instruments, all maturities and all currencies as reported by banks in the creditor country on an immediate counter-party basis. Time coverage varies by reporting country but is available starting from the 1990s in most countries.

E.2 Other dyadic variables used in gravity model

Distance: Our measures of geographic, bilateral distance are taken from the TradHist project (Fouquin and Hugot, 2016). Our preferred measure is a population weighted mean of the distance between the biggest city in the creditor country and the debtor country (*"distw"*; see Mayer and Zignago (2011) for details), but all results are robust to using different measures of geographic distance, e.g., the geographic distance between capitals or shortest maritime distance between two countries.

Regime type and political distance: To measure regime type and to calculate the "political distance" between two countries, we rely on data from the Polity Project. Specifically, we use a composite measure of political regime characteristics from the Polity5 dataset (variable "polity2"). This measure summarizes autocratic and democratic characteristics of a political regime and assigns a unified score on a range from -10 (strongly autocratic) to +10 (strongly democratic). In our gravity model of cross-border official lending, we use this variable to create a "political distance" measure that is defined as the absolute distance between the polity2 regime type of the creditor and the debtor country. This variable has the great advantage of being uniformly available for independent states since 1800.

Cultural proximity: To account for cultural proximity between creditor and debtor countries and to proxy for variations in enforcement costs and informational asymmetries, we again use data from the TradHist project (Fouquin and Hugot, 2016). More specifically, we rely on two distinct but highly correlated dummy variables to measure cultural and linguistic ties between two countries: Our first measure is equal to one if the two countries share a colonial history, i.e., if one of the countries was a colony of the other country at some point in the past (variable *EverCol* in the TradHist database). Our second dummy is equal to one if at least one language is spoken by 9 percent of the population in both countries (variable *Comlang* in the TradHist database). Data is available since 1827.

Alliances: Our measure of formal alliances is drawn from the Correlates of War Project. Specifically, we consider a country pair an alliance if at least one of the following two conditions is fulfilled:

- The two countries have signed a formal defense pact or entente agreement as measured by Singer and Small (1966), Gibler and Sarkees (2004) and Gibler (2009). In a defense pact, states commit to intervene militarily on the side of any treaty partner that is being attacked. In an entente agreement, countries pledge consultation and / or cooperation in a national emergency such as an armed attack (Gibler and Sarkees, 2004).
- The two countries fight on the same side of an inter-state war as measured by Sarkees and Wayman (2010).

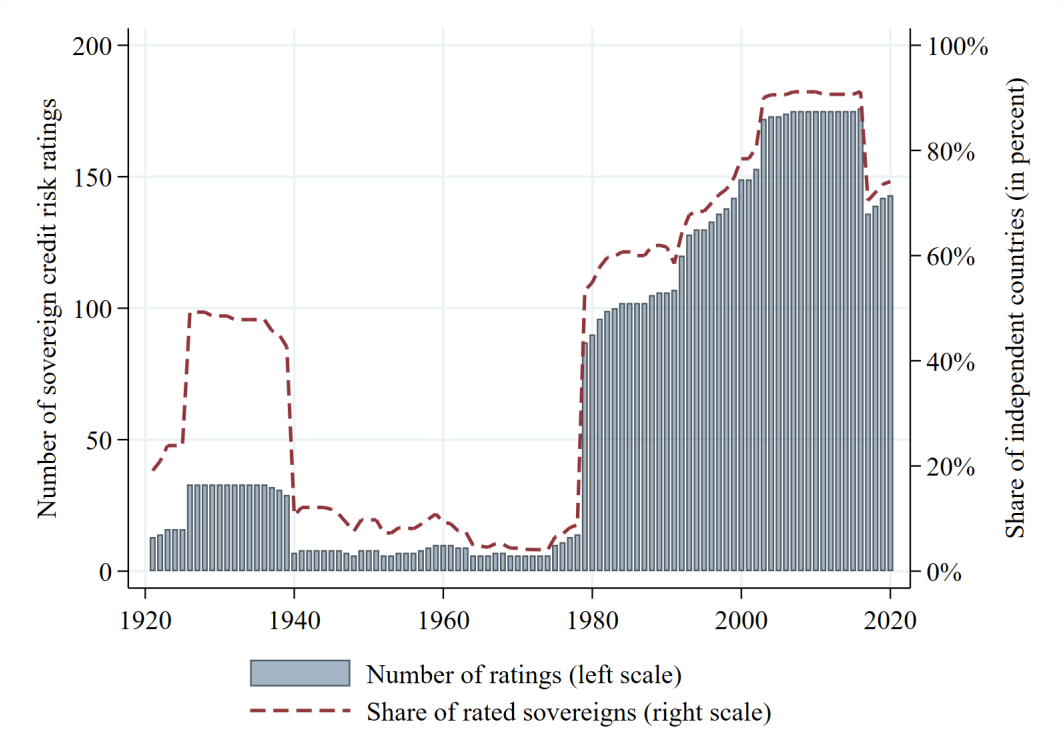
E.3 Credit Ratings

To study the correlation of private and official loan terms with recipient country credit risk, we compile a uniquely comprehensive database of country risk ratings that spans much of the 20th century. The data combines the sovereign credit risk ratings of major rating agencies such as Moody's, Standard &

Poor's and Fitch and country risk assessments published Institutional Investor Research (II Research). To ensure comparability across rating scales and sources, all ratings are mapped to a numerical scale from -4 to 20 following the approach of Reinhart et al. (2017). For countries and years, for which there is more than one credit rating available, we calculate an unweighted average of available ratings across different agencies.

Our starting point for data collection are the credit ratings compiled by Reinhart et al. (2017), which cover the modern era since roughly 1980. We complement this dataset with information on sovereign bond specific risk ratings from the Moody's Manual, which we systematically search all the way back to the Inter-War Era. Figure E26 summarizes the coverage of our database by plotting the number of sovereign risk ratings and the share of rated sovereigns by year since 1920. Despite significant gaps in the post-WW2 era, when only few cross-border sovereign bonds were issued, our dataset is likely to cover the near-universe of all sovereign risk ratings published in the 20th and early 21st century (see Gaillard, 2012 for a detailed discussion of the long-run variation in sovereign rating activity).

Figure E26: Coverage of sovereign credit risk ratings



Notes: This figure shows the coverage of our newly compiled sovereign risk ratings database. It shows the share of rated sovereigns (red dashed lines, right scale) and the number of rated sovereigns (blue bars, left scale) since 1920.

E.4 Miscellaneous

Foreign exchange rates and price deflators: We transfer all local currency amounts into USD, using the long-run exchange rate series collected by Reinhart and Rogoff (2009). Throughout the paper, when showing or using constant USD values, we rely on the US Consumer Price Index to transform nominal amounts into their 2015 real USD equivalents. To build a 200+ year time series of

the US CPI, we use data from Carter et al. (2006) for years 1790 to 1960 and update this series with CPI data from the Bureau of Labor Statistics (downloaded from data repository at the St. Louis Fed, series code "CPIAUCSL", yearly average).

GDP: Data on real GDP, population and real GDP per capita are taken from the Maddison Project Database (Bolt and van Zanden, 2020) and are available for our full sample period starting from 1790 for a subset of countries. Data on nominal GDP is from the TradHist project (Fouquin and Hugot, 2016) for years 1827 to 2014. We update the series until 2020 by using data from the World Bank's World Development Indicators (series code NY.GDP.MKTP.CD).

Geopolitical risk: To measure geopolitical risks, we rely on the widely used Geopolitical Risk Index (GPRI) developed by Caldara and Iacoviello (2023). The GPRI is a news-based measure of adverse geopolitical events and associated risks that is constructed by counting the share of newspaper articles on a monthly basis that discuss adverse geopolitical events or threats on the basis of a dictionary-based method.

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