Investor Reactions to New Sovereign Obligations*

Qi Liu† Layna Mosley‡

May 2025

Abstract

How do private sector investors react to sovereigns' new obligations to official creditors? Governments often borrow from a range of creditors, including multilateral financial institutions, bilateral official creditors, and private investors. China emerged as an important bilateral creditor over a decade ago. Credit from China-based lenders may increase sovereigns' productive capacity and signal a sovereigns' capacity for accessing additional credit when necessary. Alternatively, such loans may heighten creditors' concerns about debt sustainability. This may be especially the case when the creditor in question is viewed as motivated by strategic considerations or opaque in its loan negotiations. We hypothesize that investors in bond markets react to news of Chinese loans, but that their reactions vary as a function of the purpose of the loan and the borrower's geopolitical relationship with China. We find support for our expectations via text analysis of all ratings change announcements from Standard and Poor's from 2007 to 2023 and an event study analysis of sovereign spread shifts in response to news of Chinese-funded projects. Following announcements of new Chinese loans, the borrower's EMBI spread increases by approximately 5 basis points, greater than a typical country's one standard deviation annual change. A variety of robustness and placebo tests suggest that these results are specific to loans from China, versus from other sources.

*We thank Anne Duong and Tejas Iyer for research assistance. For comments earlier versions of this research, we thank members of the Princeton Sovereign Finance Lab, participants in the 2024 International Political Economy Society meeting, and participants in the Comparative and International Political Economy workshop, NYU Abu Dhabi, January 2025.

†Harvard University. Email: qi_liu@g.harvard.edu.

‡Princeton University. Email: layna.mosley@princeton.edu.

1 Introduction

An important feature of contemporary sovereign finance is the diversity of creditors. The resolution of debt crises in the 1980s and the related shift toward capital account openness (Chwieroth, 2007; Nelson, 2017) involved new access to bond-based financing for many middle-income borrowers. Debt relief initiatives for highly-indebted low-income countries, completed under the auspices of the IMF and the World Bank, created new fiscal space for many governments. And low returns in mature markets – as observed, for instance, in the decade following the 2008 Global Financial Crisis – prompted private sector investors to seek high returns in emerging and frontier markets (Ballard-Rosa, Mosley and Wellhausen, 2021*a*; Brooks, Cunha and Mosley, 2015*a*). At the same time, some governments expanded their borrowing with resource-backed loans from commodity firms including Glencore, Trafigura, and Vitol.[1]

The last two decades also were marked by the emergence of new bilateral official creditors, including Brazil, Saudi Arabia and, most notably, China (Chen, 2023; Dreher, Fuchs, Parks, Strange and Tierney, 2022; Lee, Kring, Chin and Gallagher, 2024). China's government launched its 'Going Global Strategy" in the late 1990s, aiming to facilitate investment abroad. After the global financial crisis, and keen to earn higher returns on its foreign currency holdings while addressing excess domestic capacity, China and its policy banks increased their overseas lending activity (Parks, Malik, Escobar, Zhang, Fedorochko, Solomon, Wang, Vlasto, Walsh and Goodman, 2023), later branded as the "Belt and Road Initiative" (Kaplan, 2021). The causes of China's expanded lending activity are both domestic and international, and lending practices vary across the many Chinese financial institutions involved in foreign financing (Bräutigam, 2022; Chen, 2024).

Borrowing governments therefore have a broader range of options when seeking external

[1]The share of long-term public and publicly-guaranteed external debt of low- and middle-income countries owed to private creditors grew from 46 percent in 2010 to 61 percent in 2021, falling to 53 percent at the end of 2022. Even among IDA-eligible countries, which often have been deemed too risky by private investors, this share grew from five percent in 2010 to 21 percent in 2022 (World Bank, 2023).

financing. Their choices reflect not only supply-side considerations (such as increased global capital market liquidity) but also domestic political concerns. The conditionality associated with multilateral official creditors, for instance, is often unpopular with domestic audiences (Bunte, 2019). And some governments prefer the relative opacity associated with some forms of finance (Brown, 2023; Cormier, 2023; Mosley and Rosendorff, 2023), including loans from Chinese-based financial institutions (as well as from the Chinese-led AIIB; see Qian, Vreeland and Zhao (2023)). Recent work by Shea, Reinsberg and Kern (2024) suggests, along these lines, that loans from Chinese creditors facilitate political survival for some types of governments.

This shift has made financing more expensive for many countries, given that commercial credit and loans from non-traditional bilateral creditors tend to be more expensive than multilateral financial institutions' and OECD governments' loans (Mihalyi and Trebesch, 2023). IDA-eligible countries' debt service burdens quadrupled between 2012 and 2022. This was partly due to an expansion of the amount of debt, and partly the result of greater reliance on more expensive commercial and Chinese credit. By 2022, these payments had reached an all-time high, [2], generating concerns that many governments were spending more on interest payments than on education, health care, or other social services.

Indeed, China's role as a bilateral creditor may be the most important element of the trend toward creditor heterogeneity (Bräutigam, 2022). The country's share of low-income country government debt grew from 18 percent in 2010 to 49 percent in 2021. China is now the developing world's largest bilateral creditor (World Bank, 2022,2). The 75 low-income countries the World Bank currently deems IDA-eligible[3] owed 58 percent of their external bilateral debt to Paris Club creditors in 2010. By 2022, Paris Club creditors represented only 27 percent of IDA-eligible countries' external debt, due in some significant part to the increased role of China – not a member of the Paris Club – as an official bilateral lender.

[2]https://www.worldbank.org/en/news/press-release/2022/12/06/debt-service-payments-put-biggest-squeeze-on-poor-countries-since-2000

[3]The International Development Association branch of the Word Bank offers loans, usually on concessional terms, and grants for basic social services to the world's poorest countries.

The increased diversity of creditors for low- and middle-income countries generates opportunities (in terms of a greater capacity to finance development-oriented projects) as well as risks (including the possibility of unsustainable debt burdens). Recent analyses consider how this diversity – and specifically, how China's presence as a creditor – affects the resolution of debt crises and the efficiency of international financial institutions (Ballard-Rosa, Mosley and Rosendorff, 2024; Ferry and Zeitz, 2024). Sovereign creditors also interact with one another in the context of debt restructuring (Schlegl, Trebesch and Wright, 2019). When a sovereign experiences difficulties servicing their debt, creditors worry about their treatment relative to other creditors. Although the G-20's Common Framework for Debt Treatments attempts to address comparability of treatment among creditors, its utility in recent cases (such as Ghana and Zambia) has been slowed by inter-creditor tensions.[4]

While existing analyses of how bond market participants price sovereign risk tend to focus on macroeconomic fundamentals such as the overall level of government debt (for instance, Ballard-Rosa, Mosley and Wellhausen (2021*a*); Brooks, Cunha and Mosley (2015*a*)), we suggest that the composition of debt also may matter to investors. Investors may believe that some types of sovereign obligations are more likely to improve productive capacity than others, facilitating future economic growth and debt repayment. Investors also may worry that, if loan amounts or pricing are determined on the basis of political and strategic rather than economic considerations, borrowing governments may accumulate more debt than they can be expected to service. Additionally, some sovereign creditors may be viewed as more likely to reschedule debt or offer new financing in the case of crises. Hence, the identify of creditors may play a role in assessments of overall sovereign risk. If this is the case, then borrowing countries' past choices over creditors (see Bunte (2019); Mosley and Rosendorff (2023); Zeitz (2024) may affect their current and future access to finance.

In this paper, we consider another type of interaction among creditors: we explore how sovereign bond investors react to news of sovereign borrowing from China. First, using a

[4]For a discussion of bondholders' use of legal means to pursue their claims, see (Makoff, 2024; Widmann, 2024).

corpus of sovereign rating change announcements (from Standard and Poor's), we report that ratings agencies cite Chinese-financed projects as potentially boosting future productivity, but also as possible increasing default risk via increases in debt stocks. We then use event history analyses to examine how private creditors in sovereign bond markets respond to news of Chinese loans to emerging and frontier market economies. We compile an original dataset, using all news coverage from Bloomberg News and the Financial Times from 2007 to 2023. We find that first, sovereign spreads increase significantly after announcements of new Chinese loans, and the effect size is larger than a typical country index's standard deviation in a year. This increase in risk premiums is especially large for liquidity- and budget-supporting loans. In contrast, borrowing costs remain almost unchanged when Chinese project loans are announced. This result remains consistent when using all loan announcements instead of those appearing in financial news. Interestingly, even for announcements that reveal previous (rather than recent) Chinese loans, liquidity loans are associated with increased risk premiums.

We also note that the effect of Chinese loan announcements varies as a function of geopolitical alignments: countries that are more geopolitically distant from China experience a more persistent increase in risk premiums than those that are closer aligned with China. We suggest that this may reflect an expectation among investors that states aligned with China are more likely to have loans forgiven or restructured in times of crisis [5]. Our results suggest that while the presence of new creditors may offer governments increased autonomy when choosing their creditors, accessing such credit can raise the costs of borrowing in private markets. A comparison with announcements of World Bank loans and loans from other emerging creditors suggests that these market reactions are specific to Chinese loans.

[5] On the frequency of restructuring of China's loans, see Horn, Reinhart and Trebesch (2022).

2 Pricing Sovereign Risk

How do sovereign creditors price risk? A large literature explores the correlates of sovereign risk; it focuses on investors' pricing of default (as well as inflation and currency) risk (see, for instance, Mosley (2003); Tomz and Wright (2013)). Default risk is understood as driven by governments' ability as well as their willingness to repay debt. The former is often associated with levels of outstanding public debt, current account position, and reserve holdings, as well as with monetary and fiscal institutions (Bodea and Hicks, 2015; Copelovitch, Gandrud and Hallerberg, 2018). The latter may be a function of domestic political institutions and interests; democratic institutions may, under some conditions, render governments more likely to honor their obligations (Ballard-Rosa, Mosley and Wellhausen, 2021*b*; Beaulieu, Cox and Saiegh, 2012; Schultz and Weingast, 2003). And, given that electoral institutions can affect how creditors' interests are aggregated domestically, these could also matter for risk assessments (Connell, 2019). Other analyses find that, because they generate uncertainty over future policy or the potential for partisan shifts, elections may be associated with greater volatility or higher risk premiums in sovereign credit markets (Bernard, Jensen, Redding and Schott, 2007; Brooks, Cunha and Mosley, 2022; Campello, 2014; Vaaler, Schrage and Block, 2006). Still others note the importance of government partisanship to sovereign credit ratings as well as to the currency denomination of debt (Ballard-Rosa, Mosley and Wellhausen, 2022; Barta and Johnston, 2018).[6]

Analyses of sovereign risk pricing also highlight the importance of global and peer-group factors. Low interest rates in mature markets often lead sovereign bond investors to seek higher returns in emerging and frontier market countries. Global capital market liquidity not only reduces the absolute cost of borrowing (in sovereign bond and bilateral official credit markets; see Bauerle Danzman, Winecoff and Oatley (2017); Longstaff, Pan, Pedersen and Singleton (2011); Rey (2015); Zeitz and Mosley (2024,2)), it can also limit markets' attention

[6] Cormier and Naqvi (2023) argue, however, that the increased importance of indexes to sovereign bond investment reduces investors' attention to country-specific factors.

to political risk, such as that posed by non-democratic political institutions (Ballard-Rosa, Mosley and Wellhausen, 2021*a*). Additionally, investors' assessments of sovereign risk are influenced by a borrowing countries' peers. Risk premiums in secondary markets are determined, in part, by borrowing costs for other countries in the same regional, credit rating or market development category (Brooks, Cunha and Mosley, 2015*a*; Gray, 2013). Foreign investors also may take cues from domestic investors, who may be better able to gather and assess the accuracy of country-specific information (Cunha, 2024).

We identify another set of influences on sovereign bond investors' assessment of risk: the actions of other creditors, in terms of providing new credit. We theorize below that investors in secondary markets for sovereign bonds will react to information about new loans. Their reactions, however, will vary with the identity of the creditor, as well as the type of loan. The notion that private markets react to new flows of financing overlaps, in some ways, with studies of the "catalytic effect" of International Monetary Fund (IMF) loans. Observers have long suggested that, by functioning as a "seal of approval" for governments' economic policies and adjustment programs, the IMF would motivate private creditors to offer new capital to sovereigns (Gould, 2003*a*).

Empirical analyses of the catalytic effect (and accounting for selection into IMF lending) suggest that it exists, within limits: for instance, Krahnke (2023) reports that IMF programs are associated with a significant increase in private capital flows, as long as the IMF financing provided is less than five percent of gross domestic product. Larger programs (the top 25 percent of IMF lending) are associated with no or even negative effects on private flows. When sovereigns have large obligations to the IMF, private creditors may worry about their likelihood of repayment in cases of future debt distress. Creditors also may worry about governments' political will to implement the reforms included as part of IMF financing. Along these lines, Shim (2022) argues that sovereign bond investors respond positively to IMF programs when governments are popular at home. The logic is that, to the extent that governments appear better able to implement economic reform, investors are more likely to

associate IMF lending with improved economic prospects.

Of course, investors' responses to IMF loans may be different than their responses to other types of sovereign finance, given the IMF's preferred creditor status, as well as the fact that IMF loans come in response to economic distress. Lang, Mihalyi and Presbitero (2023) assess sovereign bond market responses to another sort of liquidity provision – the temporary suspension of interest payments on bilateral official loans, in the context of the G-20's Debt Service Suspension Initiative. They find that, contrary to the concerns expressed by some governments at the time, bond markets did not punish eligible governments that requested a suspension. Rather, countries that received greater relief from debt servicing burdens experienced larger declines in bond market borrowing costs. This finding suggests that, if investors view new loans in a similar fashion – as indicating enhanced availability of liquidity – then they make respond positively to these as well.

We treat announcements of new credit as a potential heuristic for investors (Bunte and Kinne, 2018; Calvo and Mendoza, 2000; Mosley, 2003): information about new loans can signal that a sovereign has access to additional credit, beyond what is available via bond issuance. This finance also may generate expectations of future economic growth, which improves debt servicing capacity. Investors may not need to pay attention to the specific details of the project or loan to infer its effect on a borrower's overall fiscal space. Rather, the fact that other creditors are willing to provide capital might suggest that a sovereign will have sufficient resources to service future obligations, as well as that other creditors have a positive assessment of the borrower's prospects.

We expect, however, that the overall effect of Chinese loans on risk premiums will be positive, indicating an increase in perceived risk. Many investors view loans from Chinese state and state-connected entities as driven less by market-based risk assessment and more by an interest in cultivating strategic relationships or gaining access to natural resources. As such, loans from China may help borrowing governments remain in office (Shea, Reinsberg and Kern, 2024), and they may allow them to avoid the governance and transparency-related

conditions associated with other forms of finance, such as that from multilateral development banks (Cormier, 2023; Pin, Wang and Chang, 2020; Zeitz, 2024). These loans also are more expensive, on average, than concessional finance via Paris Club bilateral lenders or multilateral development banks, suggesting a greater burden of debt servicing for borrowing governments (Horn, Reinhart and Trebesch, 2021; Mihalyi and Trebesch, 2023).

We note that this hypothesized view is at odds with recent analyses of Chinese bilateral finance which suggest that Chinese policy banks such as China Development Bank (CDB) and China Exim (The Export Import Bank of China) are attentive to market-based considerations, even as they also consider the central government's interests (Chen, 2024).[7] Much of the finance these entities provide is tied to specific projects, which serve to generate revenues that can contribute to debt servicing (and reduce default risk concerns; see Queralt (2022)). Additionally, loans from Chinese entities typically are not considered senior or preferred, relative to sovereign bonds; borrowing governments' repayment obligations are likely similar for Chinese lending entities and for bondholders (also see Schlegl, Trebesch and Wright (2019))[8] Overall, however, we expect a more negative view of Chinese loans to prevail among investors in emerging and frontier market sovereign debt, most of whom are based in Western countries.

Hypothesis 1. *Announcements of new loans from China will generate increases in sovereign borrowers' risk premiums.*

At the same time, we note the diversity among the projects financed by China-based bilateral lenders. Kondo, Mkhitaryan and Sosa-Padilla (2024) shows that overall Chinese lending reduces the borrower's marketable debt issuance and sovereign yields, but the mechanisms through which investors process this information remain unclear.[9] Many loans are

[7] Also see Bräutigam (2022); Lee et al. (2024).

[8] Given the opacity of some Chinese loan contracts, however, some creditors worry that some loans contain priority repayment clauses. Also see Gelpern, Horn, Morris, Parks and Trebesch (2021).

[9] Kondo, Mkhitaryan and Sosa-Padilla (2024) also use year-level data, which makes it difficult to distinguish investors' reactions to Chinese loans versus other events that happen together or even leading to Chinese loans.

made to support specific infrastructure projects; other financing offers general budget support, sometimes in the context of fiscal difficulties (Horn, Parks, Reinhart and Trebesch, 2023). Although not all projects can be expected to generate a positive return or an increased rate of growth, we expect that investors will view such loans more favorably than general budget support. Indeed, if a government receives a loan from China while in the midst of economic difficulties, investors may view the government as not only under fiscal stress, but also as unable to receive favorable treatment from other creditors or unwilling to submit to the conditionality associated with the IMF. Investors therefore may view budget support loans as a broader signal of a country's economic fundamentals. Hence, to the extent that creditors are attentive to information not only about the conclusion of a loan, but also about its purposes, we expect their reactions to be especially positive where specific project financing is involved.

Hypothesis 2. *Chinese loans that fund specific projects will generate smaller risk premiums than general purpose or liquidity loans from China.*

Lastly, we expect that bond markets' reactions to loans from China may be conditioned by geopolitical alignment between China and the borrowing country. Western-based investors, who account for the majority of investment in emerging and frontier market sovereign debt, may be inclined to view China's sovereign finance activity as politically-motivated. This may hold on the demand as well as the supply side: governments that are dissatisfied with the US-led liberal international order and western-dominated IFIs may be more inclined to seek financing from new creditors such as China (Broz, Zhang and Wang, 2020; Qian, Vreeland and Zhao, 2023).

This could generate concerns that countries that are more aligned with China are more likely to receive finance that is opaque or risky. But geopolitical alignment also could generate expectations of future restructurings or bailouts, if necessary. That is, to the extent that China extends credit initially on the basis of geopolitical proximity, it also can be expected to offer refinancing on that basis. Indeed, China has frequently restructured its bilateral

obligations, offering maturity extensions and interest rate reductions, among other concessions. We expect, therefore, that geopolitical alignment with China may help explain market reactions to loans from China.

Hypothesis 3. *Sovereign risk premiums will increase more in response to news of Chinese loans when the borrowing country is less geopolitically aligned with China.*

In the next two sections, we assess these expectations empirically, first via an analysis of sovereign ratings agency statements, and then through an event study analysis of news related to Chinese-financed projects.

3 Chinese Loans and Ratings Agency Assessments

To understand how private investors perceive the impact of Chinese loans on countries' creditworthiness, we first analyze the qualitative judgments of sovereign credit rating agencies. The major agencies – Moody's, Standard and Poor's and Fitch Ratings – rate sovereigns that request (and pay) to be rated, as well as sovereigns for which there is "market interest." As of 2024, Fitch rated 117 sovereigns, Standard and Poor's rated 137 and Moody's rated 142. These three major agencies tend to agree on ratings for the highest and lowest rated borrowers (Brooks, Cunha and Mosley, 2015*b*; Mosley, 2003); differences in ratings are more common among sovereigns in the intermediate ranges.

Ratings agencies' assessments include objective as well as subjective criteria, focused on ability as well as willingness to repay sovereign obligations. Ratings agencies generate an overall – and by their description, relative – assessment of borrowers' creditworthiness. These ratings often correlate with the cost of capital, especially for emerging and frontier market countries (Brooks, Cunha and Mosley, 2015*b*; Jaramillo and Tejada, 2011; Özmen and Doğanay Yaşar, 2016). Perhaps most important, a ratings change from investment to non-investment grade can reduce a sovereign's access to capital from many institutional investors. In addition to rating sovereign borrowers, ratings agencies also provide outlooks

related to their ratings. For instance, a borrower's AA rating also has an outlook – positive, stable, or negative – attached. Changes in outlooks also can lead to shifts in spreads for emerging market countries (Hartelius, Kashiwase and Kodres, 2008), as outlooks often (but not always) portend future changes in the underlying ratings.

When ratings agencies make ratings upgrades or downgrades; when they rate a sovereign issuer for the first time; or when they change a sovereign's ratings outlook, they offer explanations for their decisions. These reports discuss the basis for the agency's decision, including their interpretation of any new and relevant information. These reports can be used as a means of understanding better financial markets' perceptions of sovereign issuers (Slapnik and Lončarski, 2023).

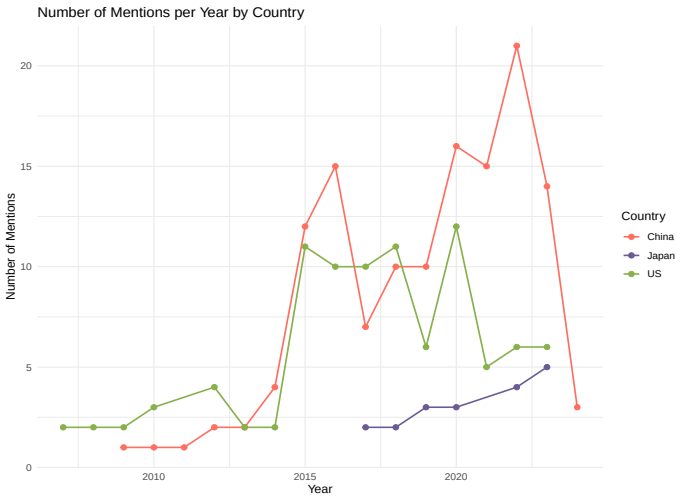
To assess how ratings agencies view the effect of Chinese lending on countries' sovereign risk, we draw on reports of 1184 credit rating actions or outlook changes, in 48 emerging market countries issued by Standard & Poor's from 2007 to 2024.[10] In each credit rating report, S&P includes a rationale section.

Lending from China has attracted high and increasing attention from investors. Figure 1 plots the number of rating action reports in our dataset mentioning China, the US, and Japan. In their rationale (for the change/update) sections, 11.3% explicitly mention China. In comparison, 7.9 % mention the US, and 1.6 % mention Japan. Additionally, mentions of China have increased rapidly over time, surpassed mentions of the US in recent years.[11]

Next, we examine the major factors rating agencies discuss in the context of outlook and ratings changes. We run a semi-supervised topic model on the *Rationale* sections of all 1184 rating actions or outlook change documents. We use Keyword Assisted Topic Models (keyATM) to identify more interpretable issue topics (Eshima, Imai and Sasaki, 2023). keyATM is a probabilistic topic model that labels topics via the specification of keywords before

[10]We included countries that are included in the EMBI+ index used in the analysis in Section 4. We used reports from S& P, rather than from Moody's or Fitch, because we were able to access and scrape the entire body of statements for S & P.

[11]Note that the last year is 2024, and the number of mentions dropped because the data does not cover the full year yet.



Note: The x-axis is time, and the y-axis is the number of mentions of each creditor country in the credit rating reports by year.

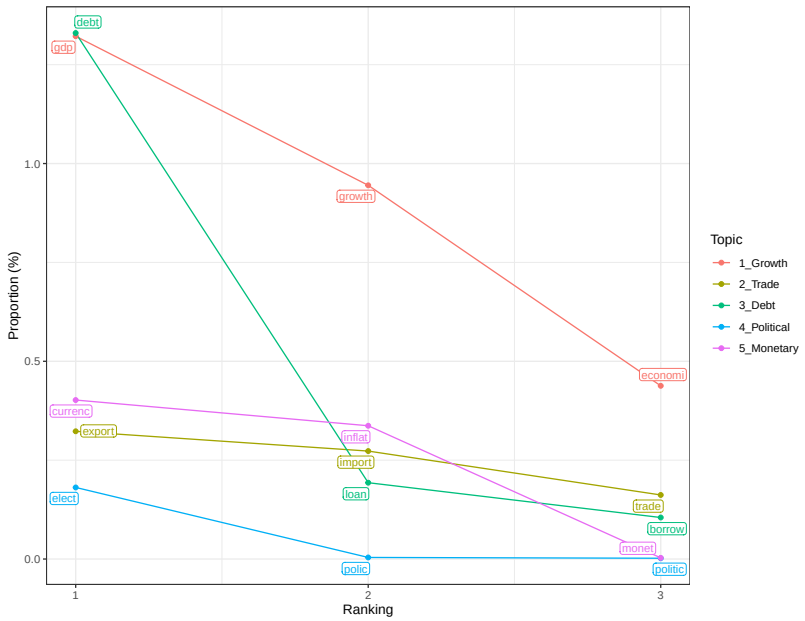
Figure 1. Mentions of Major Creditors in Ratings Reports, 2007-2024

model fitting. The importance of specified keywords is learned from the corpus. We specify five labeled topics, including *Growth*, *Trade*, *Debt*, *Political*, and *Monetary*. Table 1 lists the keywords we specified. Figure 2 shows the keyword proportions in the corpus. Note that, to address potential errors in specifying the keywords associated with each topic, the model also learns from the corpus. It samples words from our keywords with a probability that depends on whether the keywords are indeed useful. It is also possible that rating agencies discuss other topics in their rationales, so we incorporate three topics without keywords to allow the model to specify additional potential topics.

Table 1. Specified Keywords and Word Roots

Category	**Keywords (Word Roots)**
Growth	growth, economi, GDP
Trade	trade, export, import
Debt	debt, loan, borrow
Political	polic, elect, politic
Monetary	inflat, curren, monet

The model estimates both the relative frequency of words for each topic and the proportions of topics for each document. Figure 3 shows the expected proportions of the corpus

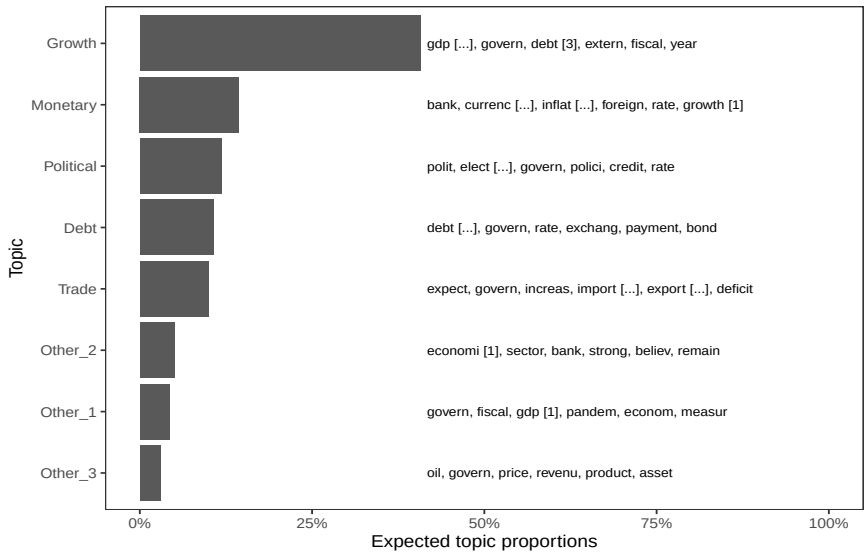


Note: This plot summarizes the pre-specified keywords used in the model and how frequently they appear in this corpus. The y-axis is the proportion of the pre-specified keywords in the corpus. They are sorted along the x-axis by their prevalence within each specified topic.

Figure 2. Keyword Proportions in the Corpus

belonging to each estimated topic and the top words of each topic. *Growth* appears to be the most popular topic, followed by the other four topics we specified. *Debt*, *Monetary*, *Political*, and *Trade* display similar levels of prevalence. The top words for each topic also suggest that the model successfully captures the key topics. For example, *gdp* is the most popular word in *Growth*, and *debt* is the most popular in *Debt*. The three no-keyword topics account for very small proportions, suggesting that we do a good job labeling keyword-assisted topics. *Other_2* is related to banks, *Other_1* seems to be specific to the pandemic, and *Other_3* is related to oil. Hence, credit rating agencies justify their rating decisions most heavily with growth outlooks but also pay significant attention to debt, monetary, political, and trade issues.

We next examine how announcements of Chinese loans are related to the content of the rationales. We match loan announcement dates with the rating news dated, and we create a



Note: This plot shows the overall topic distribution in the corpus. The words next to the bars are the top words under each topic. Words with brackets are pre-specified keywords.

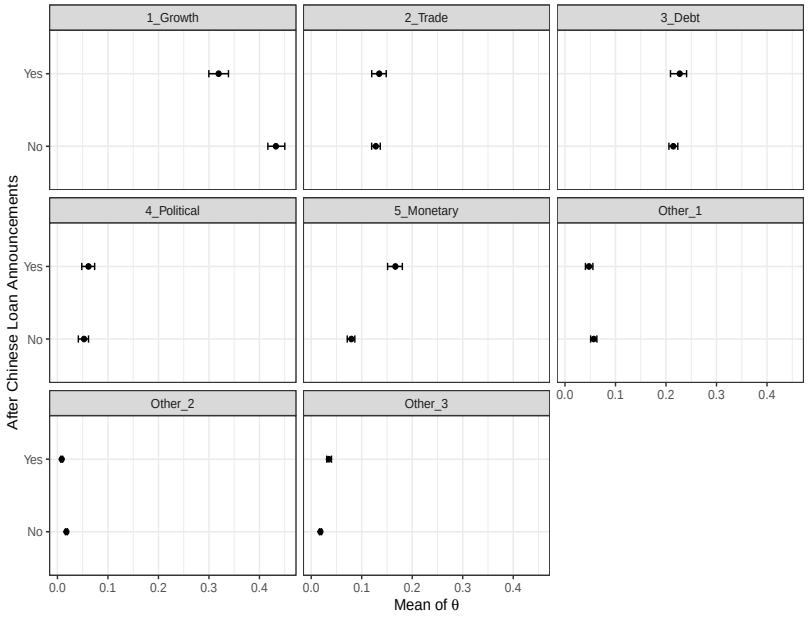
Figure 3. Topic Distributions in the Corpus

document-level variable "*post loan*" indicating whether a rating report is issued after a new Chinese loan was announced for the sovereign.[12] Together, we have 344 rationales out of 1184 that have announcements on new Chinese loans before them. We then incorporate *post loan* as a covariate in estimating the topic model.

Figure 4 shows the document-topic distributions and the 90% credible intervals of each topic for ratings reports before and after Chinese loan announcements. After Chinese loan announcements, credit rating rationales are more likely to be about debt, which supports our argument that Chinese loans are important to investors. Ratings agency staff are also significantly less likely to mention growth but more likely to point to monetary issues. This may indicate increased concerns about liquidity and financial stability, supporting our arguments that investors may worry about the effects of some Chinese lending on financial stability. Finally, the ratings assessments are also more likely to mention political factors

[12]In order to have a sufficiently large set of announcements to compare loans with no loans, we consider any time after a loan announcement as 'post-loan." In the future, we intend to expand our dataset of ratings reports, by collecting similar documents from Fitch Ratings and Moody's, so that we can use a narrower window after loan announcements.

after China loan news, which supports our theory that investors may worry about the motivations behind Chinese loans. However, this before and after difference is not statistically significant.

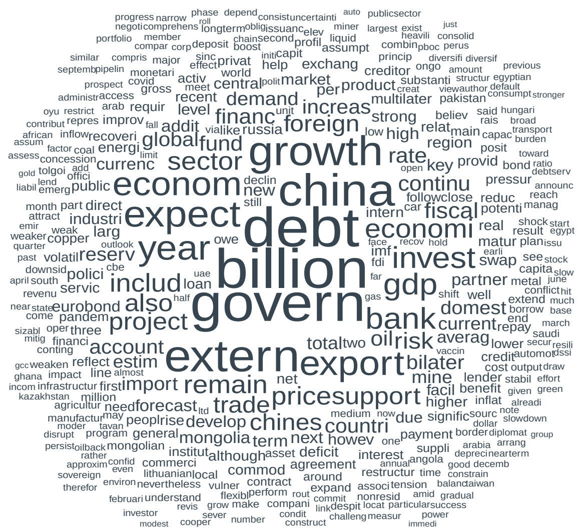


Note: The figure shows the marginal posterior means of document-topic distributions and the 90% credible intervals of them before and after a country experiences a Chinese loan announcements. Larger estimates indicate that the document is more likely to be about this topic.

Figure 4. Document-topic Distributions Before and After Chinese Loans

Thus far, our analysis indicates that sovereign credit ratings agencies may be concerned China and debt, especially once countries have documented loans from China. But ratings report *Rationale* sections often discuss numerous concerns. Even when China is named, there often is a good deal of content that is unrelated to China. Fortunately, the rating reports usually have a standard structure, and each paragraph discusses closely related issues. Therefore, we also can focus on paragraphs that explicitly mention China, to examine what sorts of concerns ratings agencies express about China. Within the 134 rating agency reports that mentions China, 191 paragraphs include "China" (and "Chinese"). Figure 5 is a word cloud plot of these paragraphs. Words are scaled by frequency, and "debt" is one of the most

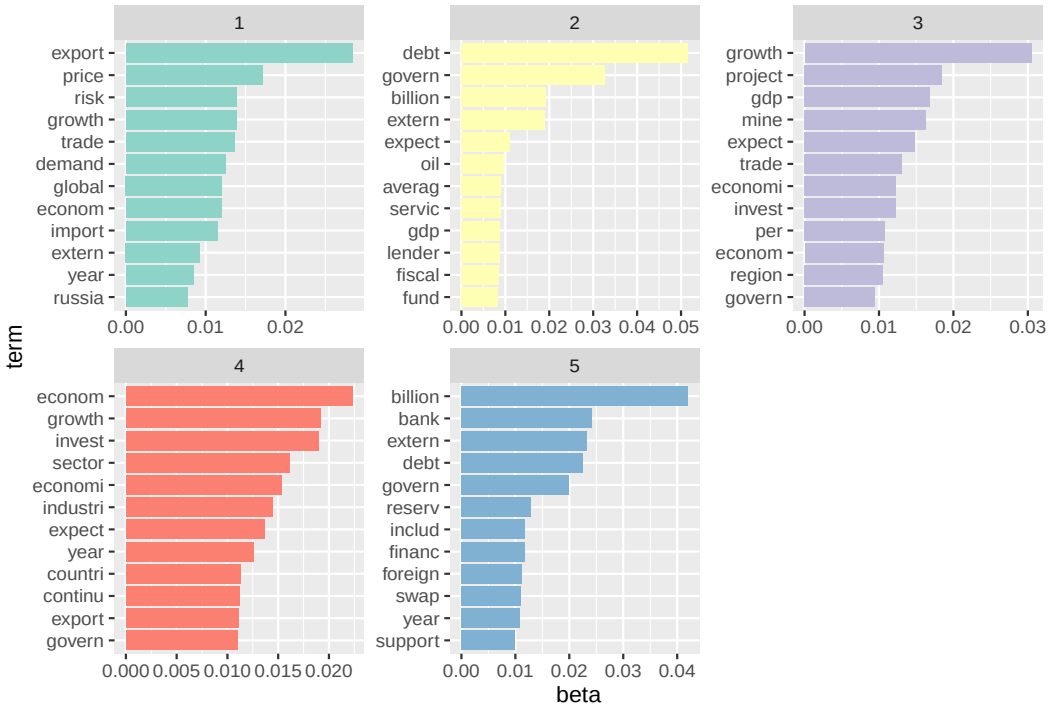
frequent words. This confirms that concerns about China are likely to be related to debt.



Note: The figure plots words in paragraphs including “China” and “Chinese,” with word font sizes scaled by frequency.

Figure 5. Word Cloud of Paragraphs Including China (Chinese)

Since we have now zoomed into a relatively small China-related corpus, we can use a simple Latent Dirichlet Allocation (LDA) model to summarize its content. LDA is an unsupervised learning approach that summarizes topic distributions in each document and word distributions in each topic. Figure 6 shows the top words in each topic. Among five topics, topic 2 and topic 5 are related to debt. More specifically, topic 2 seems related to the ability to service debt and economic and fiscal circumstances. Its top word roots include *govern*, *gdp*, *fiscal*, etc. Topic 5 seems to be more about the debt itself and is related to liquidity concerns, as it includes words like *bank*, *reserves*, *foreign*, *swaps*, *support*. We draw two conclusions from this analysis: First, when rating agencies discuss China, debt is a key related issue. Second, the rating agencies relate China and debt to two types of effects, one on growth/fiscal outcomes and the other on liquidity.



Note: This figure plots the top words in each topic within paragraphs that mention "China" or "Chinese."

Figure 6. Topics and Top Words in Paragraphs Including China (Chinese)

Two examples from these reports illustrate this sort of China-related content. The first one is focused on Chinese loans increasing the debtor country's debt stock, while the second addresses the potential positive effects of Chinese projects on economic growth.

> **Ghana**: *The Multilateral Debt Relief Initiative (MDRI) contributed to a significant reduction in Ghana's net external debt in 2006, but the public sector has been re-leveraging ever since; general government debt reached 38 % of GDP at year-end 2010. A bilateral loan from* ***China*** *may lead to a further ramp up in debt over the next few years.*

> **Jordan**: *However, the largest contributor to growth has been an uptick in finance and insurance services activity, which can also be seen in increased credit growth. That said, much of the increase in credit has been to public sector entities and includes loans to National Electric Power Company (NEPCO). If oil prices remain low, we anticipate that this will support growth over the next few years. In addition, Jordan has recently signed*

*agreements with **Chinese** companies worth $7 billion (mainly based on infrastructure projects, such as the construction of new power stations and expanding the national railway network) which should also support growth. Finally, we expect domestic demand and public infrastructure investment on the back of bilateral and multilateral grants to contribute to growth.*

4 Bond Market Responses to Chinese Loans

Credit ratings agency reports support the logic of our hypotheses, especially the general expectation that sovereign bond investors are attentive to, and often concerned about the effects of, Chinese lending to developing country governments. To more directly test our hypotheses, we consider how sovereign bond markets react to announcements of Chinese loans. We employ an event history analysis, using daily sovereign spreads in secondary markets (captured in the EMBI Global index) to examine investor reactions. Our analysis spans all 56 countries included in the EMBI Global index from 2007 to 2022. We use each country's spread relative to the broader index as our variable of interest, so that our analysis focuses on perceived risk relative to the broader emerging market category.

The EMBI-Global aggregates a sovereign's debt instruments with varying liquidity, maturities and repayment guarantees (see Cormier and Naqvi (2023)). The EMBI-Global index includes dollar-denominated bonds issued by sovereign and quasi-sovereign entities. J.P. Morgan, the provider of the index, requires that a government's debt instruments have a minimum outstanding face value of US$ 500 million. Given these requirements, the index does not include all sovereigns that issue bonds (Ballard-Rosa, Mosley and Wellhausen, 2021*b*); but it nonetheless includes a wide range of emerging and frontier markets countries from Latin America, Asia, the Middle East, Central and Eastern Europe, and sub-Saharan Africa. Because the index includes only dollar-denominated securities, one can assume that it reflects considerations of default (rather than inflation or currency) risk.

4.1 Measuring Information about Loans

Private investors often invest in multiple markets and countries, and their attention to specific sovereign bonds may be quite limited (Brooks, Cunha and Mosley, 2015*b*; Cormier and Naqvi, 2023; Mosley, 2003). News sources aimed at financial and economic actors, such as Bloomberg, are important sources of information. Traders often receive news through Bloomberg terminals, which can be used to show various market activities as well as news information throughout the day. We focus on announcements of Chinese loans from Bloomberg as the treatment in our event study analyses; we use Financial Times coverage as a supplement. Our treatment is more realistic than using all Chinese loans and their official documentation, given concerns about transparency of Chinese-financed loans (Horn, Reinhart and Trebesch, 2022), but we also analyze all Chinese loans as a robustness check.

We collect financial media announcements of receiving Chinese loans for the emerging market countries covered in EMBI+ from 2008 to 2023. We use Bloomberg as the primary source of information. We then cross-validate through four rounds of searches.[13] Besides Bloomberg, we consider the Financial Times a secondary news source for investors and conduct the same searches. We record any loans not already present in Bloomberg coverage.

We include only announcements that are clearly loans to governments, and we code the following attributes for each announcement: date of the announcement; loan size; loan purpose; whether the announcement is about a new loan or a previous loan; and other relevant information. We classify the purpose of each loan into four categories: project finance, liquidity provision, budget-supporting, and unknown. Project loans explicitly link the loan to a project (e.g., building a railway). Liquidity provision loans state that the borrower is in financial turmoil, and the Chinese loan aims at providing liquidity. Budget-supporting loans mention that the loan is used to support the government's budget. Loans that do not mention purposes are classified as unknown. Since we are interested in the

[13] In the first three rounds, we search keywords "China loan financing X," "X China loan," and "China X project" under the Bloomberg news site (`https://www.bloomberg.com/news`) We also Google search keywords "Bloomberg X China loan," where X is the country name of an emerging market.

reaction of investors to announcements, we adjust announcement dates by setting them to the current or next trading day (9 am to 5 pm EST) following each news announcement.[14]

The news includes both announcements of new loans made by China and stories related to previous loans. Even if loans were made previously, however, investors could be learning about the loan for the first time. Therefore, we include both types of loans in our data, although we analyze them separately. Our data collection results in 139 announcements on countries covered in the EMBI-Global index, including 70 announcements on new loans and 69 providing information on previous loans. The first loan announcement in our sample was made on October 19, 2007, and the last was made on December 19, 2022. Figure A1 and Figure A2 in the Appendix show the number of announcements by loan type. Figure A1 includes all announcements, and Figure A2 includes only announcements of new loans. 30 out of 56 emerging markets included in the EMBI+ had Chinese loan announcements; while many Chinese-funded projects are not publicly announced, loans from China are often revealed for countries in the EMBI+ index.

4.2 Method

To examine the effect of Chinese loan announcements on investors' reactions, we employ a "stacked" event study estimator following Rexer, Kapstein, Rivera et al. (2022). Event studies are used to study the immediate effect of events in financial markets. By restricting the analysis to short windows and utilizing daily data, potential confounding is minimized, making it more plausible to estimate causal effects.[15] One challenge of our analysis is that we have a relatively small sample of countries due to the coverage of EMBI+ indices. This makes ruling out pre-trends especially difficult.

[14]If the news comes out on weekends, or after 5 pm on a Friday, the announcement date is adjusted to the following Monday. The announcement date is adjusted to the next business day if the news is released on holidays when the market is closed. We use the Securities Industry and Financial Markets Association (SIFMA) holiday archive (`https://www.sifma.org/resources/general/us-holiday-archive/`) to determine the holiday schedule for financial markets.

[15]The state-of-art DiD model for multiple periods like Callaway and Sant'Anna (2021) does not work in this case for computational reasons, and therefore we use a "stacked" event study estimator following Rexer et al. (2022).

We therefore refine this method by adding a matching step before running the two-way fixed effect model. First, we create an "episode" for each event, which is the event window centered around the treatment day, including the treated unit and the "clean control" group in the corresponding window. The "clean control" group is constructed from countries that have never had Chinese loan announcements. Second, for each event, we identify the control unit with the most similar pre-treatment EMBI indices as the treated unit. This matched unit will be used as the control. Third, we stack episodes for all events together. Finally, we estimate a simple two-way fixed effects model using the stacked data.

The quantity of interest is then the ATT for each post-treatment period. For the sovereign bond of country c at day t in the episode (event) e, we denote the treatment time as k_e. For window length l, $t \in [k_e - l, k_e + l]$, we estimate the following model:

$$y = \alpha + \sum_{k \neq -1} \tau_k \text{Treat}_{ce} \cdot \mathbb{1}\{k = t - k_e\} + \delta_{ce} + \delta_{te} + \mu_{tce}$$

, where y is a country's EMBI index, k is a time indicator that is defined by the treatment time (e.g., $k = 1$ indicates one-day post-treatment), and δ_{ce} and δ_{te} are country and time (day) fixed effects. Here, τ_k is the ATT we are interested in estimating for each period k. Importantly, we also can estimate τ_k for negative ks, allowing us to test the parallel trends assumption. We use a window width of 40 days. Our analysis only covers trading days; the window includes 20 trading days before and 20 trading days after the announcement, approximately two months in total.[16]

While event studies zoom in on relatively short time windows, it is still possible that other shocks may happen within the window and cause confounding. It is important to exclude events involving shocks related to receiving Chinese loans and turbulence in the bond market. In other words, we must ensure that the event windows are clean. We clean the event windows

[16]For announcements on previous loans and World Bank loans, we match using Mahalanobis distance to avoid discarding events when the sample size is already small. In all other models, we match using the default glm distance.

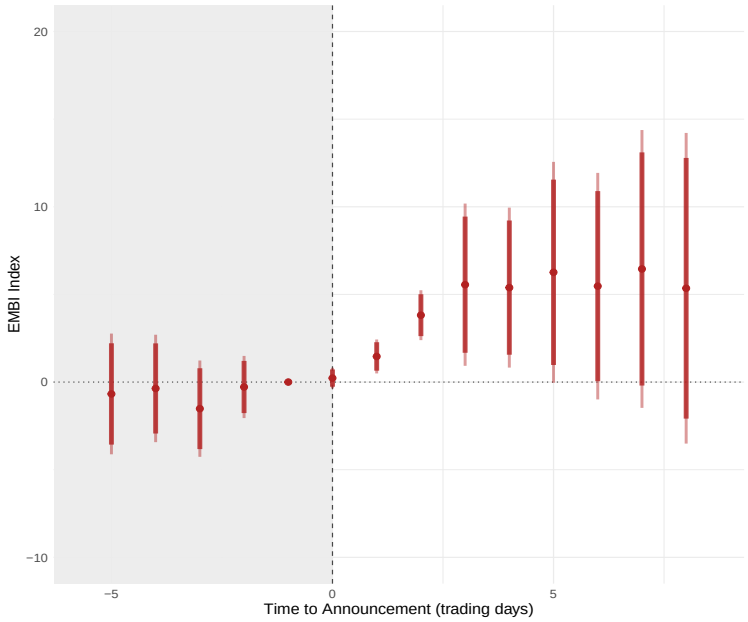
by checking whether the following shocks are observed in the borrowing country one week before and after each loan announcement: national elections, interest rate changes announced by the central bank, sovereign credit rating changes, and IMF projects announced. Again, since we are interested in the information available to investors, we measure shocks by news announcements received by investors.[17] We consider these events because investors respond to national elections (Bernard et al., 2007; Brooks, Cunha and Mosley, 2022; Campello, 2014; Vaaler, Schrage and Block, 2006), monetary policy announcements (Afonso, Jalles and Kazemi, 2019; Bredin, Hyde and Reilly, 2010), sovereign credit rating changes (Brooks, Faff, Hillier and Hillier, 2004), and IMF programs (Gould, 2003*b*; Krahnke, 2023; Shim, 2022). After removing events with these shocks around the announcement dates, we have 114 events in total. Among 114 events, 62 announcements are for new loans, and 52 are for previous loans. Classifying by loan purposes, there are 57 project loans, 12 liquidity loans, 9 budget-supporting loans, and 34 with unknown purposes. Among announcements of new loans, we have 43 project loans, 8 budget loans, 4 liquidity loans, and 6 with unknown purposes. To avoid carryover effects, we only keep the first treatment for each unit when event windows overlap.

4.3 Investor Reactions to Announcements of New Chinese Loans

We first present results on announcements of new loans. Figure 7 shows the overall effect of Chinese loans on borrowing countries' EMBI spreads. Note that EMBI indices measure a country's sovereign bond spreads relative to the broader index so that higher EMBI indices indicate higher borrowing costs. Consistent with Hypothesis 1, the effect is positive and statistically significant at the 5% level in the first four days after the announcement. Therefore, on average, an announcement of receiving Chinese loans increases a country's cost of

[17] We check national election dates from Google search. We collect news on interest rate changes from Bloomberg news. We check sovereign credit rating change dates from Trading Economics (https://tradingeconomics.com/).
Finally, dates of IMF project announcements are collected from https://www.imf.org/external/np/fin/tad/extarr1.aspx.

borrowing from the bond market. The estimated effect remains positive after the announcement. The effect size is substantial. Taking the year 2019 as an example, the median level of a country's standard deviation in its EMBI indices is 4.77. After news announcements of a Chinese loan, the borrower's EMBI index increases more than 5 after the third trading day. The result is robust when we remove the loans with unknown purposes.[18]



Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure 7. Investor Reactions to All Announcements of New Chinese Loans

We also expect (Hypothesis 2) that investors' reactions to loans may vary with the loan purpose. Our data include 43 project loans, four liquidity loans, eight budget-related loans, six unknown purpose loans, and one "others" (for building a school).[19] Figure 8(a) and (b) show that public announcements of new liquidity and budget loans from China significantly increase debtors' EMBI spreads. In the case of liquidity loans, we see a deviation from zero in the pre-treatment period.[20] This likely is caused by having a relatively small

[18] See Figure C1 in the Appendix.
[19] After removing missing data and matching, two productivity loans were removed.
[20] There is also a slight deviation two days pre-treatment for budget loans.

sample. However, the downward pre-treatment trend may work against the positive effect we detected post-treatment. Assuming that a pre-trend exists and persists into the post-treatment period, it would be biased against our findings. We also conduct placebo tests by artificially setting the treatment date to one week earlier; we observe no effect between this "fake treatment date" and the true treatment date.[21]

Meanwhile, the effect of project-related loans is only marginally significant in some years, and the effect size is very small. Interestingly, when investors only learn about the existence new loan but does not know the purpose, they perceive the debtor as less risky. This is probably because they observe the country receiving higher financial account inflows, but they do not receive information about any problems the country might be facing. These findings support our hypothesis that creditors charge higher risk premiums for liquidity and budget-supporting loans because, while not increasing future productivity, they also may signal the government's precarious fiscal position.

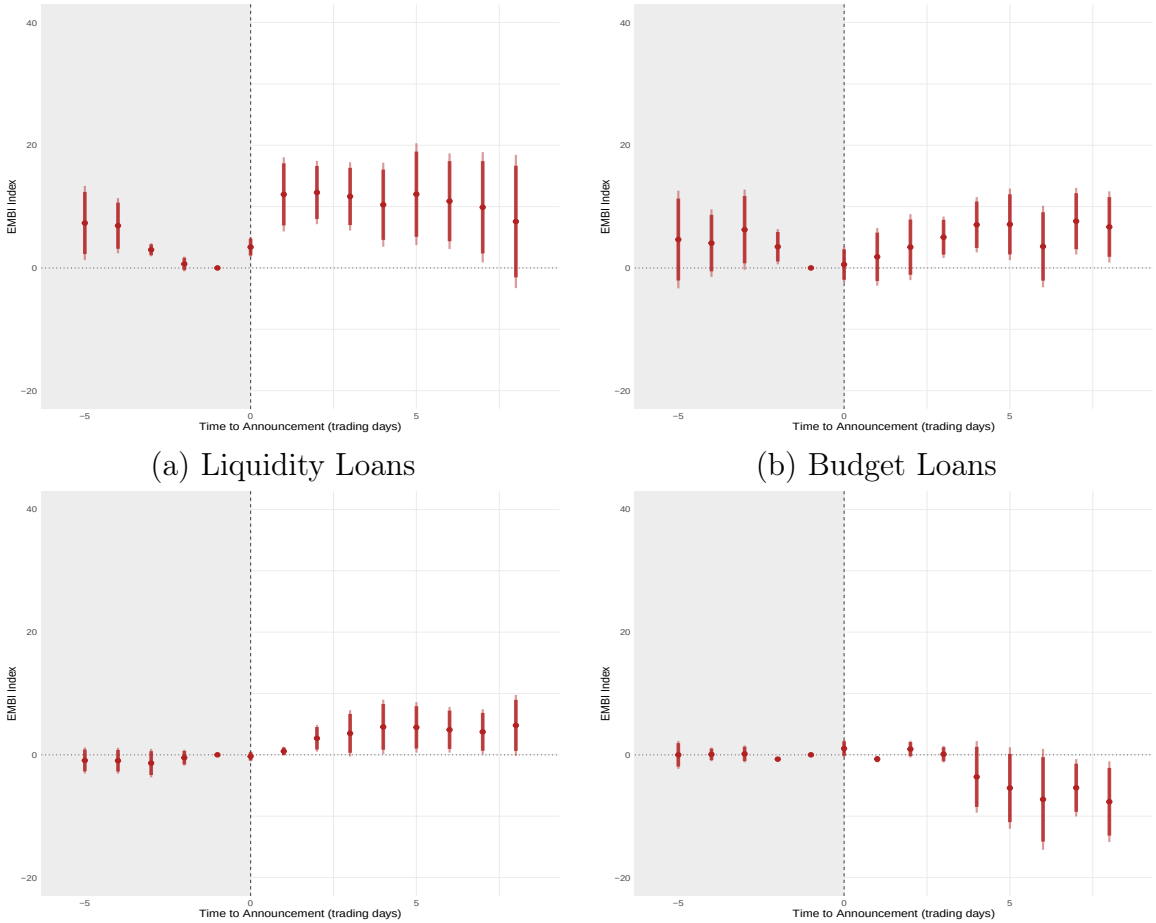
To further assess the role of financial news about loans from China, we examine whether the response of investors depends on their likely attention to such news. We employ a measure of "news pressure" to distinguish between days with higher versus lower volumes of important news Eisensee and Strömberg (2007). Higher news pressure on a day means that some other events have received very high news attention.[22] We expect the likelihood of a Chinese loan gaining attention to be lower if it coincides with a high news pressure day.[23]

We subset our events data into loans announced on high and low news pressure days. Figure 9 shows that investors react more strongly to a Chinese loan when it is announced on a low pressure day. The effect also persists longer. This supports our claim that investors are updating their assessments of borrowers based on financial news reports of Chinese loans.

[21] See Figure F1 in the Appendix.

[22] Chinese loans do not tend to be the most salient news, so this news pressure measure is exogenous to our analysis.

[23] Daily news pressure is defined as the median number of minutes a news broadcast devotes to the top three news segments in a day. Among 62 new Chinese loan announcements in our analysis, 59 are covered in the news data. We calculate the median news pressure for the 59 announcement days (which is 228, close to 220, the median in the full data), and then separate the 59 events by whether they are published on a day with news pressure higher or lower than the median.



(a) Liquidity Loans (b) Budget Loans

(c) Project Loans (d) Unknown Purposes

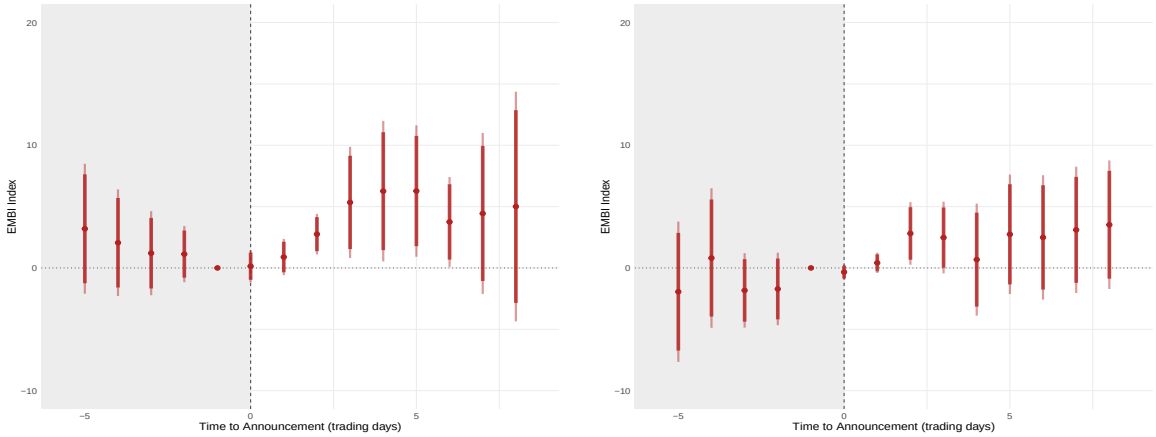
Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure 8. Investor Reactions to Announcements of New Chinese Loans: Classified by Loan Purposes

So far, we have used public announcements about Chinese loans in Bloomberg and the Financial Times. However, not all Chinese loans are covered in the news. We choose news announcements to approximate the informational environment faced by investors. As a robustness check, we consider all loans from China documented by AidData, 2,132 in total. There are 2132 Chinese loan records in total.[24]

Figure 10 shows that only rescue loans lead to a significant increase in the debtor's

[24]We remove loan records without precise dates.

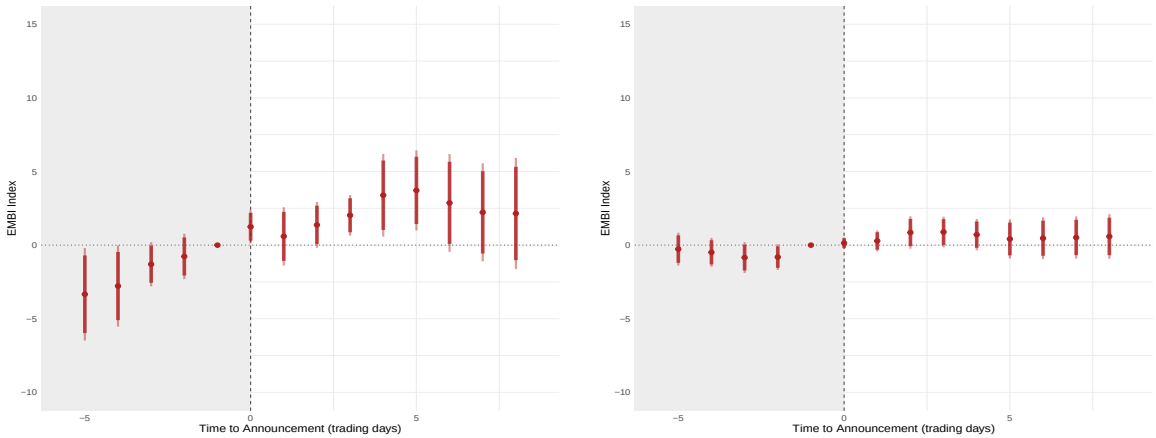


(a) Low News Pressure (b) High News Pressure

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure 9. Investor Reactions to Chinese Loans (AidData): News Pressure on Announcement Day

EMBI+ index. Non-rescue loans and project loans have no effect. This is consistent with what we find using financial news announcements.



(a) Rescue Loans (b) Non-rescue Loans

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure 10. Investor Reactions to Chinese Loans (AidData): Classified by Loan Purposes

The text analysis of the credit rating agency reports indicates that investors may be aware of the politicized nature of many Chinese loans. As such, we expect (Hypothesis 3)

that investors also might consider China's broad lending strategy and the borrower's political alignment with China. The announcement of the BRI (2013) may have prompted investors to think about China's lending as more politically oriented – even though the growth in Chinese lending began several years prior to the announcement (Parks et al., 2023).

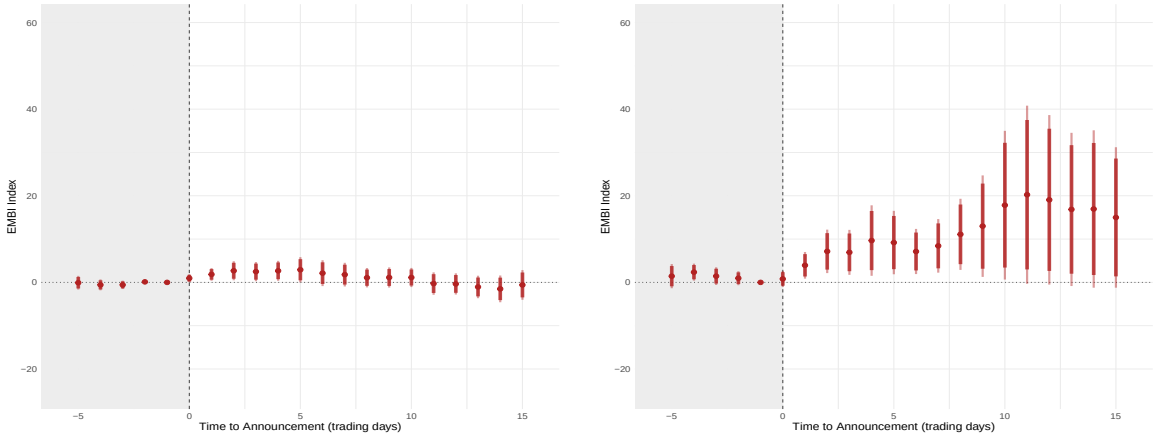
It therefore is possible that borrowers less aligned with China may experience more dramatic reactions to loan announcements, because investors may perceive them as less likely to receive a bailout from China in a crisis. We divide the announcements of Chinese loans into those before and after the BRI was announced in September 2013. Then, we measure a borrower's political alignment with China using an ideal point distance measure based on key votes in the UN General Assembly.[25]

Our results suggest that investors punish borrowers more distant from China after the announcement of BRI. As shown in Figure 11(a), after September 2013, loan announcements had very minimal effects on states closely aligned with China. However, announcements of Chinese loans to less aligned sovereigns after September 2013 significantly increased the borrower's risk premium. The point estimates are also consistently positive in Figure 11(b), while they hover around zero in Figure 11(a). This is consistent with bond market investors worrying that China is less likely to offer bailouts to less aligned countries. To the extent investors also worry that Chinese lenders are not sufficiently attentive to sovereign risk, especially during the large push of BRI, this worry would generate larger risk premiums.

Finally, we note that investors do not necessarily respond to the details – even potentially important ones – of sovereign borrowing from China. One important details is loan size. We select announcements of new loans larger than the third quartile (5 billion USD) in the sample, as well as those that are greater than 10% of the borrower country's GDP. Figure 12 shows that investors do not react to especially large loans.

We also assess whether a country's existing level of creditworthiness – captured by

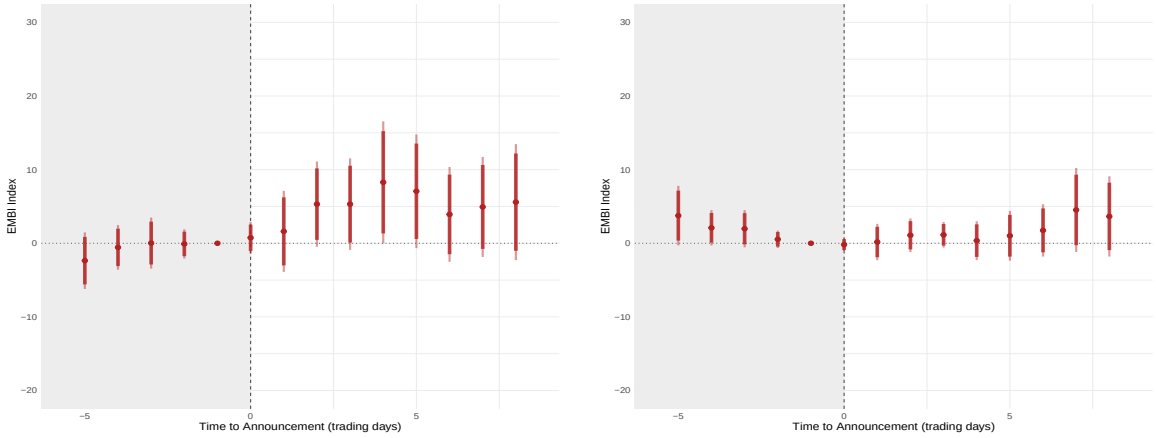
[25]We consider the borrower's UNGA voting ideal point in the year of the loan announcement. We split the ideal point distance data in half: those below the sample median are considered more aligned with China; otherwise, an observation is considered less aligned.



(a) Closer Alignment with China (b) Less Alignment with China

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure 11. Investor Reactions to Announcements of New Chinese Loans: Political Alignment



(a) Greater than five billion USD (b) Greater than 10% of GDP

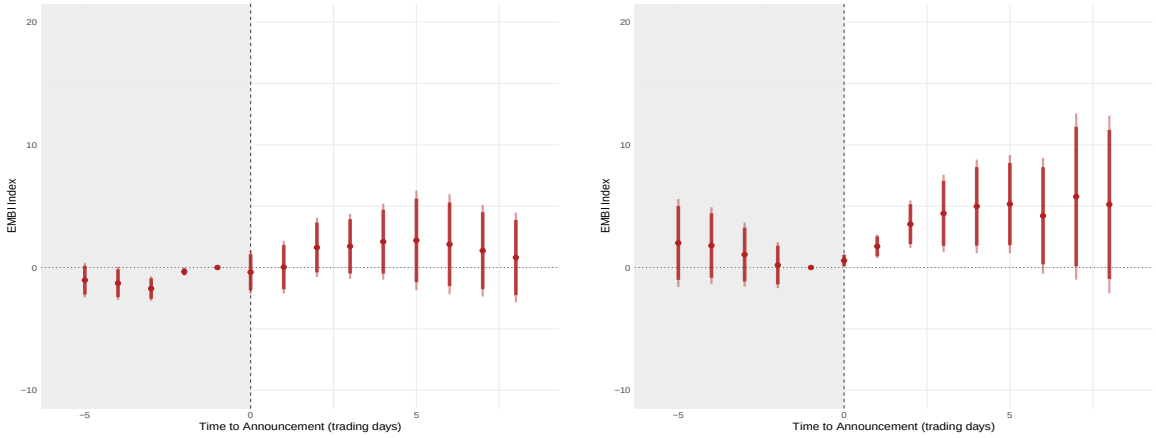
Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero. Five billion USD is the 3rd quartile value of all new loan announcements, and 10% is the median of loan-GDP ratios.

Figure 12. Investor Reactions to Announcements of New Chinese Loans: Loan Size

sovereign credit ratings – matters for market reactions to loan announcements.[26] Figure 13

[26]We consider the borrower's sovereign credit rating the month before the Chinese loan announcement. We use the ratings of three major rating agencies: Moody's, Fitch, and S&P. For 60 out of the 62 events, credit ratings from at least one rating agency are available. Episodes are classified into two groups depending on whether the borrower is rated as non-investment grade by all three rating agencies (below Baa3 for Moody's and below BBB- for S&P and Fitch). Then, among 60 events with available ratings data, 11 happened when

shows that there is a negative market reaction to episodes where the borrower already had a non-investment grade sovereign credit rating. In contrast, there is no significant effect when the borrower is rated investment grade. We use sovereign credit ratings as a measure of creditworthiness because the data are more widely available and also reflect more directly market assessments of countries' creditworthiness. An alternative measure is the country's existing debt stock. When using this measure, we do not find evidence of a significant link between overall debt burden and market reactions. However, debt stock data is missing for many of our episodes, which could cause bias due to selected reporting. Interestingly, however, we do find that for the subset of episodes for which data on overall debt balance is missing, negative market reactions to new loans are significantly more pronounced. In these cases, loans may be more informative to investors, while also generating concern about future debt burdens. The results are shown in Figure C3 in the Appendix.



(a) Investment Grade (b) Non-investment Grade

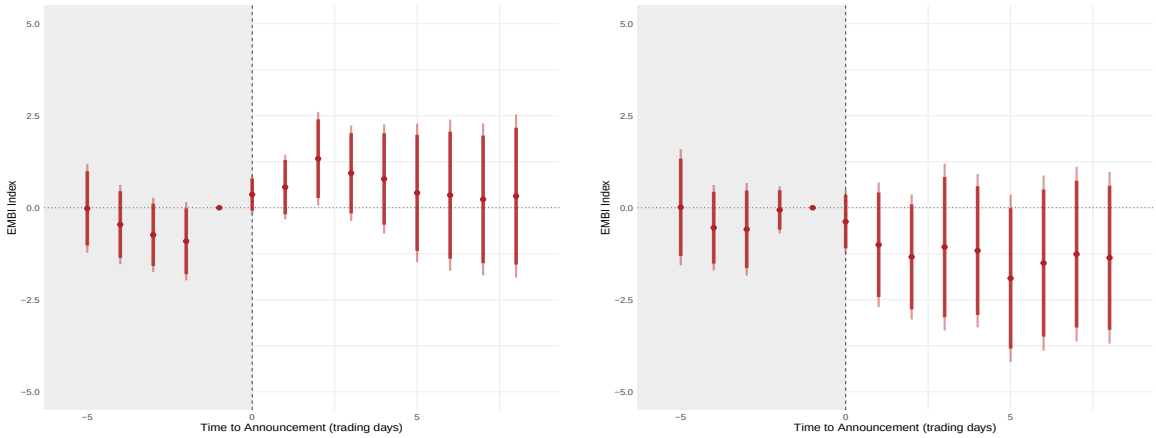
Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure 13. Credit Ratings and Investor Reactions to New Chinese Loans

the borrower was rated investment grade and 49 non-investment grade.

4.4 Do Investors Perceive Chinese Loans as Riskier than Others?

We have shown that investors treat countries with newly announced borrowing from China as, on average, riskier, although this effect varies with the loan purpose. To begin to assess whether this is a response to Chinese loans specifically, versus to new borrowing more generally, we first examine whether Chinese loans co-supported by non-Chinese financiers generate different investor reactions than those solely provided by China.[27] If China as the creditor is used as a heuristic, or if Chinese loans generate concerns about transparency and accountability, we expect investors to worry less about loans co-financed with non-Chinese entities. Indeed, Figure 14 shows that the estimate is consistently positive and significant at the 5% level two days after the loan commitment when China is the only creditor. However, for loans including non-Chinese financiers, the effect is consistently negative, suggesting a reduced risk premium.



(a) China Alone (b) With Non-Chinese Financiers

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure 14. Investor Reactions to Chinese Loans (AidData): Loans with Non-Chinese Financiers

We further compare investors' reactions to public announcements of World Bank loans with Chinese loans. Taking a similar approach to our main analysis, we collect public

[27] The coding of non-Chinese financiers is from AidData.

announcements on all World Bank loans from Bloomberg news and the Financial Times from 2007 to 2023.[28]. We note that Kersting and Kilby (2024)'s recent event study analysis of World Bank loan approvals and stock market performance reports evidence of positive abnormal returns in response to investment project announcements. [29] Sovereign bond investors, however, may react differently than equity market participants.

Compared to Chinese loans, fewer World Bank loans are covered in Bloomberg and the Financial Times. Across a search of all news from 2007 to 2023, there are only 20 announcements, with twelve announcements describing new loans and eight news stories referencing previously-concluded loans.[30] Many loans reported in the financial press involve some budget or liquidity challenges.[31] Even for project loans, the project can be conducted during hard times.[32] Although this gives us a limited sample, it has the advantage that we obtain a set of announcements that are considered important by financial journalists and observed by investors. Additionally, using this same criterion makes our following analysis comparable to that for Chinese loans.

In contrast to Chinese loans, we do not see any effect of World Bank loan announcements on the EMBI+ indices of the borrowers. Figure 15(a) shows the results for all new World Bank loans. Across all post-treatment periods, the effect is insignificant at the 5% level. Even when restricted to non-project loans in Figure 15(b), no significant effect is detected.[33]

As another placebo test, we consider the effects on (secondary) bond markets of announce-

[28]We follow the same procedure as we did for Chinese loans, except for replacing the keyword "China" with "World Bank." We adjust the announcement dates based on actual trading days and clean each event window.

[29]World Bank loans related to structural adjustment, by contrast, are associated with negative abnormal returns.

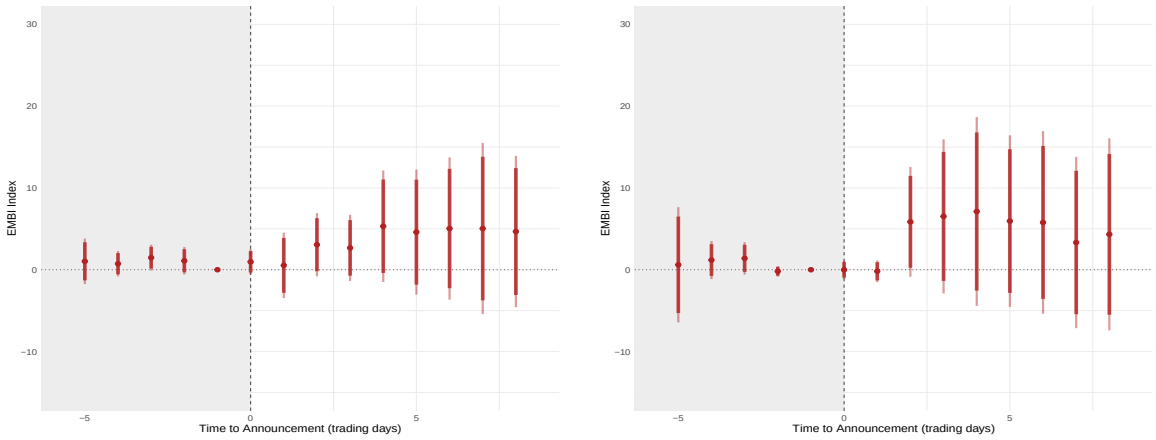
[30]After cleaning event windows, nine new loans remain, and three of them are non-project loans.

[31]For example, this news (https://www.bloomberg.com/news/articles/2022-11-10/egypt-reveals-16-billion-funding-gap-that-imf-deal-can-help-fix) mentions that "*The agreement with the IMF has helped the country secure $5 billion from multilateral organizations including the World Bank and the African Development Bank, which Maait expects to arrive in the fiscal year ending next June.*"

[32]For example, see https://www.bloomberg.com/news/articles/2021-06-30/world-bank-extends-500-million-for-india-s-undocumented-workers?srnd=undefined.

[33]One caveat on the World Bank analysis is that there is a deviation from zero in the pre-treatment period 10 trading days before the treatment. This is because we are constrained by a very small number of news announcements. However, even if the pre-trend persisted, it would bias the effect upwards from its true estimate.

ments of new (primary market) bond issues (as in Ballard-Rosa, Mosley and Wellhausen (2021*b*)). Again, we find no significant effect.



(a) All Loans (b) Non-project Loans

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure 15. Investor Reactions to Announcements of New World Bank Loans

Prviate market investors therefore appear to perceive loans from China as especially risky, relative to those from the World Bank or from bond markets. This is consistent with the distinct features of many Chinese loans, including higher interest rates, which could increase worries about future debt servicing burdens. An additional concern is that Chinese credit may be driven less by market-based risk assessments and more by the borrower's limited set of alternatives. Moreover, World Bank debt is considered senior: in the event of a default or restructuring, multilateral financial institutions typically are repaid in full. Hence, investors may worry less about how this sort of debt would affect debt servicing burdens or the rush for comparable treatment among non-senior creditors in the case of a default.

The distinct features of Chinese loans, however, are also partly present in loans from other emerging creditors. We conduct a parallel analysis on investor reactions to public announcements of loans from Russia, Saudi Arabia, Brazil, and the UAE. Figure C4 in the Appendix shows the results, which indicate some suggestive evidence of investors also

reacting negatively to loans from other emerging creditors.[34]

4.5 Announcements of Previous Loans

Our main analyses consider the effect of new Chinese loans on private investors' risk assessments. Financial news coverage of Chinese lending, however, also includes coverage of existing loans.[35] Overall, announcements of previous loans do not affect investors' reactions (see Figure E1 in the Appendix). Compared to the significant effect of new loans, this result is reasonable since the loan already exists and has less direct impact on the borrowing government's current level of debt or debt servicing.

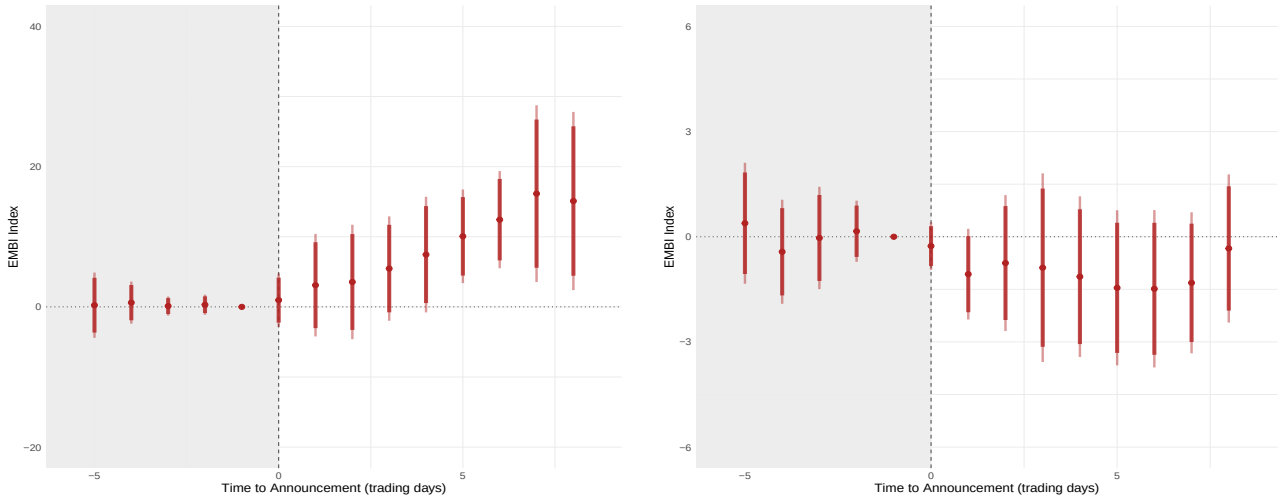
That said, announcements of previous loans can provide information to investors. Investors may worry about previous Chinese loans increasing the country's debt burden if the loan did not increase productivity. Investors also could consider a late announcement of Chinese loans as a dangerous signal of more "hidden debt," which is a common concern for Chinese loans.[36] Moreover, if borrowing from China reveals the country's willingness or ability to borrow from other creditors in response to economic crisis or declines in creditorworthiness, investors might update their expectations on the borrower's type and future behavior. Figure 16 shows the effect of previous liquidity loans versus project loans.[37] Similar to new loans, investors charge higher risk premiums when a country receives liquidity loans from China – even if the loan is made previously. The borrower country's EMBI index increases significantly after announcing a previous liquidity loan, while information on previous project loans has no effect.

[34]Note that we only have 12 new loan announcements with clean event windows for other emerging creditors, which limits our ability to test this rigorously. Figure C4(a) shows pre-trends, which come from the four Saudi Arabia loans. The result after removing them is shown in Figure C4(b).

[35]After cleaning event windows, there are 52 announcements of previous Chinese loans.

[36]For example, see "Zambian Debt to Chinese Lenders May Be More Than Disclosed", Bloomberg, 28 September 2021, retrieved from https://www.bloomberg.com/news/articles/2021-09-28/zambia-may-owe-chinese-lenders-double-what-government-disclosed.

[37]For announcements of previous loans, we do not look at budget loans, because there is only one in the sample.



(a) Liquidity Loans (b) Project Loans

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure 16. Investor Reactions to Announcements of Previous Chinese Loans

5 Conclusion

We have considered how investors in private credit markets respond to information about new sovereign loans from Chinese creditors. Our empirical analyses, based on a text analysis of statements from one of the three main sovereign credit ratings agencies, as well as event studies of sovereign risk premium changes in responses to Chinese loan announcements, largely support our expectations. Announcements of new loans generate larger spreads for emerging and frontier market countries, suggesting that bondholders are concerned with the potential negative implications of additional debt obligations, or with the specific features associated with Chinese loans. These effects are more pronounced for loans that provide general budget support or additional liquidity; for loans that are made after China's 2013 announcement of the Belt and Road Initiative (BRI); and for loans to governments that are geopolitically more distant from China.

Our placebo tests on World Bank loans and primary market bond issues indicate that these results are not necessarily about new credit generally, but are more likely about loans

from China specifically. We do find some suggestive evidence that investors share a similar concern when learning about loans from other emerging bilateral creditors (especially non-Paris Club creditors, such as Brazil, India and Saudi Arabia). In future work, in addition to considering these questions using event studies and cross-national time series data on bond issuance, we hope to draw on interviews with and surveys of professional investors, to assess further their views on Chinese-financed projects.

More broadly, we intend to consider how the composition of existing debt – and especially, of obligations to China-connected financial institutions – affects governments' ability to borrow. We might imagine, for instance, that a diverse creditor profile could generate worries about future difficulties in debt rescheduling and, therefore, that moderate and highly indebted borrowers with a diversity of creditors will have greater difficulty issuing debt, relatively to moderate and highly indebted borrowers with a narrower set of creditors. Alternatively, it might be the case that a large share of Chinese debt (relative to overall sovereign debt) makes more difficult the issuance of new sovereign bonds, just as it makes more difficult the resolution of debt with Paris Club creditors (Ballard-Rosa, Mosley and Rosendorff, 2024; Ferry and Zeitz, 2024). To the extent that composition interferes with generating new borrowing, this may represent another way in which the financing boom of the 2010s ultimately had negative consequences for sovereigns in the Global South.

Appendices

A News Announcements Data

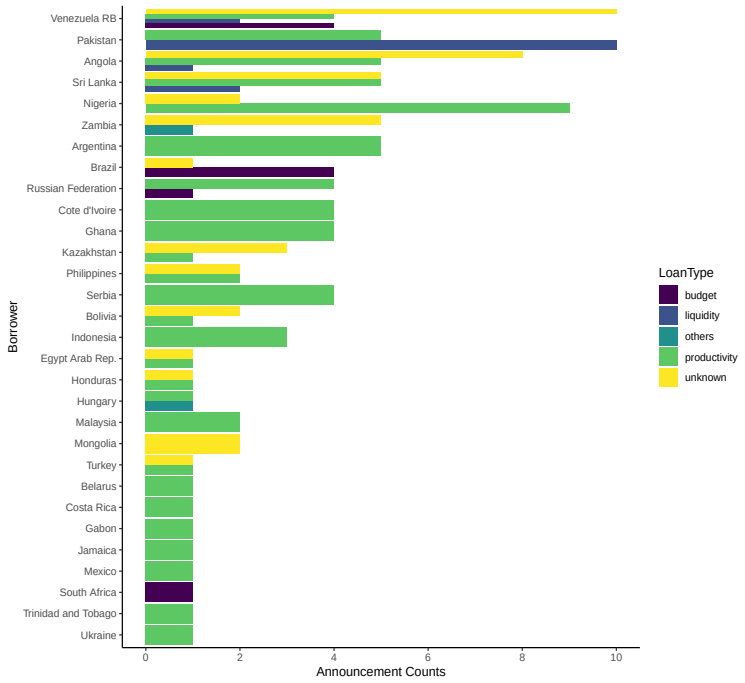


Figure A1. Announcements of Receiving Chinese Loans: Classified by Loan Type (all loans)

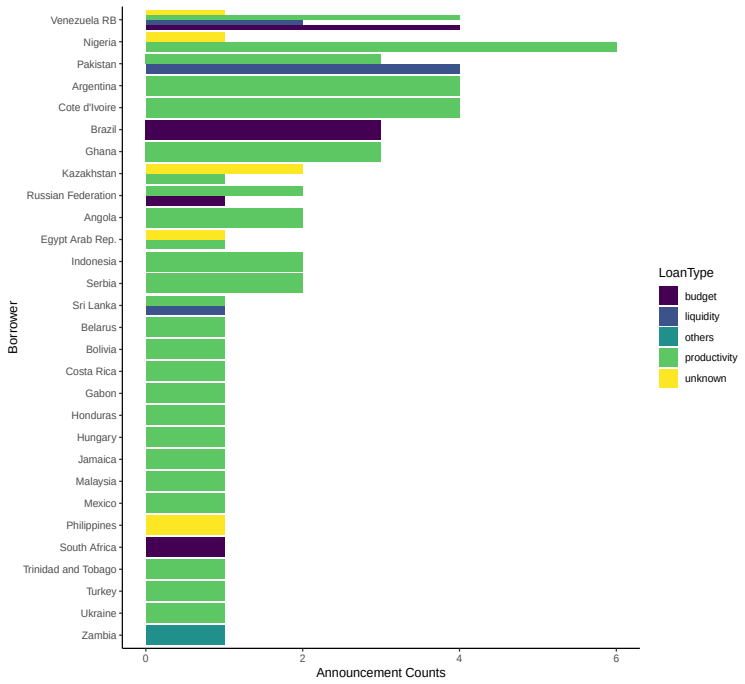


Figure A2. Announcements of Receiving Chinese Loans: Classified by Loan Type (new loans)

B Announcements after cleaning event windows

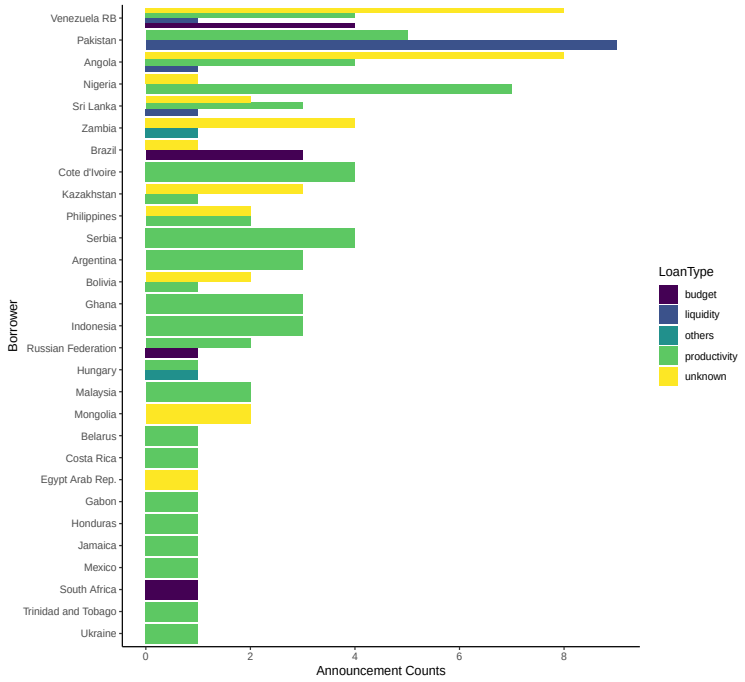


Figure B1. Announcements of Receiving Chinese Loans: Classified by Loan Type (all loans)

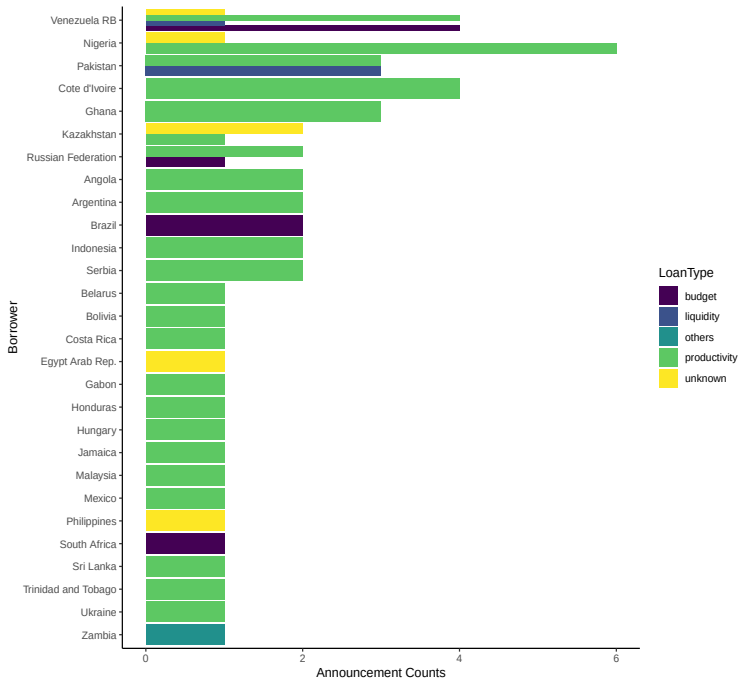


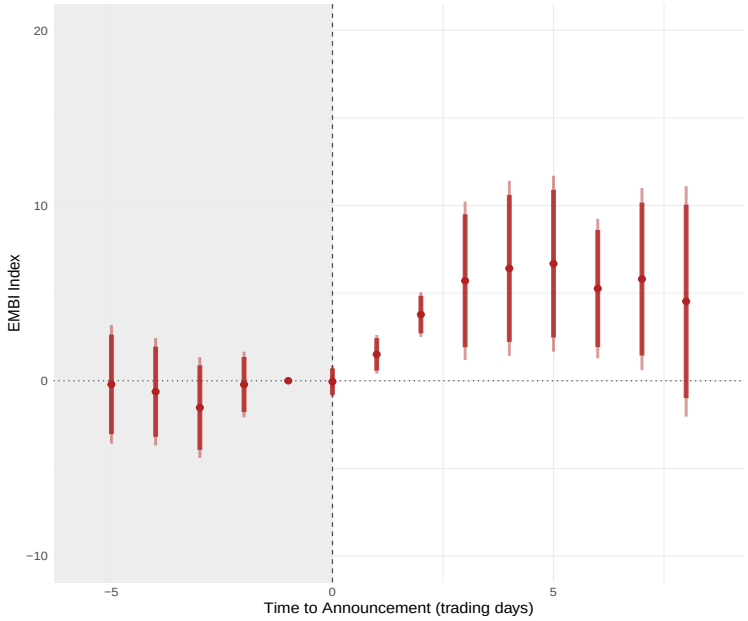
Figure B2. Announcements of Receiving Chinese Loans: Classified by Loan Type (new loans)

C Additional Figures on New Loans

Figure C1 shows that the results are robust after removing loans with unknown purposes.

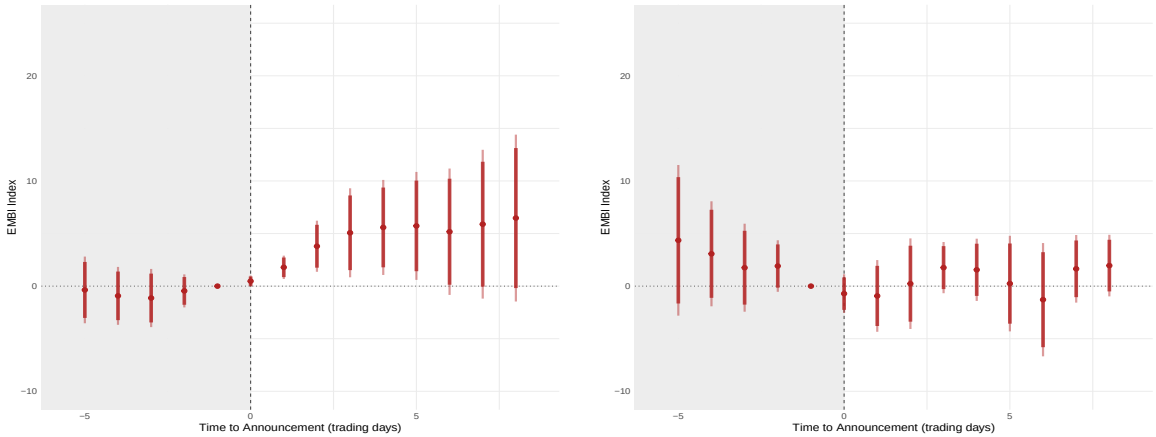
Figure C2 shows that the effect is also mostly driven by loans to non-SOEs (SOE loans are mostly project-based).

Figure C3 shows that the market responds more negatively when the borrower's existing debt stock is opaque. We use external debt stocks (% of GNI) data from the World Bank's International Debt Statistics database. This data is available for 46 out of 62 events on announcements of new Chinese loans and is missing for 16 events.



Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

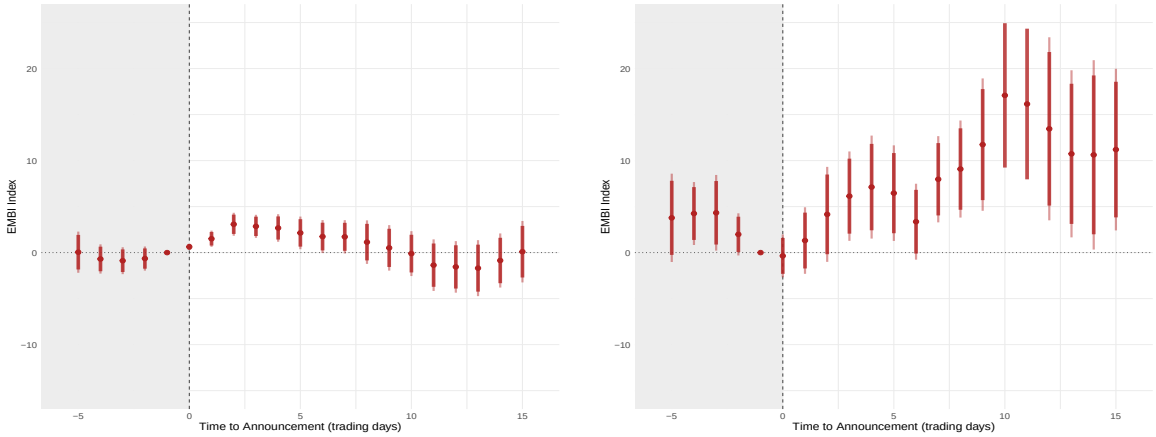
Figure C1. Investor Reactions to New Announcements of Chinese loans (removing unknown purposes)



(a) Loans to non-SOEs (b) Loans to SOEs

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

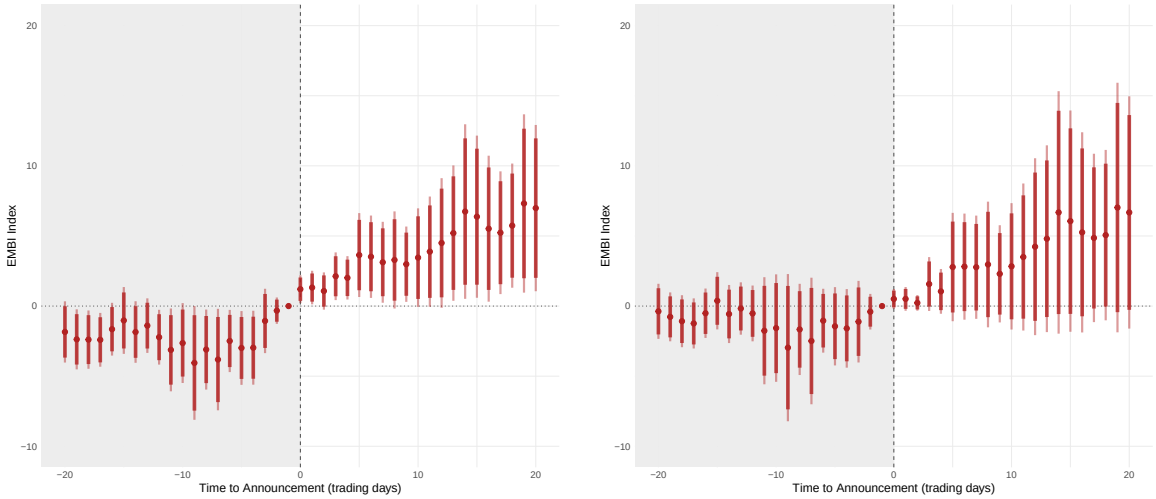
Figure C2. Investor Reactions to Announcements of New Chinese Loans: SOEs and non-SOEs



(a) Debt Data Available (b) Debt Data Missing

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure C3. Investor Reactions to Announcements of New Chinese Loans: Missing Debt Data

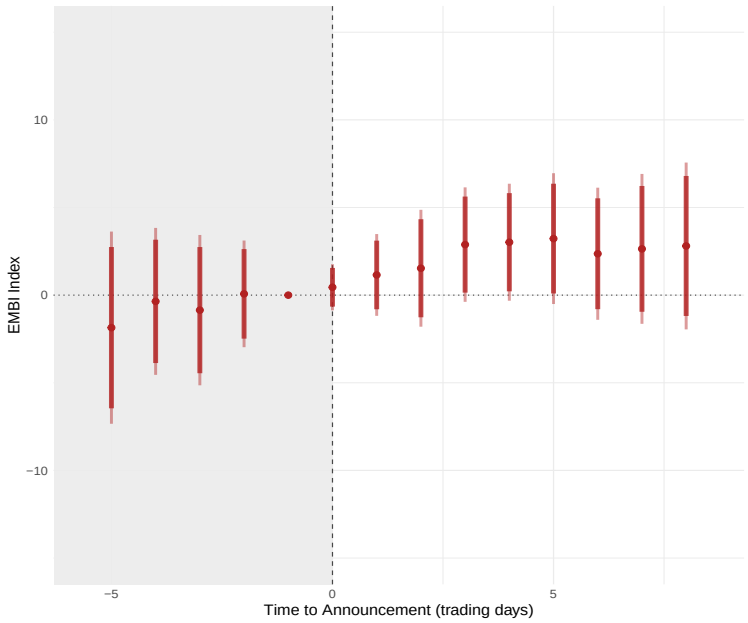


(a) All Loans (b) All Loans (excluding Saudi Arabia)

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure C4. Investor Reactions to All New Loans from Other Emerging Creditors

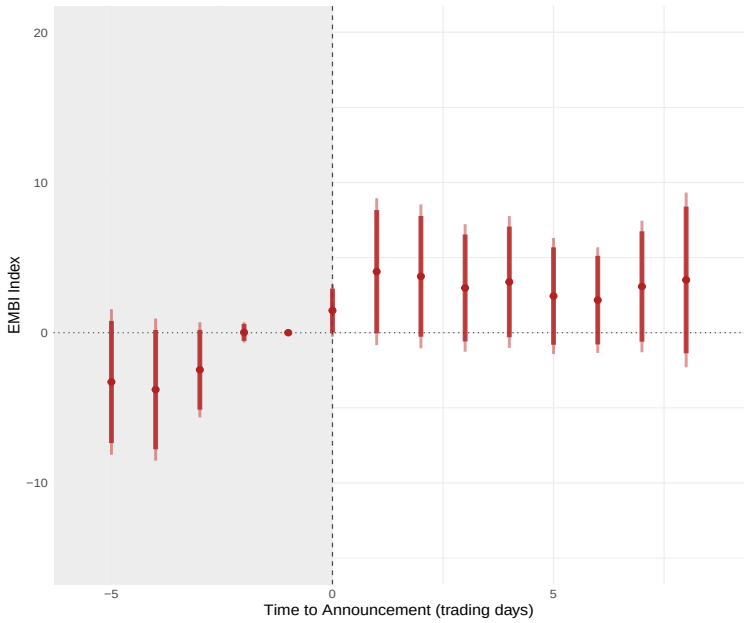
D Additional Figures on All loans



Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

Figure D1. Investor Reactions to All Announcements of Chinese loans (pooling new and previous loans)

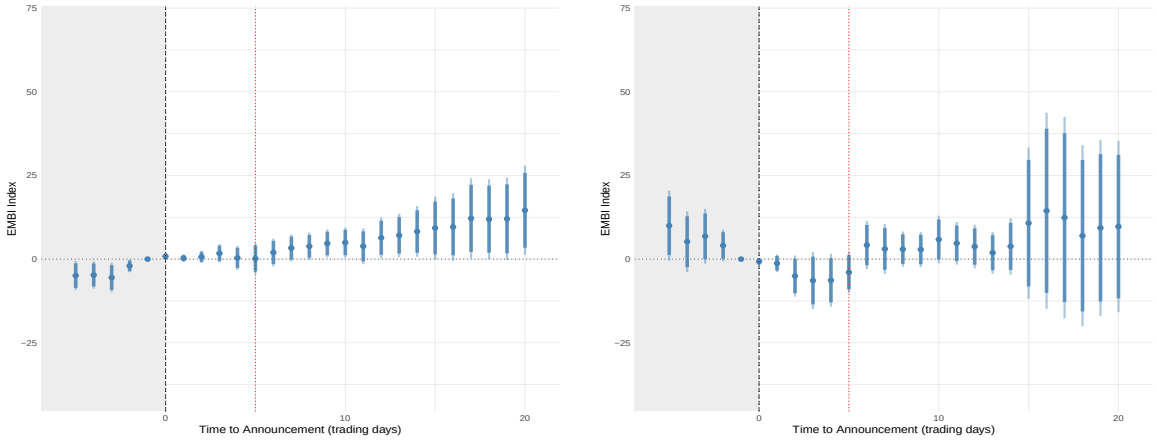
E Additional Figures on Previous Loans



Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero.

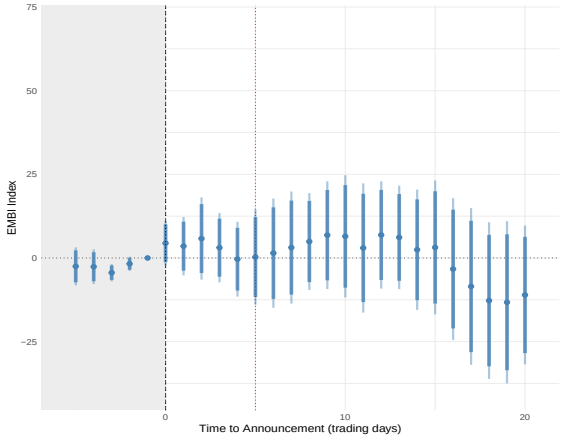
Figure E1. Investor Reactions to All Announcements of Previous Loans

F Placebo Tests

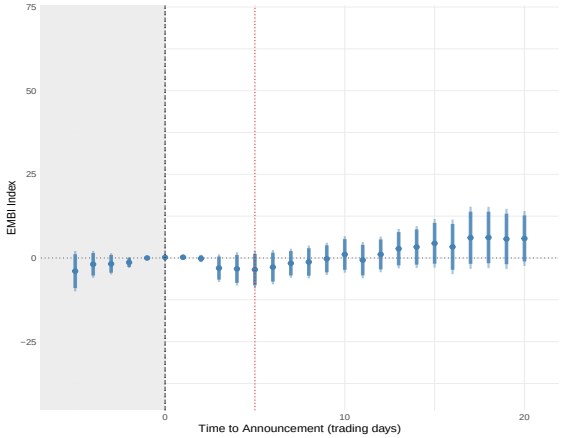


(a) All Loans

(b) Liquidity Loans



(c) Budget Loans



(d) Project Loans

Note: The vertical dashed line is the treatment day, and negative numbers indicate days pre-treatment. The error bars are 95% confidence intervals. Note that $k = -1$ is the benchmark, so the effect is always zero. The gray dashed line is the "fake treatment date" set to one week before the treatment, and the red line indicates five trading days afterward.

Figure F1. Placebo Test: Investor Reactions to New Chinese Loans

References

Afonso, António, João Tovar Jalles and Mina Kazemi. 2019. "The effects of macroeconomic, fiscal and monetary policy announcements on sovereign bond spreads: an event study from the EMU." *REM Working Paper* pp. 067–2019.

Ballard-Rosa, Cameron, Layna Mosley and B. Peter Rosendorff. 2024. "Paris Club Restructuring and the Rise of China." Princeton Sovereign Finance Lab Working Paper.

Ballard-Rosa, Cameron, Layna Mosley and Rachel L. Wellhausen. 2021*a*. "Contingent Advantage? Sovereign Borrowing, Democratic Institutions and Global Capital Cycles." *British Journal of Political Science* 51(1):353–373.

Ballard-Rosa, Cameron, Layna Mosley and Rachel L Wellhausen. 2021*b*. "Contingent advantage? Sovereign borrowing, democratic institutions and global capital cycles." *British Journal of Political Science* 51(1):353–373.

Ballard-Rosa, Cameron, Layna Mosley and Rachel L. Wellhausen. 2022. "Coming to Terms: The Politics of Sovereign Bond Denomination." *International Organization* 76(1):32–69.

Barta, Zsófia and Alison Johnston. 2018. "Rating Politics? Partisan Discrimination in Credit Ratings in Developed Economies." *Comparative Political Studies* 51(5):587–620.

Bauerle Danzman, Sarah, W. Kindred Winecoff and Thomas Oatley. 2017. "All Crises Are Global: Capital Cycles in an Imbalanced International Political Economy." *International Studies Quarterly* 61(4):907–923.

Beaulieu, Emily, Gary W Cox and Sebastian Saiegh. 2012. "Sovereign debt and regime type: Reconsidering the democratic advantage." *International Organization* 66(4):709–738.

Bernard, Andrew B, J. Bradford Jensen, Stephen J Redding and Peter K Schott. 2007. "Firms in International Trade." *Journal of Economic Perspectives* 21(3):105–130.

Bodea, Cristina and Raymond Hicks. 2015. "Price Stability and Central Bank Independence: Discipline, Credibility, and Democratic Institutions." *International Organization* 69(1):35–61.

Bräutigam, Deborah. 2022. "China and Zambia: Creating a Sovereign Debt Crisis." *International Affairs* 98(4):1347–1365.

Bredin, Don, Stuart Hyde and Gerard O Reilly. 2010. "Monetary policy surprises and international bond markets." *Journal of International Money and Finance* 29(6):988–1002.

Brooks, Robert, Robert W Faff, David Hillier and Joseph Hillier. 2004. "The national market impact of sovereign rating changes." *Journal of banking & finance* 28(1):233–250.

Brooks, Sarah M., Raphael Cunha and Layna Mosley. 2015*a*. "Categories, Creditworthiness, and Contagion: How Investors' Shortcuts Affect Sovereign Debt Markets." *International Studies Quarterly* 59(3):587–601.

Brooks, Sarah M, Raphael Cunha and Layna Mosley. 2015*b*. "Categories, creditworthiness, and contagion: How investors' shortcuts affect sovereign debt markets." *International studies quarterly* 59(3):587–601.

Brooks, Sarah M., Rodrigo Cunha and Layna Mosley. 2022. "Sovereign Risk and Government Change: Elections, Ideology and Experience." *Comparative Political Studies* 55(9):1501–1538.
URL: *https://doi.org/10.1177/00104140211047407*

Brown, Kathleen J. 2023. "Why hide? Africa's unreported debt to China." *The Review of*

International Organizations .
URL: *https://doi.org/10.1007/s11558-023-09513-4*

Broz, J. Lawrence, Zhiwen Zhang and Gaoyang Wang. 2020. "Explaining Foreign Support for China's Global Economic Leadership." *International Organization* 74(3):417–452.

Bunte, Jonas B. 2019. *Raise the debt: How developing countries choose their creditors*. Oxford University Press.

Bunte, Jonas B and Brandon J Kinne. 2018. "The politics of government-to-government loans: Interests, information, and network effects." *Unpublished manuscript, University of Texas at Dallas and University of California, Davis* .

Callaway, Brantly and Pedro HC Sant'Anna. 2021. "Difference-in-differences with multiple time periods." *Journal of Econometrics* 225(2):200–230.

Calvo, Guillermo A. and Enrique G. Mendoza. 2000. Contagion, Globalization, and the Volatility of Capital Flows. In *Capital Flows and the Emerging Economies: Theory, Evidence, and Controversies*, ed. Sebastian Edwards. University of Chicago Press pp. 15–41.

Campello, Daniela. 2014. "The Politics of Financial Booms and Crises: Evidence From Latin America." *Comparative Political Studies* 47(2):260–286.

Chen, Muyang. 2023. "China's rise and the reshaping of sovereign debt relief." *International Affairs* 98(4):1755–1775.

Chen, Muyang. 2024. *The Latecomer's Rise: Policy Banks and the Globalization of China's Development Finance*. Cornell University Press.

Chwieroth, Jeffrey. 2007. "Neoliberal Economists and Capital Account Liberalization in Emerging Markets." *International Organization* 61(02):443–463.

Connell, Brendan J. 2019. "Electoral Rules, Interest Group Pressures, and the Price of Democratic Default." *International Studies Quarterly* 63(4):987–1000.
URL: *https://doi.org/10.1093/isq/sqz067*

Copelovitch, Mark, Christopher Gandrud and Mark Hallerberg. 2018. "Financial Data Transparency, International Institutions, and Sovereign Borrowing Costs." *International Studies Quarterly* 62(1):23–41.

Cormier, Ben. 2023. "Chinese or western finance? Transparency, official credit flows, and the international political economy of development." *The Review of International Organizations* 18(2):297–328.

Cormier, Ben and Natalya Naqvi. 2023. "Delegating Discipline: How Indexes Restructured the Political Economy of Sovereign Bond Markets." *The Journal of Politics* 85(4):1501–1515.
URL: *https://doi.org/10.1086/723997*

Cunha, Raphael. 2024. "Democracy and Markets in a Partially Globalized World: Local and Global Financial Market Responses to Elections in Developing Countries." *International Studies Quarterly* 68(2):sqae017.
URL: *https://doi.org/10.1093/isq/sqae017*

Dreher, Axel, Andreas Fuchs, Bradley Parks, Austin Strange and Michael J Tierney. 2022. *Banking on Beijing: The aims and impacts of China's overseas development program*. Cambridge University Press.

Eisensee, Thomas and David Strömberg. 2007. "News droughts, news floods, and US disaster relief." *The Quarterly Journal of Economics* 122(2):693–728.

Eshima, Shusei, Kosuke Imai and Tomoya Sasaki. 2023. "Keyword-Assisted Topic Models." *American Journal of Political Science* .

Ferry, Lauren and Alexandra O. Zeitz. 2024. "China, the IMF, and Sovereign Debt Crises." *International Studies Quarterly* .

Gelpern, Anna, Sebastian Horn, Scott Morris, Brad Parks and Christoph Trebesch. 2021. "How China Lends: A Rare Look into 100 Debt Contracts with Foreign Governments." Peterson Institute for International Economics, Kiel Institute for the World Economy, Center for Global Development, and AidData at William & Mary.

Gould, Erica R. 2003*a*. "Money Talks: Supplementary Financiers and International Monetary Fund Conditionality." *International Organization* 57(3):551–586.

Gould, Erica R. 2003*b*. "Money Talks: Supplementary Financiers and International Monetary Fund Conditionality." *International Organization* 57(3):551–586.

Gray, Julia. 2013. *The Company States Keep: International Economic Organizations and Investor Perceptions*. Cambridge: Cambridge University Press.

Hartelius, Kristian, Kenichiro Kashiwase and Laura E. Kodres. 2008. "Emerging Market Spread Compression: Is it Real or is it Liquidity?" *IMF Working Papers* 2008(010).
URL: *https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Emerging-Market-Spread-Compression-Is-it-Real-or-is-it-Liquidity-21546*

Horn, Sebastian, Bradley C Parks, Carmen M Reinhart and Christoph Trebesch. 2023. China as an international lender of last resort. Technical report National Bureau of Economic Research.

Horn, Sebastian, Carmen M Reinhart and Christoph Trebesch. 2021. "China's overseas lending." *Journal of International Economics* 133:103539.

Horn, Sebastian, Carmen M Reinhart and Christoph Trebesch. 2022. "Hidden defaults.".

Jaramillo, Laura and Michelle Michelle Tejada. 2011. "Sovereign Credit Ratings and Spreads in Emerging Markets: Does Investment Grade Matter?" *IMF Working Papers* 2011(44).
URL: *https://www.elibrary.imf.org/view/journals/001/2011/044/001.2011.issue-044-en.xml*

Kaplan, Stephen. 2021. *Globalizing Patient Capital: The Political Economy of Chinese Finance in the Americas*. Cambridge: Cambridge University Press.

Kersting, Erasmus and Christopher Kilby. 2024. "How do stock markets in emerging economies respond to World Bank loan approvals?" *Emerging Markets Review* 63:101207.

Kondo, Illenin, Astghik Mkhitaryan and César Sosa-Padilla. 2024. Borrowing from China and Sovereign Credit Risk. In *AEA Papers and Proceedings*. Vol. 114 American Economic Association 2014 Broadway, Suite 305, Nashville, TN 37203 pp. 148–152.

Krahnke, Tobias. 2023. "Doing more with less: The catalytic function of IMF lending and the role of program size." *Journal of International Money and Finance* 135:102856.
URL: *https://www.sciencedirect.com/science/article/pii/S0261560623000578*

Lang, Valentin, David Mihalyi and Andrea F Presbitero. 2023. "Borrowing costs after sovereign debt relief." *American Economic Journal: Economic Policy* 15(2):331–358.

Lee, Yaechan, Willian Kring, Greg Chin and Kevin P. Gallagher. 2024. A Survey of China within and beyond the Bretton Woods System. Technical report Global Development Policy Center GCI Working Paper 033.

Longstaff, Francis A., Jun Pan, Lasse H. Pedersen and Kenneth J. Singleton. 2011. "How Sovereign Is Sovereign Credit Risk?" *American Economic Journal: Macroeconomics* 3(2):75–103.

Makoff, Gregory. 2024. *Default: The Landmark Court Battle Over Argentina's $100 Billion Debt Restructuring*. Washington, DC: Georgetown University Press. Foreword by Lee C. Buchheit.

Mihalyi, David and Christoph Trebesch. 2023. Who Lends to Africa and How? Introducing the Africa Debt Database. Technical report Kiel Working Papers 2217.

Mosley, Layna. 2003. *Global Capital and National Governments*. New York, NY: Cambridge University Press.

Mosley, Layna and B. Peter Rosendorff. 2023. "Government Choices of Debt Instruments." *International Studies Quarterly* 67.

Nelson, Stephen C. 2017. *The Currency of Confidence: How Economic Beliefs Shape the IMF's Relationship with Its Borrowers*. Cornell University Press.

Parks, Bradley C, Ammar A Malik, Brooke Escobar, Sheng Zhang, Rory Fedorochko, Kyra Solomon, Fei Wang, Lydia Vlasto, Katherine Walsh and Seth Goodman. 2023. *Belt and road reboot: Beijing's bid to de-risk its global infrastructure initiative*. AidData at William & Mary Williamsburg, VA.

Pin, S., Y. Wang and W. Chang. 2020. "The Effects of China's Development Projects on Political Accountability." *British Journal of Political Science* pp. 1–20.

Qian, Jing, James Raymond Vreeland and Jianzhi Zhao. 2023. "The Impact of China's AIIB on the World Bank." *International Organization* 77(1):217–237.

Queralt, Didac. 2022. *Pawned States: State Building in the Era of International Finance*. Princeton University Press.

Rexer, Jonah M, Ethan B Kapstein, Andres F Rivera et al. 2022. Pricing Conflict Risk: Evidence from Sovereign Bonds. Technical report Empirical Studies of Conflict Project.

Rey, Hélène. 2015. "Dilemma Not Trilemma: The Global Financial Cycle and Monetary Policy Independence." *NBER Working Paper* No. 21162.

Schlegl, Matthias, Christoph Trebesch and Mark L. J. Wright. 2019. "The Seniority Structure of Sovereign Debt." NBER Working Paper 25793.

Schultz, Kenneth A and Barry R Weingast. 2003. "The democratic advantage: institutional foundations of financial power in international competition." *International organization* 57(1):3–42.

Shea, Patrick E., Bernhard Reinsberg and Andreas Kern. 2024. "China Lending and the Political Economy of Leader Survival." *Journal of Conflict Resolution* 0(0):00220027241263036.

Shim, S. 2022. "Who Is Credible? Government Popularity and the Catalytic Effect of IMF Lending." *Comparative Political Studies* 55(13):2147–2177.
URL: *https://doi.org/10.1177/00104140211060280*

Slapnik, Ursula and Igor Lončarski. 2023. "Understanding sovereign credit ratings: Text-based evidence from the credit rating reports." *Journal of International Financial Markets, Institutions and Money* 88:101838.

Tomz, Michael and Mark L.J. Wright. 2013. "Empirical Research on Sovereign Debt and Default." *Annual Review of Economics* 5(1):247–272.

Vaaler, Paul M., Burkhard N. Schrage and Steven A. Block. 2006. "Elections, Opportunism,

Partisanship and Sovereign Ratings in Developing Countries." *Review of Development Economics* 10(1):154–170.

Widmann, Monica. 2024. "Violating Impartiality: The United States Judiciary Governing the Market." Unpublished manuscript.

World Bank. 2022. International Debt Report 2022. Technical report World Bank.

World Bank. 2023. International Debt Report 2023. Technical report World Bank.

Zeitz, Alexandra O. 2024. *The Financial Statecraft of Borrowers: African Governments and External Finance*. Cambridge: Cambridge University Press.

Zeitz, Alexandra O. and Layna Mosley. 2024. "Terms and Conditions: The Pricing and Politics of Bilateral Sovereign Lending." Unpublished manuscript.

Özmen, Erdal and Özge Doğanay Yaşar. 2016. "Emerging market sovereign bond spreads, credit ratings and global financial crisis." *Economic Modelling* 59:93–101.
URL: *https://doi.org/10.1016/j.econmod.2016.06.014*