

United States Financial Sanctions and the Surge of Chinese Lending *

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Abstract

The United States has increasingly imposed financial sanctions on foreign economies for activities including trading in weapons of mass destruction, supporting terrorism and drug cartels, and military aggression. We find that during 1990-2023, U.S. financial sanctions were associated with a 33.37% reduction in lead syndicated loans from non-Chinese lenders in the G7 and major financial centers. However, Chinese mainland and overseas lead lenders *offset* this credit contraction by approximately 11.30%. We further show that in Hong Kong, non-Chinese and overseas Chinese lead lenders almost equally covered the credit gap in sanctioned economies, indicating that our estimates of the Chinese offset are conservative. Finally, firms that increased their leverage with Chinese lenders during sanction periods exhibited lower operational efficiency, suggesting that Chinese syndicated loans are an inferior substitute.

Keywords: financial sanctions, syndicated loans, cross-border lending, Chinese banks, capital control, mergers and acquisitions

JEL Classification: F51, G15, G20

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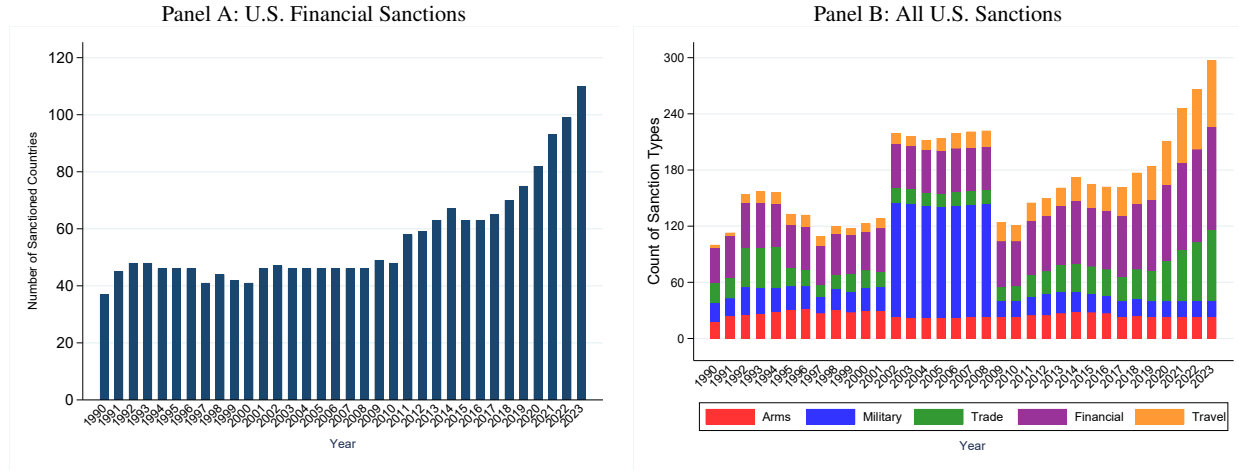
1 Introduction

Several influential studies document that the Chinese government and its state owned banks are challenging the United States in global financial markets (Gelpern et al., 2023), particularly to low-income and emerging economies (Horn et al., 2021). Evidence further suggests that China is competing directly with the United States in the global syndicated loan market that issued more than 0.15 trillion USD in new loans and carried more than 10.40 trillion USD in outstanding debt in 2023 (LPC, 2024). The market share of U.S. banks in global syndicated loans declined from 64.10% during 1990-2001 to 44.65% during 2016-2023. Over the same time, the market share of Chinese banks increased from 0.51% to 3.20%.

As China has expanded its presence in the global syndicated loan market, the U.S. government has increasingly turned to sanctions as a tool to deter, coerce, or even punish foreign nations for activities such as trading in weapons of mass destruction, supporting terrorism and drug cartels, engaging in military aggression, etc. Figure 1 Panel A shows that the number of economies subject to U.S. financial sanctions rose from 46 in 2001 to 110 in 2023. Panel B illustrates that overall sanctions, including arms embargoes, restrictions on military cooperation, trade, finance and travel, roughly doubled between 1990 and 2003; and that financial sanctions emerged as an increasingly prominent policy instrument alongside travel sanctions following the 2008 global financial crisis.

There are several reasons why we would expect that U.S. financial sanctions simultaneously reduce the supply of syndicated loans from G7 lenders while creating opportunities for Chinese banks to expand. First, financial firms operating under U.S. jurisdiction are required to curtail and even cease all business dealings with sanctioned entities and restrict transactions solely to non-sanctioned parties within the sanctioned economy. Non-compliance may result in substantial fines and regulatory penalties. For example, in 2025 the US government fined GVA Capital Ltd., a San Francisco-based venture capital firm \$216 million dollars for violating Russia/Ukraine sanctions and for failing to comply with a subpoena. Even firms assessed smaller fines can suffer significant reputational losses (Berkowitz et al., 2026). Second, the U.S. government coordinates financial sanctions with its G7 allies, further constraining the pool of willing lenders in sanctioned markets.

Figure 1 TYPE OF U.S. SANCTIONS



NOTE: This figure plots the number of U.S. sanctions during 1990-2023 from the Global Sanction Database (GSDB) (Yalcin et al., 2025). Panel A documents financial sanctions by the U.S. government. Panel B presents five sanction types including arms, military, trade, financial and travel sanctions by the U.S. government. The correlation between trade sanction and financial sanctions is 26.9%. Details on the timing and target economies of U.S. financial sanctions are provided in Appendix A5.

In this context, Chinese banks which hold substantial assets in both U.S. dollar and RMB are well positioned to expand their operations to fill the credit gap. Overseas branches of Chinese banks legally incorporated in financial centers such as Hong Kong and Singapore enjoy an additional advantage, as they are financial centers with relatively free capital mobility as compared to mainland Chinese banks which are mostly subject to capital controls .

We find that China only partially offsets the credit contraction induced by U.S. financial sanctions. While non-Chinese banks in the G7 and financial centers reduced the value of their syndicated loans by 33.37% and raised loan prices, mainland Chinese banks contributed a 2.17% increase in lending, overseas Chinese banks in G7 countries contributed 0.09%, and overseas Chinese banks in financial centers contributed 1.51% and all three sources reduced their loan rates. Together, these three Chinese components yielded a aggregated lending increase of 3.77%, implying that Chinese lending offsets approximately 11.30% of loan reduction in G7 and financial center. Our results further suggest that U.S. financial sanctions were well enforced because there was very little leakage from overseas Chinese banks in G7. The main sources of leakage in the financial centers were Hong Kong and Singapore, which contributed 1.35% and 0.14% respectively.

We further show that the Chinese substitution effect is driven by transient sanctions rather than persistent sanctions. When we extend the analysis to distinguish between persistent and transient sanctions, we find that Chinese banks more strongly offset transient U.S. financial sanctions. One interpretation is that sanctions are more likely to be transient in countries that credibly commit to reforming the behavior that triggered them, such as curtailing weapons proliferation or severing ties with terrorist organizations, and that Chinese lenders view firms in such countries as comparatively lower-risk borrowers with stronger recovery prospects.

Our estimates of the Chinese offset effect are conservative when non-Chinese lenders in Hong Kong are taken into account. In Hong Kong, overseas Chinese and non-Chinese lenders increased their loans to firms in sanctioned economies by roughly equal magnitude, implying that a significant share of the total offset is attributable to non-Chinese lenders than to China alone. Beyond Hong Kong, it is also possible that lenders in other jurisdictions selectively ignored U.S. sanctions. Notably, our estimates identify Taiwan as a significant participant in sanctioned markets given its substantial market share, though this result should be interpreted with caution given the estimation could be noisy.

An analysis of companies suggests that Chinese loans served as a limited and potentially inferior substitute for non-Chinese loans. Only 0.22% of firms in the sample had originally relied on loans from non-Chinese banks in the G7 countries and financial centers before sanctions and took on more debt from China after sanctions were enacted. Thus, sanctions simply made firms that had depended on China even more dependent. Relative to firms that continued to borrow from non-Chinese lenders in the G7 and financial centers, these firms experienced an 11.30% decline in total factor productivity following the imposition of financial sanctions, consistent with Chinese syndicated loans serving as an inferior substitute.

Related Literature

Following the global financial crisis in 2008, financial sanctions have become the U.S. government's most important sanction tool. Several articles study the impact of financial and other sanc-

tions imposed on Russia after its 2014 invasion of Crimea and its 2022 invasion of Ukraine, including [Jiao and Wei \(2026\)](#), [Keerati \(2023\)](#), [Itskhoki and Mukhin \(2025\)](#)), and [Garofalo et al. \(2025\)](#)). [Cipriani et al. \(2023\)](#) provides an overview of how financial sanctions enacted by North American and European countries can deny sanctioned economies access to international payment systems. [Besedeš et al. \(2021\)](#) documents that E.U. financial sanctions push large firms to reallocate their cross-border activities toward non-sanctioned third parties. Our paper complements the work of [Efing et al. \(2023\)](#) showing that while German domestic banks cut lending to sanctioned firms by 38%, their overseas branches offset a substantial share of the credit hole.

Our paper is related to several studies of China’s growing economic influence. [Horn et al. \(2020, 2021\)](#) analyze China’s government overseas lending, [Cerutti et al. \(2023\)](#) studies Chinese private banks and [Morck et al. \(2008\)](#) studies China’s outward foreign direct investment (OFDI). [Ma et al. \(2025\)](#) examines the growing importance of Chinese households that buy U.S. stocks.

Our findings relate to studies of how syndicated lending responds to global shocks. [Berg et al. \(2021\)](#) examines the 24% decline in loan issuance in the UK syndicated loan market after the Brexit. [Gustafson et al. \(2021\)](#) highlights the monitoring role of lenders in the global syndicated loan market. [Giannetti and Jang \(2025\)](#) suggests that foreign lenders tend to expand credit more aggressively than domestic lenders during lending booms, which can contribute to banking crises. [Giannetti and Laeven \(2012\)](#) also finds that global lenders tend to lend more domestically during financial crisis. Our paper shows how U.S. financial sanctions is strongly associated with the reallocation of syndicated loan reallocation from the west to the east.

The paper is organized as follows. Section 2 outlines the institutional background and testable hypotheses. Section 3 describes the data sources, sample construction, and key variable definitions. Section 4 presents the empirical methodology, and discusses the main results. Section 5 presents robustness tests and further discussions. Section 6 concludes the paper.

2 Institutional Background and Hypothesis Development

This section provides an overview of relevant institutional facts and then develops several testable hypotheses.

2.1 Institutional Overview

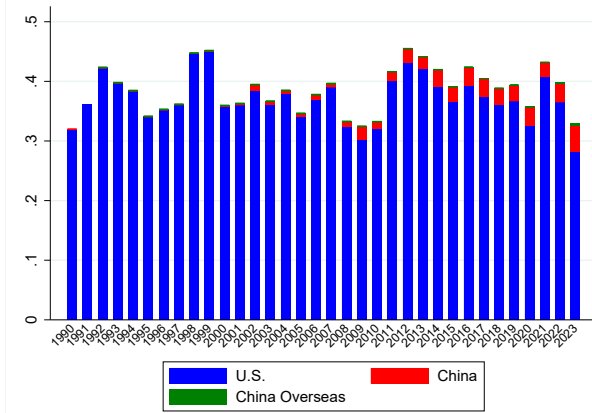
Sanctions have become the primary tool of post-Cold War economic statecraft. The U.S. Office of Foreign Assets Control (OFAC) and the Global Sanctions Database (GSDB) Version 4 (Yalcin et al., 2025) are the most influential data sources on sanctions. For our purposes, the GSDB has several advantages including: (1) comprehensive multilateral coverage (1950-2023) including UN, EU, and bilateral sender-target relationships; (2) differentiation between implemented sanctions and threatened measures; (3) an intensity indicator that denotes the level of success of particular sanctions; (4) automated text analysis of United Nations resolutions, WTO dispute-settlement reports, and national government documents with manual validation. While OFAC provides a detailed account of U.S. sanctions¹ the GSDB is more useful for an international study of U.S. financial sanctions that are coordinated with its G7 and EU allies. The sanctioned economies included in our sample are listed in Table A5.

Several changes in international financial institutions have strengthened the position of the United States in global financial market power. These include (1) the financing of trade through derivative instruments and capital markets that increases systemic sanction vulnerability; (2) the hegemony of the dollar in payment systems and (3) U.S. institutional control over financial infrastructure, including SWIFT and clearing systems. Complementing these advantages, the United States is the largest supplier of syndicated loans and also coordinates financial sanctions with its EU and G7 partners, many of whom are significant players in the syndicated loan market. This combination of market dominance and multilateral coordination amplifies the coercive reach of U.S. financial sanctions.

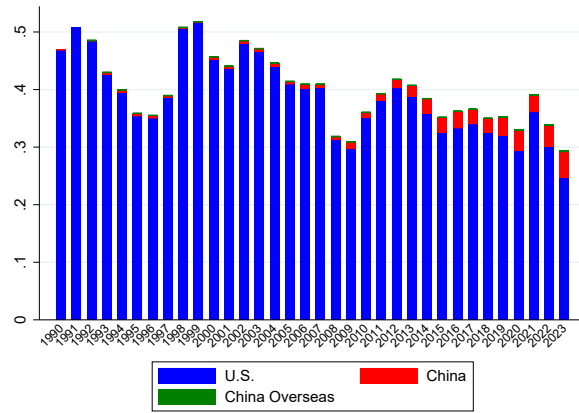
¹A potential is that OFAC relies on administrative notices and legal texts that are updated irregularly and without external cross-checking.

Figure 2 CHINESE VERSUS U.S. SYNDICATED LOANS

Panel A: Value Share of Loans



Panel B: Number Share of Loans



NOTE: This figure shows the composition of syndicated lending by lender origin from 1990 to 2023. Panel A presents value share of syndicated loans from Chinese (U.S.) branches as a share of global market value. Panel B presents number share of loans from the branches in U.S. (China) as a share of global deal numbers during the same period. U.S. shares do not include Chinese overseas branches, and vice versa. Details on the timing and target countries of U.S. financial sanctions are provided in Appendix A5.

As a capital-abundant country with massive household savings but strict capital controls, China has both financial resources and institutional capacity to offer alternatives to U.S. finance. Critically, this capacity not primarily through direct lending from mainland Chinese banks, but through overseas branches of Chinese banks strategically positioned in global financial centers and G7 jurisdictions. Though legally incorporated abroad, these branches remain ultimately controlled by their Chinese parent institutions. When the overseas bank is located in a country that does not cooperate with U.S. sanctions, this organizational structure allows Chinese capital to penetrate sanctioned markets while maintaining plausible jurisdictional distance from both U.S. regulators and China's own capital controls.

China's growing willingness to extend credit abroad was formally institutionalized by the *Go Abroad* policy launched in 1999 and accelerated throughout the 2000s, which explicitly encouraged Chinese financial institutions to establish overseas branch networks in strategic financial hubs. This policy transforms those institutions from domestically only lenders into globally integrated intermediaries. Three interconnected factors explain why overseas branches, rather than domestic banks, have emerged as the primary vehicles for lending in geopolitically sensitive markets: domestic economic pressures that compressed returns on home lending; the strategic overseas in-

infrastructure built under the *Go Abroad* policy. This unique institutional advantage allows overseas branches to hold in sanctioned markets, insulating parent institutions from direct regulatory exposure. Figure 2 traces the growth of China's syndicated lending since 1990, revealing a strategic pivot amid successive domestic financial shocks, including the 2008 global financial crisis, the 2015 stock and currency market turmoil, the pandemic, and the ongoing real estate crisis, each of which dampened returns in China's real economy.

2.2 Hypothesis Development

When a country becomes subject to U.S. financial sanctions, it is compelled to reassess external financial ties and explore alternative economic channels. This includes strengthening partnerships with non-Western actors and building domestic market resilience. Strict compliance by U.S. banks triggers a cascading effect in credit availability, prompting sanctioned entities to diversify their financial alliances (Mamonov et al. (2023)). This dynamic gives rise to a testable hypothesis: U.S. financial sanctions reduce the supply of credit from Western lenders while increasing sanctioned economies' reliance on other alternative financial systems. Over time, such pressures may also foster deeper regional financial cooperation among sanctioned states seeking to collectively mitigate the effects of financial sanctions from the U.S..

As the world's second largest economy, China has increasingly sought to develop external alternatives to the Western-dominated financial system. Key policy includes the Belt and Road Initiative (BRI), which facilitates infrastructure investment and trade connectivity across partners, and a growing network of bilateral currency swap agreements designed to promote the international use of the renminbi (RMB) in cross-border transactions. These efforts reflect China's broader strategic objective of reducing dependence on U.S.-centric financial infrastructure while expanding its own monetary policy impact.

Moreover, China's high domestic savings rate, approximately 40% in 2023², provides a substantial and stable funding base for its banking system. This enables Chinese banks to raise capital

²Details can be found here at World Bank. <https://data.worldbank.org/indicator/NY.GNS.ICTR.ZS>

at relatively low cost in domestic markets, supporting potential outward financial expansion when the return in domestic markets is decreasing. State-oriented financial institutions, together with abundant domestic capital, enables China to offer alternative financing to countries excluded from Western financial systems, reinforcing its growing role as a creditor in global financial markets.

However, the capacity and willingness to extend credit to sanctioned economies differ fundamentally across types of Chinese lenders. Domestically located banks in Mainland China operate under the direct supervision of Chinese financial regulators and remain highly sensitive to their own U.S. dollar clearing exposures and correspondent banking relationships. These institutions face significant constraints in lending directly to sanctioned jurisdictions, as such activities could jeopardize their access to the U.S. financial system and expose their limited overseas operations to enforcement actions. Consequently, Mainland Chinese domestic banks exhibit only modest expansion into sanctioned markets following U.S. sanctions, as their institutional risk management prioritizes preserving core dollar-clearing capabilities over marginal lending opportunities. This discussion points to the following hypothesis:

Hypothesis 1 *After U.S. financial sanctions, Mainland Chinese banks increase their syndicated credits to sanctioned economies.*

However, one concern of only looking at direct shareholders in mainland China is that Chinese banks may blur its ownership using its subsidiaries incorporate in Hong Kong or other financial centers for tax or regulation purposes (Clayton et al. (2025), Lane and Milesi-Ferretti (2017) and Coppola et al. (2021)). By contrast, overseas branches and subsidiaries of Chinese banks, incorporated in financial centers such as Hong Kong, Singapore and Switzerland, and G7 jurisdictions, operate under different constraints and incentives. These entities are legally domiciled outside Mainland China, subject to host-country regulatory oversight, and maintain independent balance sheets and funding sources. Their status as Chinese-owned institutions aligns them with broader strategic objectives. Moreover, these overseas branches face competitive pressures in their local markets and have stronger incentives to deploy capital in higher-yielding cross-border opportu-

nities, including lending to sanctioned economies where Western banks have retreated and loan spreads are consequently wider. However, because entities domiciled in the G7 are generally expected to comply with U.S. financial sanctions, the overseas Chinese entities located in financial centers versus the G7 are better positioned to fill the credit holes in sanctioned economies.

This institutional differentiation yields a clear prediction: following U.S. financial sanctions, domestically located mainland Chinese banks respond only weakly, constrained by prudential concerns about sanctions exposure. In contrast, overseas branches of Chinese banks—particularly those in financial centers that do not cooperate with U.S. sanctions enforcement and that possess established international banking infrastructure emerges as the primary vehicles for Chinese credit expansion into sanctioned markets. These branches are well positioned to do so based on their jurisdictional long distance from U.S. regulators, and strategic close relationship with Chinese state banks. This argument motivates the following hypothesis:

Hypothesis 2 *Following U.S. financial sanctions, Chinese overseas branches domiciled in financial centers and G7 jurisdictions that do not coordinate with U.S. financial sanctions increase syndicated lending to sanctioned economies.*

When sanctioned firms replace Western syndicated loans with Chinese financing, whether directly or through intermediaries, their strategic and operational priorities are likely to shift. Firms in sanctioned economies face pressure to satisfy potentially conflicting economic and political objectives simultaneously, and this tension can erode economic performance over time. This leads to the following hypothesis:

Hypothesis 3 *U.S. financial sanctions induce firms in sanctioned economies to increase their borrowing from Chinese lenders, and this substitution toward inferior credit sources is associated with weaker operational efficiency.*

3 Data, Variable and Specification

3.1 Data

Our empirical analysis combines multiple data sources to examine how U.S. financial sanctions affect syndicated lending patterns. We define *switcher* as firms that relied primarily on non-Chinese loans from the G7 countries and financial centers prior to sanctions and subsequently shifted to Chinese loans after sanctions were imposed. As shown in Table A6, switchers represent less than 0.22% of our sample. We exclude these firms from our baseline analysis on the fact that China’s influence in sanctioned markets is most plausibly transmitted through pre-existing financial relationships. The behavior of switched firms is inconsistent with this narrative, as they lacked any prior connection to Chinese lenders and may instead represent a distinct phenomenon: firms engaged in a distressed search for alternative funding rather than the activation of deep, strategic financial partnerships.

Syndicated loan data for both private and public firms are sourced from DealScan, a database maintained by the Loan Pricing Corporation (LPC). LPC compiles loan facility data from Securities and Exchange Commission (SEC) filings and voluntary disclosures by borrowers and lenders, covering the period 1980–2023. The database provides detailed loan-level information at origination, including loan size, collateral usage, facility type, covenants, and pricing terms. DealScan also reports the domicile of the lead lender and the borrowing firm, as well as the currency denomination of each facility. All loan amounts are converted to U.S. dollars.

Following the previous literature, we exclude loans issued to regulated utility companies (SIC codes between 4900 and 4999) and financial companies (SIC codes between 6000 and 6999). Observations with missing SIC codes are dropped. The lead lenders in our sample are domiciled in the G7 (including the United States), Mainland China, and the following financial centers: Belgium, Ireland, Luxembourg, the Netherlands, Singapore, Hong Kong, and Switzerland. Borrowing firms are domiciled in economies subject to U.S. financial sanctions during period 1990–2023, as identified by the Global Sanctions Database. Sanctioned economies are listed in Table A5. Our

deal-level sample spans 1990–2023 and contains 146,282 observations, covering 10,525 firms with domiciles in sanctioned economies and 4,876 bank branches that are syndicated lead lender with domiciles in the G7, Mainland China and financial centers, of which 1,253 are from Mainland China, 2,531 are from the G7 (including the United States) and 1,092 are from financial centers.

Firm-level data are obtained from Thomson Reuters Worldscope, which provides extensive global coverage of publicly listed companies. Key financial variables include Total Factor Productivity (TFP), Return on Asset (ROA), Sales Growth etc as shown in Appendix Table A1. To avoid results being driven by small economies, we exclude borrower economies with fewer than 100 listed firms. The distribution of firms across sanctioned economies are reported in Table A7. We further exclude firms with missing ISIN codes and those operating in the financial and utility sectors (SIC codes in 4900–4999 and 6000–6999). Firm-level data are merged with syndicated deal-level data using the borrowers’ ISIN codes, and deal-level observations are aggregated to the firm-year level before being matched to annual financial information. The final firm-level dataset comprises 403,717 observations representing 28,902 unique listed firms across approximately 40 economies over the period 1990–2023. Mergers and acquisitions data are sourced from Thomson Reuters’ Securities Data Company (SDC) M&A database. To reduce the outliers, all continuous firm-level variables are winsorized at the 1st and 99th percentiles.

3.2 Summary Statistics for Key Variables

Table A4 presents descriptive statistics for the top 20 syndicated loan markets over 1990–2023. The United States has consistently dominated global syndicated lending over the past three decades, accounting for more than 44.65% of total volume during 2016–2023. China ranked second over the same period, yet with a substantially smaller share of 3.20%, underscoring the pronounced asymmetry between the two countries’ positions in the global market. Nevertheless, China’s share has grown nearly sixfold from approximately 0.51% during 1990–2001, a trajectory consistent with its deepening integration into global financial markets and its strategic role in facilitating international trade flows and outward direct investment.

The definitions and sources of all variables used in the empirical analysis are provided in Appendix Table A1, with summary statistics reported in Appendix Table A2. The first panel of Table A2 presents the characteristics at the loan-level, indicating that 28% of the loan tranches were originated under active sanctions. The second panel reports firm-level statistics. The exposure to sanctions is 0.46 years for the average firm-year observation. We standardize firm-level total factor productivity (TFP) and more details about the construction of TFP are contained in the next section. Sample firms have an annual sales growth of 13%, an annual investment rate of 5%, and an annual return on assets (ROA) of 3%.

4 Empirical Results

4.1 Syndicated Deal Level Responses

4.1.1 Substitution Effect: Baseline

To test our hypothesis regarding the Chinese substitution effect, we employ the following difference-in-differences (DiD) specification:

$$\begin{aligned}
Y_{f,b,t} = & \alpha + \beta_1 \mathbb{1}(\text{Mainland China})_b \times \text{Sanction}_{c,t} \\
& + \beta_2 \mathbb{1}(\text{Overseas China G7})_b \times \text{Sanction}_{c,t} \\
& + \beta_3 \mathbb{1}(\text{Overseas China FC})_b \times \text{Sanction}_{c,t} \\
& + \beta_4 \text{Sanction}_{c,t} + \mu_j + \eta_b + \lambda_t + \varepsilon_{f,b,t}
\end{aligned} \tag{1}$$

where $Y_{f,b,t}$ is either the log loan amount (in millions USD) or the loan rate (all-in spread drawn over LIBOR in percent). The subscripts f , c , b , and t represent firm, borrower country, location of bank branch (i.e. Mainland China, Overseas China G7 and Overseas China FC), and year, respectively. The lenders in the sample are bank branches located the Financial Centers, G7 countries, and Mainland China operating during 1990–2023.³

³Due to the prevalence of missing observations for the "all in spread drawn" variable in Dealscan, we follow

The indicator $\text{Sanction}_{c,t}$ equals 1 if the borrower’s country is under U.S. financial sanctions for the first time in year t and thereafter, and 0 otherwise. Coefficient β_4 captures the average change in loan outcomes for the reference group, U.S. and other G7 lenders, when sanctions are imposed. We distinguish among three types of Chinese lenders. $\mathbb{1}(\text{Mainland Lender})_b$ equals 1 for lenders located in Mainland China and is 0 otherwise. $\mathbb{1}(\text{Chinese Overseas G7})_b$ identifies Overseas branches of Chinese banks located in G7 countries (United States, United Kingdom, Canada, France, Germany, Italy, Japan). $\mathbb{1}(\text{Chinese Overseas FC})_b$ identifies overseas branches of Chinese banks located in financial center (FC) ⁴, including Hong Kong, Singapore, Switzerland, Luxembourg, Netherlands, Ireland, and Belgium. β_1 , β_2 , and β_3 capture the differential changes in lending by each category of Chinese lender relative to the reference group following sanctions.

We include fixed effects of the borrower industry μ_j (measured at first 2-digit SIC code from borrower firms) to absorb demand-side heterogeneity across sectors. Bank branch fixed effects η_b absorb time-invariant lender unobserved effect. Year fixed effects λ_t control for unobserved time-varying factors affecting global lending. Standard errors are clustered at the firm and industry $\times$ year levels to account for correlation within firms and sector dynamic patterns.

Table 1 contains our baseline results and confirms our expectation that Chinese lenders offset U.S. financial sanctions. Column (1) reports estimated regression coefficient and standard errors, where Constant is the log of expected loans prior to sanctions, and Sanction is the expected log point reduction in loans under sanctions. All three interaction terms capture the expected log-point differences in lending from mainland Chinese banks, overseas Chinese banks in G7 countries, and overseas Chinese banks in financial centers during sanctions relative to the pre-sanction period—each measured against the overall change in lending. All coefficients of interaction terms are statistically significant and consistent with our hypothesis that U.S. financial sanctions created

[Laeven and Popov \(2023\)](#) and employ a two-step procedure. In the first step, we estimate the following regression using the full sample of loans:

$$\text{Loan Rate}_{f,b,t} = \text{Log}(\text{Amount})_{f,b,t} + \text{Log}(\text{Maturity})_{f,b,t} + \eta_t + \eta_b + \varepsilon_{f,b,t} \quad (2)$$

Then we use the fitted value as “Predicted loan rate” based on the equation 2.

⁴We did not put London as financial center here as those banks in London are classified in UK and grouped into G7 countries.

Table 1 CREDIT SUPPLY RESPONSE TO U.S. FINANCIAL SANCTIONS, 1990-2023

	Volume	Volume (Economic significance)	Loan Rate
	(1)	(2)	(3)
$\mathbb{1}(\text{Mainland China})_b \times \text{Sanction}_{c,t}$	0.174** (0.080)	2.17%	-0.010 (0.010)
$\mathbb{1}(\text{Overseas China G7})_b \times \text{Sanction}_{c,t}$	0.669** (0.269)	0.09%	-0.033 (0.028)
$\mathbb{1}(\text{Overseas China FC})_b \times \text{Sanction}_{c,t}$	0.410*** (0.092)	1.51%	-0.063*** (0.011)
$\text{Sanction}_{c,t}$	-0.351*** (0.062)	-29.60%	0.062*** (0.009)
Constant	5.995*** (0.038)		1.455*** (0.006)
Sample Borrowers	All countries sanctioned by the US. Switchers are excluded.		
Sample Lenders	Mainland China, G7 and Financial Centers		
Fixed Effects	Borrower's industry, lender branch, year		
Observations		144901	144901
Adjusted R^2		0.388	0.341

NOTES: This table reports the heterogeneous responses of Mainland Chinese branches and Chinese overseas branches to U.S. financial sanctions imposed on borrower countries from 1990 to 2023. The outcome variables are the natural logarithm of loan amount (in millions USD) and the all-in spread drawn over LIBOR (in percent). $\mathbb{1}(\text{Mainland China})_b$ indicates lenders located in Mainland China. $\mathbb{1}(\text{Overseas China G7})_b$ indicates overseas China lenders located in G7 countries (United States, United Kingdom, Canada, France, Germany, Italy and Japan). $\mathbb{1}(\text{Overseas China FC})_b$ indicates overseas China lenders located in financial centers (Hong Kong, Singapore, Switzerland, Luxembourg, Netherlands, Ireland, and Belgium). The indicator $\text{Sanction}_{c,t}$ equals 1 if the borrower's country is under U.S. financial sanctions for the first time in year t and thereafter, and 0 otherwise. Economic significances are calculated using each lender's volume share of total loan amounts, as detailed in Appendix Table A3. All specifications include year, industry, and lender branch fixed effects. Standard errors are clustered at both the industry-by-year and firm levels and reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Table 2 COUNTRY LEVEL CREDIT SUPPLY, 1990-2023

	Volume	Volume (Economic Significance)	Loan Rate
	(1)	(2)	(3)
$\mathbb{1}(\text{Mainland China})_b \times \text{Sanction}_{c,t}$	0.174** (0.080)	2.17%	-0.010 (0.010)
$\mathbb{1}(\text{Overseas China FRA})_b \times \text{Sanction}_{c,t}$	1.375*** (0.286)	0.02%	-0.177*** (0.040)
$\mathbb{1}(\text{Overseas China JPN})_b \times \text{Sanction}_{c,t}$	1.263 (0.812)	0.05%	-0.118* (0.065)
$\mathbb{1}(\text{Overseas China GBR})_b \times \text{Sanction}_{c,t}$	0.300 (0.359)	0.01%	0.042 (0.039)
$\mathbb{1}(\text{Overseas China USA})_b \times \text{Sanction}_{c,t}$	0.803 (0.635)	0.03%	-0.086 (0.065)
$\mathbb{1}(\text{Overseas China HKG})_b \times \text{Sanction}_{c,t}$	0.399*** (0.096)	1.35%	-0.062*** (0.011)
$\mathbb{1}(\text{Overseas China LUX})_b \times \text{Sanction}_{c,t}$	-0.766 (0.745)	0.00%	0.033 (0.058)
$\mathbb{1}(\text{Overseas China SGP})_b \times \text{Sanction}_{c,t}$	0.505*** (0.173)	0.14%	-0.068*** (0.019)
$\mathbb{1}(\text{Overseas China CHE})_b \times \text{Sanction}_{c,t}$	1.591*** (0.229)	0.03%	-0.101*** (0.024)
$\text{Sanction}_{c,t}$	-0.351*** (0.062)	-29.60%	0.062*** (0.009)
Constant	5.995*** (0.038)		1.455*** (0.006)
Sample Borrowers	All countries sanctioned by the US. Switchers are excluded.		
Sample Lenders	Mainland China, G7 and Financial Centers		
Fixed Effects	Borrower's industry, lender branch, year		
Observations	144901		144901
Adjusted R^2	0.388		0.341

NOTES: This table reports the heterogeneous responses of Mainland Chinese branches and Chinese overseas branches to U.S. financial sanctions imposed on borrower countries from 1990 to 2023. The outcome variables are the natural logarithm of loan amount (in millions USD) and the all-in spread drawn over LIBOR (in percent). $\mathbb{1}(\text{Mainland China})_b$ indicates lenders located in Mainland China. $\mathbb{1}(\text{Overseas China ISO3})_b$ indicates overseas China lenders located in the respective countries identified by its ISO 3-character country code, from G7 nations (United States, United Kingdom, Canada, France, Germany, Italy and Japan) and financial centers (Hong Kong, Singapore, Switzerland, Luxembourg, Netherlands, Ireland, and Belgium). The indicator $\text{Sanction}_{c,t}$ equals 1 if the borrower's country is under U.S. financial sanctions for the first time in year t and thereafter, and 0 otherwise. Economic significances are calculated using each lender's volume share of total loan amounts, as detailed in Appendix Table A3. Canada, Germany, Italy, Ireland, Netherlands, and Belgium are excluded due to insufficient observations. All specifications include year, industry, and lender branch fixed effects. Standard errors are clustered at both the industry-by-year and firm levels and reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

a credit contraction that Chinese lenders partially offset.

The economic significances of the regression coefficients are reported in column (2).⁵ The estimated effects for mainland Chinese banks, G7-based overseas Chinese banks, financial center-based overseas Chinese banks, and all non-Chinese lenders are 2.17%, 0.09%, 1.51% and -29.6% respectively. The total "China effect" is the sum of the first three components: $2.17\% + 0.09\% + 1.51\% = 3.77\%$ and the reduction in loans from non-Chinese banks in the G7 and FC $-29.6\% - 3.77\% = -33.37\%$. Thus, the China effect reduces the overall reduction in credit by 3.77% points or by roughly 11.30%. Consistent with our hypothesis 1, the offset effect is much stronger in FC-based Chinese overseas banks than in G7-based Chinese overseas banks that more strongly cooperate with U.S. financial sanctions. However, the substitution effect of Mainland Chinese banks is stronger than for FC-based Chinese banks.

Column (3) of Table 1 reports results on loan pricing. When sanctions were in play, non-Chinese U.S. and G7 lenders increase their loan rates by approximately 6.2 percentage points, which is consistent with supply contraction. Mainland Chinese lenders and overseas Chinese FC lenders also offer cheaper loan price but the results are noisy. In contrast, overseas Chinese banks in financial centers reduced their loan rates by 6.3 percentage points—an effect that is precisely estimated and consistent with an expansion in loan supply. The overall loan price to sanctioned economies is more expensive as shown in the coefficient of sanction dummy.

4.1.2 Persistent Versus Transient Financial Sanctions

To further examine the sensitivity of our results to the nature of the sanctions, we distinguish between persistent and transient sanctions⁶ and show our results in Table 3. The results remain consistent. Importantly, the estimated effects for transient sanctions are larger in magnitude and exhibit stronger statistical significance than those for persistent sanctions. This pattern suggests

⁵The economic magnitude is $(\exp(\text{reg}) - 1) \times \text{ms}$, where "ms" denotes the volume share of lenders from Mainland China, Overseas China G7, Overseas China FC or all lenders prior to sanctions as reported in Appendix Table A3.

⁶Persistent sanctions are those that remain in effect through a complete period of time once imposed, while transient sanctions are those that were lifted at some point during the sample period after being initially imposed as shown in A5.

that the initial imposition of a sanction generates a particularly sharp disruption to lending activity, which mitigate the original purpose of financial sanctions if those sanctions are eventually lifted. Among types of lenders, overseas Chinese branches in financial centers enjoy more credit lending expansion if they expect that U.S. financial sanctions will be eventually transient.

Table 3 PERSISTENT VERSUS TRANSIENT FINANCIAL SANCTIONS

	Volume	Volume (Economic Significance)	Loan Rate
	(1)	(2)	(3)
$\mathbb{1}(\text{Mainland China})_b \times \text{Persistent}_{c,t}$	0.127 (0.084)	1.55%	-0.002 (0.011)
$\mathbb{1}(\text{Mainland China})_b \times \text{Transient}_{c,t}$	0.333** (0.150)	4.52%	-0.058*** (0.018)
$\mathbb{1}(\text{Overseas China G7})_b \times \text{Persistent}_{c,t}$	0.607** (0.275)	0.08%	-0.027 (0.029)
$\mathbb{1}(\text{Overseas China G7})_b \times \text{Transient}_{c,t}$	1.150** (0.469)	0.19%	-0.030 (0.033)
$\mathbb{1}(\text{Overseas China FC})_b \times \text{Persistent}_{c,t}$	0.371*** (0.094)	1.34%	-0.058*** (0.011)
$\mathbb{1}(\text{Overseas China FC})_b \times \text{Transient}_{c,t}$	0.487** (0.248)	1.87%	-0.075*** (0.029)
Sanction Persistent $_{c,t}$	-0.287*** (0.067)	-24.95%	0.054*** (0.010)
Sanction Transient $_{c,t}$	-0.589*** (0.092)	-44.51%	0.091*** (0.011)
Constant	5.994*** (0.038)		1.455*** (0.006)
Sample Borrowers	All countries sanctioned by the US. Switchers are excluded.		
Sample Lenders	Mainland China, G7 and Financial Centers		
Fixed Effects	Borrower's industry, lender branch, year		
Observations	144901		144901
Adjusted R^2	0.389		0.342

NOTES: This table reports the heterogeneous responses of Mainland Chinese branches and Chinese overseas branches to U.S. financial sanctions imposed on borrower countries from 1990 to 2023. The outcome variables are the natural logarithm of loan amount (in millions USD) and the all-in spread drawn over LIBOR (in percent). $\mathbb{1}(\text{Mainland China})_b$ indicates lenders located in Mainland China. $\mathbb{1}(\text{Overseas China G7})_b$ indicates overseas China lenders located in G7 countries (United States, United Kingdom, Canada, France, Germany, Italy and Japan). $\mathbb{1}(\text{Overseas China FC})_b$ indicates overseas China lenders located in financial centers (Hong Kong, Singapore, Switzerland, Luxembourg, Netherlands, Ireland, and Belgium). The indicator Sanction $_{c,t}$ equals 1 if the borrower's country is under U.S. financial sanctions for the first time in year t and thereafter, and 0 otherwise. Sanction Persistent $_{c,t}$ equals one if the borrower's financial sanctions imposed by U.S. is persistent in that year or any subsequent year, and zero otherwise. Economic impacts are calculated using each lender's volume share of total loan amounts, as detailed in Appendix Table A3. All specifications include year, industry, and lender branch fixed effects. Standard errors are clustered at both the industry-by-year and firm levels and reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

4.1.3 Chinese and Non-Chinese Lenders in Hong Kong

Although we argue that overseas Chinese branches maintain close ties to their mainland parent banks by their ownership structure, other types of lenders may also follow the lending footprint of overseas Chinese banks in sanctioned markets. In particular, we examine whether non-Chinese banks domiciled in Hong Kong exhibit lending patterns similar to those of overseas Chinese branches following the imposition of U.S. financial sanctions. As shown in Table 4, non-Chinese lenders in Hong Kong display an offset effect of comparable magnitude to that of overseas Chinese branches in Hong Kong. This result suggests that our baseline estimates of the Chinese substitution effect represent a lower bound, as we cannot fully attribute the lending expansion in Hong Kong to Chinese-affiliated institutions alone. Some non-Chinese banks appear to follow similar patterns of credit provision to sanctioned borrowers after the U.S. financial sanctions.

Table 4 Chinese and non-Chinese Lenders in Hong Kong

	Volume	Volume (Economic Significance)	Loan Rate
	(1)	(2)	(3)
$\mathbb{1}(\text{Overseas China HKG})_b \times \text{Sanction}_{c,t}$	0.378*** (0.095)	0.85%	-0.063*** (0.011)
$\mathbb{1}(\text{Non-Overseas China HKG})_b \times \text{Sanction}_{c,t}$	0.150** (0.070)	0.80%	-0.028*** (0.008)
$\text{Sanction}_{c,t}$	-0.340*** (0.060)	-28.82%	0.063*** (0.009)
Constant	5.998*** (0.039)		1.455*** (0.006)
Sample Borrowers	All countries sanctioned by the US. Switchers are excluded.		
Sample Lenders	Mainland China, G7 and Financial Centers		
Fixed Effects	Borrower's industry, lender branch, year		
Observations		144901	144901
Adjusted R^2		0.388	0.341

NOTES: This table reports the heterogeneous responses of Hong Kong branches to U.S. financial sanctions imposed on borrower countries from 1990 to 2023. The outcome variables are the natural logarithm of loan amount (in millions USD) and the all-in spread drawn over LIBOR (in percent). $\mathbb{1}(\text{Overseas China HKG})_b$ indicates lenders located in Hong Kong with Mainland China parents. $\mathbb{1}(\text{Non-Overseas China HKG})_b$ indicates lenders located in Hong Kong not with Mainland China parents. The indicator $\text{Sanction}_{c,t}$ equals 1 if the borrower's country is under U.S. financial sanctions for the first time in year t and thereafter, and 0 otherwise. Economic impacts are calculated using each lender's volume share of total loan amounts, as detailed in Appendix Table A3. All specifications include year, industry, and lender branch fixed effects. Standard errors are clustered at both the industry-by-year and firm levels and reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

4.2 Firm Level Responses

We have demonstrated that, in response to financial sanctions, U.S. lenders decrease their lending to affected borrowers, and Chinese lenders serve as a weak substitute. However, our analysis so far has been exclusively about bank lending, and we have not explored effect of firms' economic activity. The latter is important as it speaks to whether financial sanctions have real economic consequences for borrowers through credit reallocation. We estimate the following specification:

$$\begin{aligned} Performance_{f,t} = & \alpha + \beta_1 \mathbb{1}(\text{China Parent Branch} - G7\&FC)_{f,t} \times Sanction_{c,t} \\ & + \beta_2 \mathbb{1}(\text{China Parent Branch} - G7\&FC)_{f,t} \\ & + \beta_3 Sanction_{c,t} + \eta_f + \eta_{jt} + \epsilon_{j,t} \end{aligned} \quad (3)$$

where f , j , t denote the firm, industry, and year, respectively. The dependent variables are firm-level total factor productivity (TFP)⁷, sales growth, investment, and return on assets (ROA). Our key variable, $\mathbb{1}(\text{China Parent Branch} - G7\&FC)_{f,t}$, is an indicator that equals one if the difference between the number of loans issued by Chinese banks (including both Mainland Chinese banks and their overseas branches) and the number issued by bank branches in G7 countries and financial centers (FC) is non-negative, and zero otherwise⁸. $Sanction_{c,t}$ is a dummy variable equals one if country c of firm f is financially sanctioned for the first time in year t and thereafter, zero otherwise. Loans issued by Chinese overseas branches located in G7 countries and financial centers are excluded when calculating loan counts for G7 and financial center lender. The coefficient on the interaction term captures the differential effect on real economic outcomes for firms that rely more or equally on Chinese-owned lenders relative to G7 and financial center lenders, following the imposition of sanctions on their country of domicile. We include firm level controls including

⁷We calculate the TFP following [Levinsohn and Petrin \(2003\)](#), the core production function, typically Cobb-Douglas, is specified as:

$$\text{Log}(\text{Sales}) = \alpha + \beta_1 \text{Log}(\text{Employee}) + \beta_2 \text{Log}(\text{Material}) + \beta_3 \text{Log}(\text{Assets}) + \lambda_i + \eta_t + \epsilon_{i,t} \quad (4)$$

where i , t refer to firm and year. We take natural logarithm on *Sales*, *Employee*, *Assets*, and *Material* respectively. We also include firm and year fixed effects. TFP is constructed by standardizing the residual $\epsilon_{i,t}$.

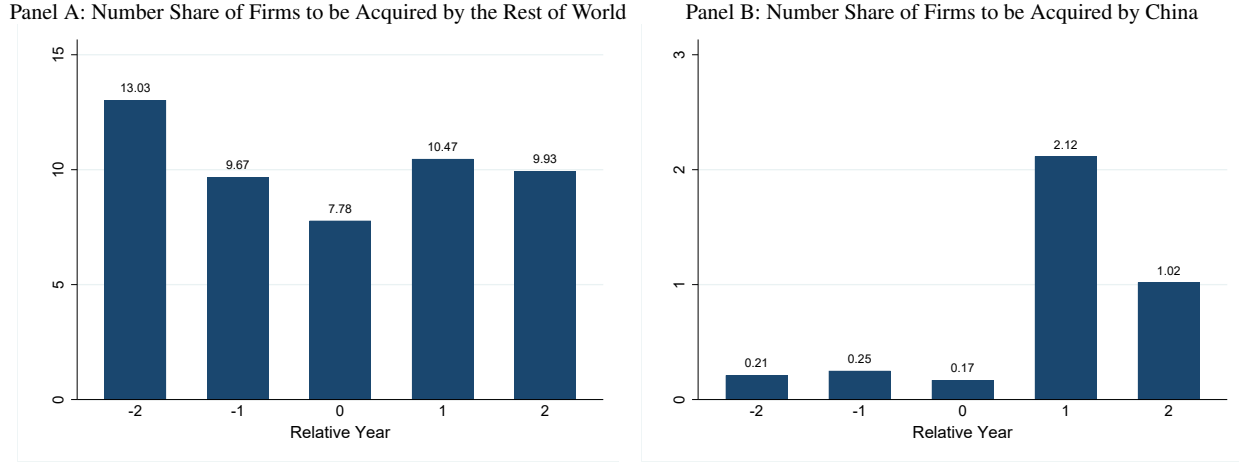
⁸When calculating loan counts for G7 and financial center lenders, we exclude loans issued by Chinese overseas branches operating within these jurisdictions to avoid double-counting.

assets, cash holding, and Tobin's Q, and also industry-year and firm fixed effects. Standard errors are clustered at the industry and year level.

Table 5 examines how U.S. financial sanctions affect the performance of firms domiciled in sanctioned economies. Following the imposition of sanctions, firms that relied more or equally on loans from Chinese-owned branches experienced significant declines across all performance measures relative to their respective standard deviations: an 11.30% reduction in total factor productivity (TFP), a 2.73% reduction in sales growth, a 6.10% reduction in capital expenditure, and a 2.74% reduction in return on assets (ROA). Taken together, these results indicate that firms in sanctioned economies that substituted away from G7 and financial center lenders toward Chinese-owned branches experienced lower productive efficiency, reduced investment activity, slower sales growth, and weaker profitability, consistent with Chinese syndicated loans serving as an inferior substitute for withdrawn Western financing.

We further explore whether Chinese firms use the opportunity to acquire some of borrowers after they are being sanctioned. Chinese firms may strategically gain more ownership controls. Figure 3 presents the number share of firms that were acquired over a five-year window surrounding the sanction event: two years before, the year of being first sanctioned, and two years after the sanction was imposed. Specifically, the share for a given year is defined as the number of firms acquired or acquired by Chinese firms that year, divided by the total number of firms that year. Panel A shows the total number share of acquired firms around the sanction period. The share increased by approximately 2.69% in the first year following the sanction announcement, from 7.78% in the sanction announced year to 10.47% in the first following year. Panel B focuses specifically on acquisitions by Chinese firms. A substantial increase is observed in the first year after the sanction announcement, with the share rising from 0.17% in the announcement year to 2.12% one year later, an increase of about 1.95%. The merge and acquisition activities facilitate exit from mandatory disclosure and reporting. These figures suggest that sanctions incentivize firms to become more opaque, a rational response to a constrained, high-scrutiny financing environment.

Figure 3 SANCTION AND ACQUISITION



NOTE: This figure plots the percentage share of firms acquired within a five-year window around the imposition of U.S. financial sanctions. Year 0 corresponds to the year in which a country is under financial sanctions, while negative (positive) values denote years before (after) the imposition of sanctions. The sample period spans 1990–2023, and sanction events are identified based on the GSDB (Yalcin et al., 2025). Panel A presents the share of all acquired firms, whereas Panel B restricts the sample to acquisitions by Chinese firms. Details on the timing and target countries of U.S. financial sanctions are reported in the Appendix A5.

5 Robustness

We assess the robustness of our findings by formally testing the parallel trends assumption underlying our staggered difference-in-differences design, and by conducting additional analyses using alternative event cutoff and benchmark comparisons.

5.1 Parallel Trend

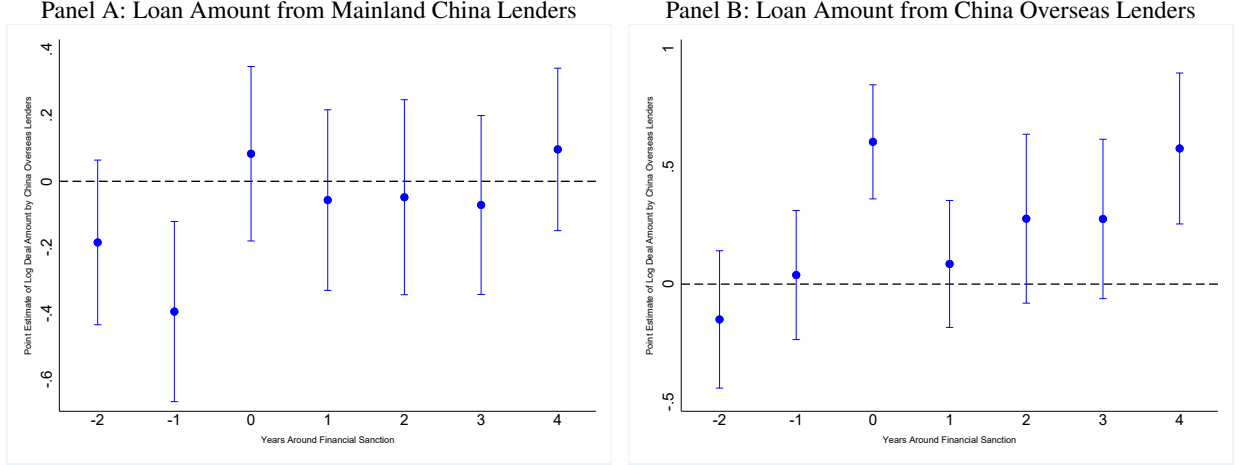
Our staggered difference-in-differences design relies on the parallel trends assumption, which requires that no persistent pre-existing trends differentially affect treated and control groups prior to the imposition of sanctions (Wing et al., 2024). We define a set of seven event-time dummies, spanning from two years before to four years after the first sanction year, and extend Equation 1 by interacting these dummies with indicators for China Mainland and China overseas lenders in G7 countries and financial centers. This approach allows us to examine dynamic effects and more reliably test for pre-trends in a less noisy context. The specification is as follows:

Table 5 SANCTIONS AND CORPORATE PERFORMANCE

	TFP (1)	Sales Growth (2)	Investment (3)	ROA (4)
$\mathbb{1}(\text{ChinaParentBranch} - \text{G7\&FC}) \times \text{Sanction}_{c,t}$	-0.113*** (0.029)	-0.018 (0.021)	-0.005 (0.006)	-0.004 (0.004)
$\mathbb{1}(\text{ChinaParentBranch} - \text{G7\&FC})$	0.061*** (0.016)	-0.014 (0.018)	-0.013*** (0.003)	-0.002 (0.002)
$\text{Sanction}_{c,t}$	0.110*** (0.037)	-0.008 (0.052)	0.003 (0.007)	0.001 (0.005)
$\text{Ln}(\text{Assets})$	0.011*** (0.002)	-0.035*** (0.004)	0.001*** (0.000)	-0.012*** (0.002)
$\text{Tobin's}Q$	-0.014*** (0.003)	0.013** (0.005)	0.001*** (0.000)	-0.001 (0.001)
Cash	-0.031** (0.015)	0.129*** (0.024)	0.023*** (0.004)	0.037*** (0.004)
Constant	-0.277*** (0.035)	0.866*** (0.092)	0.037*** (0.006)	0.303*** (0.051)
Sample Firms	Firms Firms in all countries sanctioned by the US. Switchers are excluded.			
Fixed Effects	Firm, Industry-Year			
Observations	368852	358002	368994	345894
Adjusted R^2	0.504	0.111	0.283	0.404
Average	-0.00	0.13	0.05	0.03
Standard Deviation	1.00	0.66	0.08	0.15

NOTE: This table examines the effect of U.S. financial sanctions on corporate performance over the period 1990–2023. The dependent variables include total factor productivity (TFP), sales growth, investment and ROA. The indicator variable $\mathbb{1}(\text{China Parent Branch-G7\&FC})$ equals one if the number of loans originated by Chinese-owned lenders equals or exceeds the number of loans from lenders based in G7 countries and financial centers, and zero otherwise. Loans issued by Chinese overseas branches located in G7 countries and financial centers are excluded when calculating loan counts for G7 and financial center lenders. $\text{Sanction}_{c,t}$ is a dummy variable equals one if the country c of firm f is financially sanctioned for the first time in year t and thereafter, zero otherwise. Summary Statistics of the variables are listed in details in Appendix Table A2. All firm-level control variables are lagged by one year. The regressions include firm fixed effects and industry (SIC 2-digit)-year fixed effects. Standard errors, clustered at the industry and year level, are reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Figure 4 PARALLEL TREND OF LOAN AMOUNT



NOTE: The figures present regression coefficients and 95% confidence bands in Equation 5 for Chinese overseas branch and Mainland Chinese lending after U.S. financial sanction imposed. The outcome variable is the natural logarithm of loan amount (in millions USD). Panel A (B) shows the parallel trend of syndicated loan amount from Mainland China (overseas China branches in G7 countries (United States, United Kingdom, Canada, France, Germany, Italy and Japan) and in financial centers (Hong Kong, Singapore, Switzerland, Luxembourg, Netherlands, Ireland, and Belgium)). 0 indicates the year where the U.S. financial sanctioned was imposed. Details on the timing and target countries of U.S. financial sanctions are reported in the Appendix A5. All specifications include year, industry, and lender branch fixed effects. Standard errors are clustered at both industry-by-year and firm levels.

$$\begin{aligned}
 \text{Log}(\text{Amount}) = & \alpha + \sum_{k=-2}^4 \beta_k \times \mathbb{1}(\text{Mainland China})_b \times \text{Sanction}_{c,t+k} \\
 & + \sum_{k=-2}^4 \lambda_k \times \mathbb{1}(\text{Chinese Overseas G7\&FC})_b \times \text{Sanction}_{c,t+k} \\
 & + \delta_1 \times \text{Sanction}_{c,t} + \mu_j + \eta_b + \lambda_t + \epsilon_{f,b,t}
 \end{aligned} \tag{5}$$

where $\{\beta_k\}_{k=-2}^4$ and $\{\lambda_k\}_{k=-2}^4$ capture the dynamic effects of sanctions on lending by mainland Chinese banks and overseas Chinese banks in G7 countries and financial centers, respectively, surrounding sanction event. $k = -2, -1$ correspond to the pre-sanction periods, while $k = 0, 1, 2, 3, 4$ correspond to the sanction year and post-sanction periods. If our staggered difference-in-difference holds, we expect that the $k = 0, 1, 2, 3, 4$ should be significant where as $k = -2, -1$ is not.

Figure 4 plots the point estimates and 95% confidence bands based on parallel trend in which the dependent variable is the natural logarithm of loan amount. The parallel trends assumption

holds across all lender types: pre-sanction coefficients are statistically insignificant from zero⁹. Following the imposition of sanctions, loan volumes from Chinese lenders exhibit a positive and increasing trend, consistent with a gradual expansion of Chinese credit in sanctioned markets. The pre-trends across all lender types and the post-sanction divergence indicate that these effects are indeed driven by sanction imposition rather than pre-existing trends, which validates the parallel trends assumption based on our identification strategy.

It is important to note that our empirical strategy, by construction, yields a conservative estimate of the sanction effect. The analysis specifically conditions on the period after a sanction is imposed, deliberately excluding any potential anticipatory behavior in the pre-sanction years. Consequently, the estimated coefficients represent a lower bound on the total effect, as they do not capture any strategic adjustments lenders or borrowers may have undertaken in anticipation of the sanction.

5.2 Further Discussion

5.2.1 Sanction Events: Different Cutoff

To address potential timing discrepancies between the official sanction enactment date and its operational impact on lending markets, we implement an alternative coding rule for the sanction indicator. Specifically, we code sanctions imposed January–June as taking effect in year t , while those imposed July–December are coded as taking effect in year $t+1$. This adjustment accounts for the possibility that sanctions announced late in the calendar year may not influence bank lending decisions until the following year. Re-estimating our baseline specifications under this alternative timing rule yields results reported in Table A8 that are both qualitatively and quantitatively similar to our main findings. The estimated economic effects for mainland Chinese and overseas Chinese financial center lenders are marginally smaller in magnitude, while the effect for overseas Chinese G7 branches increases modestly from 0.09% to 0.11%. These results confirm that our conclusions are not sensitive to the alternative timing of sanction imposition.

⁹Except for year -1 for mainland Chinese lenders in Panel A

5.2.2 Benchmark Comparison: Emerging Sanctioned Markets Only

We note in Table A5 that most sanctioned economies are coming from the emerging markets. To make sure that our results are not driven by developed economies, we re-estimate our baseline regression by excluding 8 developed countries. The results are reported in Appendix Table A9, and the results are similar.

5.2.3 Benchmark Comparison: Greater China lenders only

Greater China could also follow the footprint of the Chinese oversea lending activities. We therefore disaggregate the Greater China lender group to test for heterogeneity across mainland China, Hong Kong, Macau, and Taiwan. Appendix Table A10 shows that lenders across Greater China broadly increased their credit supply to sanctioned borrowers, though the expansion is statistically significant only for mainland Chinese and Hong Kong lenders—consistent with our baseline estimates. Taiwan-based lenders also exhibit a positive effect of notable economic magnitude, though the estimate falls short of conventional significance levels.

6 Conclusion

This study provides systematic evidence of the divergent responses by the U.S. and Chinese banks to U.S. financial sanctions imposed on global economies. Our findings reveal a fundamental re-configuration of global credit flows amid rising geopolitical tensions: while U.S. banks reduced lending to sanctioned entities, mainland Chinese banks and their overseas branches expanded lending, producing a partial but imperfect substitution effect.

Three key insights emerge from our analysis. First, financial sanctions have become potent tools of economic statecraft precisely because they exploit the structural advantages of dollar dominance and Western control over global financial infrastructure. Second, China’s banking system has developed increasing institutional capacity to partially offset credit contraction induced by sanctions, though this offset is concentrated in overseas branches rather than domestic lenders.

Third, the resulting financial fragmentation produces a hybrid credit environment in which sanctioned economies maintain access to both Western and Chinese financial networks, albeit at the cost of reduced allocation efficiency and weaker firm performance.

The policy implications are consequential. For sanctioning countries, our results suggest that financial coercion may become less effective as alternative financial systems mature. For emerging economies, the findings underscore the strategic dilemma of navigating between Western financial compliance and growing dependence on Chinese capital. More broadly, the evidence points to an incipient bifurcation in global finance that could reshape the architecture of international economic relations for decades to come.

Future research should investigate how financial sanctions affect corporate investment, technological diffusion, and the long-term growth trajectories of sanctioned economies. As geopolitical competition intensifies, understanding these financial fault lines will become increasingly important for both policy makers and researchers.

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Internet Appendix

United States Financial Sanctions and the Surge of Chinese Lending

(Intended for online publication only)

by Daniel Berkowitz, Yichen Sun, Zehao Wang and Sili Zhou

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Table A1 VARIABLE DESCRIPTIONS

Variable	Definition	Source
Panel A: Deal-level variables		
Log(Loan Amount (in million USD))	Natural logarithm of deal amount in million dollar.	Dealscan
Loan Rate (in percent)	The spread of the interest rate over The London Inter-Bank Offered Rate (LIBOR) in percent.	Dealscan
Panel B: Firm-level variables		
$\mathbb{1}(\text{China Parent Branch} - G7\&FC)$	An indicator variable equals to 1 if firm f received the deal number from Chinese Parent Branch is no less than its from the G7 and financial centers branches, and zero otherwise.	Dealscan
TFP	Standardized firm-level total factor productivity, measured as the residual from Cobb-Douglas production function.	Worldscope
Sales Growth	Annual percentage growth rate of the sales.	Worldscope
Investment	The capital expenditure scaled by lagged total assets for firm f in the given year.	Worldscope
ROA	Net income scaled by lagged total assets.	Worldscope
Cash	Cash scaled by lagged total assets.	Worldscope
Tobin's Q	The sum of total assets and market capitalization minus the book value of common equity, divided by total assets.	Worldscope
Ln(Asset)	Natural logarithm of total assets.	Worldscope
Panel C: Country-level variables		
$\mathbb{1}(\text{Sanction})_{c,t}$	A dummy variable equals to one in the year for country c received its first financial sanction from U.S. and onward, zero otherwise .	Global Sanction Database by Yalcin et al. (2025)
$\mathbb{1}(\text{Mainland China})_b$	An indicator variable equals to one if a lender locates in Mainland China and zero otherwise.	Dealscan
$\mathbb{1}(\text{Overseas China FC})_b$	An indicator variable equals to one if a lender is a Chinese branch operating in financial centers (Ireland, Luxembourg, Netherlands, Singapore, Switzerland, Belgium, or Hong Kong) and zero otherwise.	Dealscan
$\mathbb{1}(\text{Overseas China G7})_b$	An indicator variable equals to one if a lender is a Chinese branch operating in G7 countries (Canada, France, Germany, Italy, Japan, United Kingdom, or United States) and zero otherwise.	Dealscan

Table A2 SUMMARY STATISTICS

	Obs (1)	Mean (2)	S.D. (3)	P25 (4)	P50 (5)	P75 (6)
<i>Panel A: Deal-level Variables</i>						
$1(\text{Sanction})_{c,t}$	146282	0.28	0.45	0.00	0.00	1.00
Log(Loan Amount (in million USD))	146282	5.90	1.50	4.87	5.94	6.91
Loan Rate (in percent)	146282	1.47	0.19	1.35	1.49	1.61
<i>Panel B: Firm-level Variables</i>						
$1(\text{Sanction})_{c,t}$	403717	0.46	0.50	0.00	0.00	1.00
TFP	403564	-0.00	1.00	-0.18	0.14	0.43
ROA	352402	0.03	0.15	0.00	0.04	0.09
Sales Growth	358543	0.13	0.66	-0.09	0.07	0.25
Investment	403717	0.05	0.08	0.00	0.02	0.06
Ln(Assets)	403717	20.58	5.80	19.57	21.32	23.36
Tobin's Q	403717	1.34	1.52	0.61	1.01	1.59
Cash	403717	0.17	0.23	0.02	0.09	0.23

NOTE: This table reports descriptive statistics for key variables in the empirical tests. The sample period is year 1990 to 2023. Panel A shows the summary statistics for deal-level variables between lender and borrower firms. Panel B presents firm level variable. Detailed definition are found in Table [A1](#).

Table A3 LOAN STATISTICS BY LENDER TYPE: SHARE OF OBSERVATIONS, VOLUME, AND VALUE

Lender Type	Observations	Volume Share (%)	Value Share (%)
$\mathbb{1}(\text{G7})_b$	85,074	58.16	67.62
$\mathbb{1}(\text{FC})_b$	44,490	30.41	24.26
$\mathbb{1}(\text{Mainland China})_b$	16,718	11.43	8.12
$\mathbb{1}(\text{Overseas China FC})_b$	4,361	2.98	1.81
$\mathbb{1}(\text{Overseas China G7})_b$	133	0.09	0.10
By Country:			
$\mathbb{1}(\text{Overseas China HKG})_b$	4,019	2.75	1.63
$\mathbb{1}(\text{Overseas China SGP})_b$	315	0.22	0.14
$\mathbb{1}(\text{Overseas China GBR})_b$	59	0.04	0.06
$\mathbb{1}(\text{Overseas China USA})_b$	34	0.02	0.02
$\mathbb{1}(\text{Overseas China JPN})_b$	26	0.02	0.01
$\mathbb{1}(\text{Overseas China CHE})_b$	11	0.01	0.02
$\mathbb{1}(\text{Overseas China FRA})_b$	11	0.01	0.00
$\mathbb{1}(\text{Overseas China NLD})_b$	9	0.01	0.01
$\mathbb{1}(\text{Overseas China LUX})_b$	5	0.00	0.00
$\mathbb{1}(\text{Overseas China DEU})_b$	3	0.00	0.00
$\mathbb{1}(\text{Overseas China BEL})_b$	2	0.00	0.00

NOTE: This table presents the distribution of loans based on lender areas. $\mathbb{1}(\text{Overseas China})_b$ is an indicator variable that equals 1 if the lender is Chinese overseas bank (excluding Mainland China), and 0 otherwise. Similar notation applies for country-specific indicators. FC denotes financial centers, including Belgium, Ireland, Luxembourg, Netherlands, Singapore, Hong Kong and Switzerland, and G7 denotes G7 countries including United States, United Kingdom, France, Germany, Japan, Italy, and Canada. Volume (Value) share refers to share of the number (amount) of loans to the total number (amount) of loans.

Table A4 THE TOP 20 GLOBAL SYNDICATED LOAN MARKETS, 1990-2023

Panel A: Top 20 syndication markets in 1990-2001							
Rank	Country Of Syndication	# Observations	Total Loan Volume in Billion USD	Volume Share%	Cum. Volume Share %	% Volume Share of Foreign Lender	% Volume Share of Foreign Borrower
1	United States	54839	9710.20	64.10%	64.10%	66.42%	1.98%
2	United Kingdom	3510	1240.22	8.19%	72.29%	43.16%	5.21%
3	Canada	1801	429.52	2.84%	75.13%	25.51%	9.03%
4	France	961	361.68	2.39%	77.51%	77.26%	4.02%
5	Germany	526	238.40	1.57%	79.09%	46.91%	7.57%
6	Japan	796	229.98	1.52%	80.61%	20.76%	0.42%
7	Hong Kong (China)	1451	208.70	1.38%	81.98%	66.85%	9.80%
8	Australia	958	198.45	1.31%	83.29%	37.78%	2.96%
9	Netherlands	533	194.08	1.28%	84.57%	75.91%	6.15%
10	Italy	515	190.40	1.26%	85.83%	95.20%	6.66%
11	South Korea	1538	172.34	1.14%	86.97%	80.67%	4.85%
12	Spain	639	149.30	0.99%	87.95%	72.09%	1.67%
13	Sweden	326	120.96	0.80%	88.75%	84.81%	1.81%
14	Taiwan (China)	903	101.99	0.67%	89.43%	26.59%	7.21%
15	Indonesia	1470	98.67	0.65%	90.08%	88.70%	10.24%
16	Malaysia	684	90.40	0.60%	90.67%	65.98%	4.72%
17	Mexico	507	88.77	0.59%	91.26%	96.73%	5.53%
18	Switzerland	228	79.49	0.52%	91.79%	87.91%	5.15%
19	China	1043	76.62	0.51%	92.29%	87.62%	21.43%
20	Thailand	1020	76.05	0.50%	92.79%	85.75%	6.26%
Rest		7380	1091.67	7.21%	100.00%		
Total		81628	15147.90	100.00%			

Panel B: Top 20 syndication markets in 2002-2015							
Rank	Country Of Syndication	# Observations	Total Loan Volume in Billion USD	Volume Share%	Cum. Volume Share %	Volume Share% of Foreign Lender	Volume Share% of Foreign Borrower
1	United States	71038	18365.63	41.82%	41.82%	63.60%	5.52%
2	Japan	28150	3373.09	7.68%	49.50%	7.54%	4.32%
3	United Kingdom	8587	2995.80	6.82%	56.32%	33.35%	11.18%
4	France	6072	1907.10	4.34%	60.66%	80.73%	4.85%
5	Germany	5381	1837.23	4.18%	64.85%	54.31%	3.69%
6	Australia	4967	1141.16	2.60%	67.45%	36.35%	5.56%
7	Spain	4021	1118.73	2.55%	69.99%	43.98%	2.26%
8	Canada	4935	1101.29	2.51%	72.50%	20.45%	4.16%
9	China	3216	982.60	2.24%	74.74%	12.35%	7.59%
10	Netherlands	2164	730.91	1.66%	76.40%	84.61%	17.82%
11	Italy	2714	724.14	1.65%	78.05%	77.25%	3.45%
12	India	3181	687.87	1.57%	79.62%	35.39%	13.03%
13	Hong Kong (China)	2482	635.52	1.45%	81.06%	66.43%	30.49%
14	Russian Federation	1593	627.24	1.43%	82.49%	86.21%	11.82%
15	Switzerland	710	579.75	1.32%	83.81%	91.94%	4.14%
16	Taiwan (China)	5641	424.20	0.97%	84.78%	22.53%	15.56%
17	Greece	442	410.85	0.94%	85.71%	98.49%	3.27%
18	Belgium	711	410.66	0.94%	86.65%	94.42%	6.71%
19	Singapore	1608	374.74	0.85%	87.50%	58.52%	15.33%
20	South Korea	2635	353.06	0.80%	88.31%	37.21%	12.17%
Rest		18318	5135.62	11.69%	100.00%		
Total		178566	43917.20	100.00%			

Panel C: Top 20 syndication markets in 2016-2023							
Rank	Country Of Syndication	# Observations	Total Loan Volume in Billion USD	Volume Share%	Cum. Volume Share%	Volume Share% of Foreign Lender	Volume Share% of Foreign Borrower
1	United States	40920	13881.84	44.65%	44.65%	63.50%	5.90%
2	Japan	20895	2189.76	7.04%	51.69%	4.47%	4.79%
3	United Kingdom	4001	1515.12	4.87%	56.56%	50.32%	21.70%
4	Germany	4667	1249.96	4.02%	60.58%	48.18%	2.76%
5	France	4747	1053.60	3.39%	63.97%	64.72%	2.77%
6	China	3682	994.09	3.20%	67.17%	8.70%	5.70%
7	Hong Kong (China)	2909	987.07	3.17%	70.34%	63.09%	40.60%
8	Australia	4176	786.54	2.53%	72.87%	46.92%	6.87%
9	Canada	3769	767.47	2.47%	75.34%	23.81%	4.32%
10	Spain	4104	537.45	1.73%	77.07%	24.61%	4.89%
11	India	2118	488.67	1.57%	78.64%	46.12%	14.99%
12	Netherlands	1307	483.49	1.55%	80.19%	85.42%	6.43%
13	Italy	2560	468.04	1.51%	81.70%	70.58%	1.93%
14	Switzerland	685	438.51	1.41%	83.11%	90.88%	8.82%
15	Singapore	1451	425.72	1.37%	84.48%	40.43%	14.04%
16	United Arab Emirates	536	315.29	1.01%	85.49%	63.00%	6.01%
17	Saudi Arabia	339	311.55	1.00%	86.49%	73.30%	0.44%
18	Taiwan (China)	3365	304.20	0.98%	87.47%	26.39%	13.02%
19	Sweden	812	256.40	0.82%	88.30%	59.92%	0.88%
20	Turkey	799	210.34	0.68%	88.97%	87.72%	1.82%
Rest		13862	3428.45	11.03%	100.00%		
Total		121704	31093.57	100.00%			

NOTE: This table reports descriptive statistics for the top 20 syndicated loan markets ranked by total loan volume across three periods: 1990–2001 (Panel A), 2002–2015 (Panel B), and 2016–2023 (Panel C). *Rest* aggregates the remaining countries in each sub-period and *Total* sums each column. The first two columns report each economy's rank and name. The third and fourth columns report the total number of deals and total loan volume in billions of USD. The fifth and sixth columns report each economy's share of total global loan volume and the corresponding cumulative share. The final two columns report the share of foreign lenders and foreign borrowers, respectively, as a percentage of each economy's total loan volume within the respective sub-period.

Table A5 SANCTIONED ECONOMIES LIST

Sanctioned Economies	ISO	G20	Sanctioned Periods from GSDB	First Sanctioned Date
United Arab Emirates	ARE		1990-2023	1976/10/4
Argentina	ARG	Yes	2019-2023	2019/5/23
Belgium	BEL		2023	2023/9/14
Bangladesh	BGD		2021-2023	2021/12/10
Bulgaria	BGR		2001-2023	2001/6/26
Bosnia and Herzegovina	BIH		1991-1996, 1998-2023	1991/5/19
Brazil	BRA	Yes	2021-2023	2021/12/22
Switzerland	CHE		2023	2023/5/19
Chile	CHL		1990-1991	1970/9/15
China	CHN	Yes	2017-2023	2017/6/29
Colombia	COL		1995-2023	1995/10/21
Egypt	EGY		1990-2023	1990/8/1
Greece	GRC		2013-2023	2013/3/14
Hong Kong (China)	HKG		2020-2023	2020/8/7
Croatia	HRV		1991-1996, 1998-1999 2021-2023	1991/5/19
Indonesia	IDN	Yes	2011-2023	2011/8/16
India	IND	Yes	1990-2008	1990/10/15
Israel	ISR		2023	2023/12/13
Jordan	JOR		1990-2023	1990/8/2
South Korea	KOR	Yes	2023	2023/12/12
Kuwait	KWT		1990-2023	1990/8/3
Sri Lanka	LKA		2022-2023	2022/11/9
Mexico	MEX	Yes	2022-2023	2022/2/17
Malaysia	MYS		2023	2023/2/9
Nigeria	NGA		1993-1999, 2013-2023	1993/6/23
Oman	OMN		1990-2023	1976/10/4
Pakistan	PAK		1990-2001, 2012-2013	1990/10/1
Peru	PER		1992-1994, 2022-2023	1992/4/1
Philippines	PHL		2002-2023	2002/8/12
Romania	ROU		1990-1991	1990/6/1
Russian Federation	RUS	Yes	2014-2023	2014/3/17
Saudi Arabia	SAU	Yes	1990-2023	1976/10/4
Singapore	SGP		2023	2023/2/1
Serbia	SRB		1991-1996, 1998-2023	1991/5/19
Thailand	THA		1991-1992, 2014-2019	1991/2/25
Turkey	TUR		2018, 2020-2023	2018/8/1
Taiwan (China)	TWN		2013-2021	2013/5/10
Ukraine	UKR		2014-2023	2014/3/17
Vietnam	VNM		1990-1998, 2020-2023	1975/4/30
South Africa	ZAF	Yes	2019-2023	2019/10/10

NOTE: This table lists all economies subject to U.S. financial sanctions in the Global Sanctions Database (GSDB) (Yalcin et al., 2025) that recorded at least 100 syndicated loan deals during 1990–2023. ISO denotes the three-character ISO country code. G20 indicates whether the economy is a member of the G20. Sanctioned Periods reports the years in which each economy was subject to U.S. financial sanctions within the sample period. First Sanctioned Date records the date on which the first U.S. financial sanction was imposed on each economy; where this date predates 1990, we use 1990 as the baseline year for calculating the total number of sanctioned years within our sample.

Table A6 FIRMS SWITCH FROM G7 AND FINANCIAL CENTERS TO CHINA IN SANCTIONED ECONOMIES

Company Name	SIC	ISO	Company Name	SIC	ISO
58.COM INC	7375	CHN	LB GROUP CO LTD	2819	CHN
BES ENGINEERING CO	1611	TWN	LONGFOR GROUP	1542	CHN
BEST PACIFIC	2241	HKG	MEGAFON PAO	4812	RUS
BETTER LIFE CO	5411	CHN	MEIHUA HOLDINGS	2869	CHN
CANVEST ENVIR	1623	HKG	PARKSON RETAIL GROUP	5311	CHN
CENTRAL	1531	CHN	QUANTA COMPUTER	3571	TWN
CHIEN KUO CONSTR CO	1542	TWN	SHANGHAI AMARSOF	7371	CHN
CHINA AOYUAN	1531	CHN	SHENZHEN HONGTAO	8711	CHN
CHINA EVERGRANDE	1531	CHN	SINON CORP	2879	TWN
CHINA GRAND AUTO	5012	CHN	SUNSPRING METAL	3432	TWN
CHINA JINMAO	1531	CHN	TAIWAN CEMENT	3241	TWN
CHINA MERCHANTS SHE	1531	CHN	TECHTRONIC INDUS	3546	HKG
CHINA YONGDA	5511	CHN	TEST RITE INT'L CO	5722	TWN
CHUNG HWA PULP CORP	2621	TWN	TONGDA GROUP HLDGS	3699	HKG
CNQC INTERNATI	1531	HKG	TONGFU MICROELE	3825	CHN
COSCO SHIPPING	4412	CHN	TURKCELL ILETISIM	4812	TUR
DIANA SHIPPING INC	4412	GRC	UNITTEC CO	4111	CHN
EVERGREEN MARINE	4412	TWN	WALSIN LIHWA CORP	3357	TWN
FORMOSA PLASTIC	2821	TWN	WALTON ADVANCED ENGN	3674	TWN
GREENLAND HONG KONG	1531	CHN	WASKITA KARYA	1542	IDN
GRUPPA ILIM AO	2631	RUS	WEST CHINA CEMENT	3241	CHN
HAIDILAO INT	5812	HKG	WT MICROEL	5065	TWN
HANNSTAR BOARD CORP	3672	TWN	WUXI HONGHUI	2821	CHN
HENDERSON LAND	1531	HKG	YAGEO CORP	3677	TWN
HENG TONG OPTIC	3357	CHN	YANGMING MARINE TRAN	4412	TWN
HKBN LTD	4812	HKG	YFY INC	2621	TWN
HUMANWELL HEALTHCARE	2834	CHN	YIEH PHUI ENTERPRISE	3315	TWN
INVENTEC CORP	3571	TWN	ZHEJIANG WA	3351	CHN
JIANGSU FENGSHAN	2879	CHN	ZHENRO	1531	HKG
JIANGXI COPPER CO	3339	CHN	ZJ HUAHAI PHARM.	2834	CHN
JOY CITY	1542	HKG	ZTE CORP	3661	CHN
KEHUA HOLDINGS	3714	CHN			

NOTE: This table lists firms domiciled in financially sanctioned economies that switched their primary lending origins during the sanctions period. Specifically, prior to sanctions, these firms obtained more loans from G7 and financial center lenders than from Chinese banks, but subsequently borrowed more from Chinese banks than from G7 and financial center lenders following the imposition of sanctions. Company Name reports listed firm's name. SIC reports the firm's industry classification at the four-digit SIC code. ISO denotes the three-character ISO country code where firm headquartered.

Table A7 FIRM DISTRIBUTION BY SANCTIONED ECONOMIES

ISO	#Observation	#Firm	ISO	#Observation	#Firm
ARE	2,357	171	KWT	3,545	227
ARG	3,870	275	LKA	4,971	287
BEL	6,124	501	MEX	6,537	534
BGD	2,029	163	MYS	26,874	1,489
BGR	4,408	323	NGA	2,305	176
BIH	1,763	125	OMN	2,246	155
BRA	18,923	1,662	PAK	8,367	533
CHE	11,886	894	PER	4,872	365
CHL	6,589	380	PHL	8,141	472
CHN	85,920	6,389	ROU	2,964	236
COL	1,956	122	RUS	15,246	1,145
EGY	4,168	283	SAU	3,541	285
GRC	8,821	595	SGP	17,327	1,071
HKG	38,633	2,774	SRB	1,652	144
HRV	1,890	145	THA	29,698	1,983
IDN	15,227	1,166	TUR	9,501	667
IND	64,552	4,523	TWN	42,995	2,712
ISR	11,130	845	UKR	1,810	154
JOR	4,111	258	VNM	16,569	1,403
KOR	46,969	3,422	ZAF	12,046	1,054

NOTE: This table reports firm distribution for listed firms domiciled in countries subject to U.S. financial sanctions during 1990–2023, restricted to economies with at least 100 listed firms. Detailed sanctions information for each economy is provided in Table A5. ISO denotes the three-character ISO country code. #Observations reports the total number of firm-level observations for each economy. #Firms reports the total number of distinct firms domiciled in each economy within our sample.

Table A8 SANCTION EVENTS: DIFFERENT CUTOFF

	Volume (1)	Volume (Economic Significance) (2)	Loan Rate (3)
$\mathbb{1}(\text{Mainland China})_b \times \text{Sanction}_{c,t}$	0.170** (0.081)	2.12%	-0.009 (0.010)
$\mathbb{1}(\text{Overseas China G7})_b \times \text{Sanction}_{c,t}$	0.799*** (0.243)	0.11%	-0.045 (0.029)
$\mathbb{1}(\text{Overseas China FC})_b \times \text{Sanction}_{c,t}$	0.312*** (0.096)	1.09%	-0.055*** (0.012)
$\text{Sanction}_{c,t}$	-0.349*** (0.060)	-29.46%	0.061*** (0.009)
Constant	5.992*** (0.038)		1.456*** (0.006)
Sample Borrowers	All countries sanctioned by the US. Switchers are excluded.		
Sample Lenders	Mainland China, G7 and Financial Centers		
Fixed Effects	Borrower's industry, lender branch, year		
Observations	144901		144901
Adjusted R^2	0.388		0.340

NOTES: This table reports the heterogeneous responses of Mainland Chinese banks and Chinese overseas branches to U.S. financial sanctions imposed on borrower countries from 1990 to 2023. The outcome variables are the natural logarithm of loan amount (in millions USD) and the all-in spread drawn over LIBOR (in percent). $\mathbb{1}(\text{Mainland China})_b$ indicates lenders located in Mainland China. $\mathbb{1}(\text{Overseas China G7})_b$ indicates Overseas China lenders located in G7 countries (United States, United Kingdom, Canada, France, Germany, Italy and Japan). $\mathbb{1}(\text{Overseas China FC})_b$ indicates Overseas China lenders located in financial centers (Hong Kong, Singapore, Switzerland, Luxembourg, Netherlands, Ireland, and Belgium). $\text{Sanction}_{c,t}$ is a dummy variable equals one if the country c of firm f is financially sanctioned for the first time in year t and thereafter, zero otherwise. Economic impacts are calculated using each lender's volume share of total loan amounts, as detailed in Appendix Table A3. All specifications include year, industry, and lender branch fixed effects. Standard errors are clustered at both the industry-by-year and firm levels and reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Table A9 BENCHMARK COMPARISON: EMERGING SANCTIONED MARKETS ONLY

	Volume (1)	Volume (Economic Significance) (2)	Loan Rate (3)
$\mathbb{1}(\text{Mainland China})_b \times \text{Sanction}_{c,t}$	0.172* (0.102)	1.57%	-0.007** (0.004)
$\mathbb{1}(\text{Overseas China G7})_b \times \text{Sanction}_{c,t}$	0.859 (0.553)	0.09%	-0.104 (0.090)
$\mathbb{1}(\text{Overseas China FC})_b \times \text{Sanction}_{c,t}$	0.373*** (0.124)	0.99%	-0.063*** (0.010)
$\text{Sanction}_{c,t}$	-0.122** (0.054)	-11.49%	0.030*** (0.001)
Constant	5.735*** (0.038)		1.492*** (0.001)
Sample Borrowers	All countries sanctioned by the US. Switchers are excluded.		
Sample Lenders	Mainland China, G7 and Financial Centers		
Fixed Effects	Borrower's industry, lender branch, year		
Observations	130200		130200
Adjusted R^2	0.360		0.269

NOTES: This table reports the heterogeneous responses of Mainland Chinese banks and Chinese overseas branches to U.S. financial sanctions imposed on borrower countries from 1990 to 2023. The outcome variables are the natural logarithm of loan amount (in millions USD) and the all-in spread drawn over LIBOR (in percent). $\mathbb{1}(\text{Mainland China})_b$ indicates lenders located in Mainland China. $\mathbb{1}(\text{Overseas China G7})_b$ indicates overseas China lenders located in G7 countries (United States, United Kingdom, Canada, France, Germany, Italy and Japan). $\mathbb{1}(\text{Overseas China FC})_b$ indicates overseas China lenders located in financial centers (Hong Kong, Singapore, Switzerland, Luxembourg, Netherlands, Ireland, and Belgium). $\text{Sanction}_{c,t}$ is a dummy variable equals one if country c of firm f is financially sanctioned for the first time in year t and thereafter, zero otherwise. Economic impacts are calculated using each lender's volume share of total loan amounts, as detailed in Appendix Table A3. All specifications include year, industry, and lender branch fixed effects. Standard errors are clustered at both the industry-by-year and firm levels and reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

Table A10 BENCHMARK COMPARISON: GREATER CHINA ONLY

	Volume (1)	Volume (Economic Significance) (2)	Loan Rate (3)
$\mathbb{1}(\text{Mainland China})_b \times \text{Sanction}_{c,t}$	0.139* (0.077)	1.15%	-0.010 (0.010)
$\mathbb{1}(\text{Hong Kong})_b \times \text{Sanction}_{c,t}$	0.243*** (0.074)	1.86%	-0.041*** (0.009)
$\mathbb{1}(\text{Taiwan})_b \times \text{Sanction}_{c,t}$	0.113 (0.086)	3.88%	-0.022** (0.011)
$\mathbb{1}(\text{Macau})_b \times \text{Sanction}_{c,t}$	0.185 (0.257)	0.03%	-0.036 (0.031)
$\text{Sanction}_{c,t}$	-0.382*** (0.064)	31.75%	0.065*** (0.009)
Constant	5.652*** (0.034)		1.503*** (0.005)
Sample Borrowers	All countries sanctioned by the US. Switchers are excluded.		
Sample Lenders	Greater China, G7 and Financial Centers		
Fixed Effects	Borrower's industry, lender branch, year		
Observations		215524	215524
Adjusted R^2		0.402	0.394

NOTES: This table reports the heterogeneous responses of Greater Chinese branches to U.S. financial sanctions imposed on borrower countries from 1990 to 2023. The outcome variables are the natural logarithm of loan amount (in millions USD) and the all-in spread drawn over LIBOR (in percent). $\mathbb{1}(\text{Mainland China})_b$ indicates lenders located in Mainland China. $\mathbb{1}(\text{Hong Kong})_b$ indicates lenders located in Hong Kong. $\mathbb{1}(\text{Taiwan})_b$ indicates lenders located in Taiwan. $\mathbb{1}(\text{Macau})_b$ indicates lenders located in Macau. $\text{Sanction}_{c,t}$ is a dummy variable equals one if the country c of firm f is financially sanctioned for the first time in year t and thereafter, zero otherwise. Economic impacts are calculated using each lender's volume share of total loan amounts, as detailed in Appendix Table A3. All specifications include year, industry, and lender branch fixed effects. Standard errors are clustered at both the industry-by-year and firm levels and reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.