Regulatory Divergence and Bank Capital Flows: Evidence from an Emerging Market *

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Abstract

How does cross-country divergence in banking regulation shape banking systems? Using novel Peruvian transaction credit data of domestically and foreign regulated banks, we study whether unilateral capital requirement changes substantially rebalance the competitive landscape between them. We find that regulatory divergence significantly shifts lending toward banks subject to more lenient regulation employing reduced form and structural approaches: after a 1pp increase in domestic relative to foreign capital requirements, foreign regulated banks expand by 7-10% relative to domestically regulated lenders, even for the same borrower.

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"[The divergence between the US and Europe on Basel III] would be a pity... we would lose that harmonisation of principles and the level playing field that everybody aspired to."

— Christine Lagarde (FT interview, 2024)

1 Introduction

A leading principle of the international banking architecture is that regulatory standards should be harmonized across countries. The rationale relies on the assumption that lenient regulation abroad is costly for a domestic economy since regulation affects capital flows and competition: foreign banks can gain a competitive advantage at the expense of domestic banks, and their less regulated capital flows could undermine domestic financial stability. This concern materialized in the 1980s with the global expansion of Japanese banks due to favorable regulation, which ended up representing one third of international bank assets, and with their subsequent retrenchment that contributed to the Asian Financial Crisis. The episodes encouraged international cooperation to reduce regulatory divergence through the Basel standards, but their consequences remained contested (e.g., Kane (1990)) due to the lack of compelling evidence.

Beyond its historical origins, three contemporary developments have reinforced the need for evidence on the consequences of regulatory divergence. First, recent policy disagreements illustrate the fragility of maintaining a common standard: U.S. banks are expecting the largest deregulation post financial crisis, which is estimated at $2.6tn[1], while the EU has delayed its Basel rollout due to uncertainty about the adoption in other jurisdictions[2]. Second, after the emergency takeover of Credit Suisse by UBS, Switzerland is debating whether increasing capital requirements to ensure a safer financial system would come with a significant competitive cost for its global banks and economy.[3] Third, global banks are expanding more using organizational forms regulated by the foreign country where their parent bank is headquartered, relative to subsidiary structures that are regulated by the domestic country in which they operate.[4]

Against this backdrop, in this paper, we use a credible research design to quantify the impact of regulatory divergence on a domestic banking system and economy. We analyze a unique setting where the same firm borrows from banks subject to domestic and foreign regulation. By comparing credit outcomes for the same firm across banks subject to different regulations, we identify the regulatory impact on bank credit supply while absorbing shifts in credit demand or investment opportunities. To implement this strategy, we use Peru as our empirical laboratory because it offers two advantages. First, we can leverage novel transaction loan data that tracks domestically and foreign regulated banks. Second, we can exploit plausibly exogenous capital regulatory adjustments. Our empirical findings reveal that after a 1pp rise in domestic capital

[1] See for example https://www.ft.com/content/8c69189c-7594-4612-bf29-0847ed995d98

[2] They cite "concerns regarding the international level playing field and the impact on EU banks remain high." For more details, see https://ec.europa.eu/commission/presscorner/detail/en/ip_24_3981

[3] See for instance https://www.bloomberg.com/news/articles/2026-05-19/ubs-debate-in-parliament-puts-capital-bill-on-track-for-easing

[4] According to the BIS, the relative importance of subsidiaries has declined by 10pp.

requirements, foreign regulated banks expand their lending relative to domestically regulated banks by 7-10%. Moreover, we show that the pass-through of regulatory divergence to real firm inputs and output is limited. Finally, we develop a structural model of loan demand and supply to formalize the impact of divergence in capital requirements, study policy counterfactuals, and discuss welfare implications. The model corroborates our reduced form estimates and shows that departures from the existing regulatory system distort the international playing field.

Our analysis unfolds as follows. We begin by outlining a framework to study how regulatory differences affect bank lending and competitiveness. Conceptually, the advantage of banks depends on the cost and stability of their funding, but capital regulation shapes such costs (Hanson, Kashyap, and Stein (2011)). In that sense, we refer to a capital cost mechanism to describe how regulatory differences affect lending costs, which contracts the credit supply and the market share of more regulated banks. We formalize this idea in a model where firms demand credit depending on loan rates and bank characteristics through a multinomial logit, while banks face capital requirements and compete in loan rates à la Bertrand. The model delivers two implications: First, higher unilateral capital requirements in a country raise the loan rates of banks subject to its regulation, which increases the market share of banks outside its regulatory reach. Second, an international level playing field does not depend only on the capital requirements, but also on the costs of bank capital.[5] Estimating these effects is central to our quantitative analysis.

Next, we present our empirical setting in detail. Our identification strategy exploits two contrasting organizational forms: domestically regulated banks and foreign regulated banks that rely on representative offices for credit assessment, relationship management, and coordination. The relevance of our setting hinges on the significance of representative offices, which we establish in two steps. First, we map their footprint using hand-collected data on their registrations in forty countries. We find that there are four representative offices for every ten domestically regulated banks, with the share being larger in countries with better institutional quality, financial and economic development. However, as such lending is not regulated by the host, its economic scale remains unknown. For that reason, in our second step, we employ granular Peruvian data on representative offices to provide the first direct estimates of their magnitude. The data is novel in research and offers the most comprehensive coverage of global bank activities in a country compared to existing sources. We find that global bank lending that relies on representative offices accounts for 25% of corporate dollar loans, which represents 13% of total corporate credit.[6]

We then document that such global bank organizational form has a competitive advantage over domestically regulated banks: they offer cheaper loans by 0.5-0.8pp, even when we com-

[5]This result provides important insights on regulatory discussions. For instance, in a recent congressional testimony, CEOs of major U.S. banks argued that due to their higher capital adequacy ratios, which reflect G-SIB charges and Basel add-ons, they compete on an uneven playing field against European banks. However, a country with higher requirements can still have a regulatory advantage if its capital cost is lower. In the case of the U.S., there is a long-standing literature about its unique exorbitant privilege (e.g., Gourinchas and Rey (2007)), which suggests that their lower capital costs might offset the tightness of its regulation.

[6]Importantly, in Peru, firms can only borrow from domestic regulated banks (local banks or subsidiaries of foreign banks) or foreign regulated banks that rely on representative offices (there are no branches of foreign banks).

pare loans to the same firm with similar contractual terms and control for bank characteristics that proxy for marginal lending cost and markups. Our findings suggest that the systematic loan pricing differences between institutions are associated with disparities in bank regulatory requirements costs. We formalize this interpretation when we estimate the structural model.

Having characterized our setting, we proceed to measure empirically an object of interest: the impact of regulatory divergence on bank lending reallocation. We use three complementary event studies for identification, which offer two advantages: First, they ensure the robustness of our findings beyond a particular setting. Second, they allow us to identify additional moment conditions for our structural estimation. For our empirical analysis, we use the loan data that tracks domestically and foreign regulated bank lending to Peruvian corporate firms, and we supplement it with firm level data. Since our comprehensive data is not available until 2018, for an event preceding that period we rely on DealScan, which covers only syndicated loans.[7]

The first event we analyze is Peru's transition from Basel II to Basel III, which became effective in January 2023. Similar adjustments for foreign regulated banks took place before 2020. The Covid pandemic delayed Peru's implementation to 2023, which provides exogenous timing variation for our analysis. The two modifications implemented were the introduction of a capital conservation buffer and an adjustment in Tier 1 requirements. Overall, the modifications increased the observed capital adequacy ratio of the banking system by 2pp, which experienced a discrete and unexpected jump at the time of implementation.

The evidence from the Basel transition is consistent with the capital cost channel. We observe a sharp increase in the cheapness of foreign regulated banks relative to domestically regulated banks after the adjustment. To analyze quantities, we follow the standard Khwaja and Mian (2008) approach that compares over time the same borrower across affected (domestically regulated) and unaffected (foreign regulated) banks. We estimate that a 1pp rise in domestic capital requirements increases lending from foreign regulated banks by 9% compared to domestically regulated banks. In addition, we test the impact on bank default and find no substantial change, which is consistent with corporate credit being low risk (non performing loans below 0.5%). We further study how the relative regulatory change is transmitted into real effects on firm outcomes using a shift-share design that exploits the cross sectional variation of firm level reliance on domestically regulated banks prior to the shock. We find that the regulatory shock is smoothed out at the firm level, which leads to no aggregate effects on capital, labor or sales.

A second event that we study is the change in organizational form of a bank that switched from a representative office to a subsidiary of a foreign bank. This conversion shifted regulatory jurisdiction from the foreign to the domestic regulator. As a result, its minimum capital requirement increased by 1.8pp. The main motive for its change was the expansion of its business to a

[7]While our analysis goes beyond this, the syndicated market provides relevant cases of representative-office–mediated lending. For instance, Japanese banks lend to European firms even without having subsidiaries or branches. Our most detailed data include all loan products from global banks: traditional, working capital, and international trade loans, as well as project finance, club deals, and syndicated loans.

new segment of smaller clients, which was outside its existing corporate client base.

The results from the organizational form event are also consistent with the capital cost channel and with the magnitudes of the first event. Our analysis focuses on borrowers with an established relationship with the institution before the event since the change would be plausibly exogenous for such a group. We estimate that a 1pp rise in capital requirements generated by the switch from foreign to domestic regulatory oversight increases loan rates by 1pp and decreases lending by 12.2% relative to non switching lenders. We also study the real effects on firm outcomes by exploiting the cross sectional variation of firm level reliance on the transitioning institution prior to the shock. We find that firms borrowing more from the affected bank reduced their credit and that it was ultimately transmitted to real outcomes: a 1pp increase in regulatory divergence reduces labor by roughly 1.2% and sales by 0.1%, which are quantitatively small effects.

The third event we explore is the Peruvian tightening of its capital requirements on dollar-denominated loans originated by domestically regulated banks. As part of the reforms adopted after the Global Financial Crisis, the regulator introduced a 0.25% capital surcharge in 2010 on loans made by banks under its jurisdiction to borrowers identified as exposed to exchange rate risk. Later, it revised the framework and placed the surcharge on a pre set phase-in path: 0.40% in 2013, 0.60% in 2014, and 0.80% in 2015. We focus on the first step of the phase-in, as it precedes the entry of major global banks and lies beyond the aftermath of the Global Financial Crisis. A unique feature of the regulation is that it creates a permanent divergence between domestically and foreign regulated banks because dollarization risks are specific to emerging markets, where the former are located, and absent in advanced economies, where the latter are mainly based.

Unlike our previous events, in this case we rely on DealScan because it is the only available data for the analysis period. The empirical design is a difference-in-differences-in-differences comparing foreign against domestically regulated banks' participation in Peru relative to other South American countries, before and after the regulation. Consistent with the event acting as a treatment shock, we find that 100% of domestically regulated banks scaled back their lending in Peru, while 77% of foreign regulated banks raised their participation. Our estimates imply that a unilateral 1pp domestic capital requirement rise leads to a 10pp lending expansion of foreign regulated banks relative to domestically regulated banks. Additionally, we document that foreign regulated banks reallocated their portfolios across countries to finance their expansion.

Finally, in the last part of the paper, we develop a structural model of loan demand and bank supply in the spirit of industrial organization to discipline the mechanism, study counterfactuals, and discuss welfare implications. On the demand side, we use a discrete choice framework to model how firms choose among banks based on their loan rates and observable characteristics, which implies a logit demand. Given that loan rates are endogenous in the demand equation, we instrument them using the monetary policy rates in the parent bank's home country because they provide exogenous variation in banks' funding costs. On the supply side, banks compete in rates (Bertrand) and face capital requirements and lending costs. This implies an optimal pricing

condition that links loan rates to marginal funding costs, markups, and bank capital cost. Using the demand equations together with the bank price rule, we estimate the shadow cost of capital using the moment equations. For identification, we rely on our event studies.

We then use the estimated model to run counterfactuals that quantify the impact of capital regulation on bank capital flows. First, we increase capital requirements in one jurisdiction at a time to identify which regulatory regimes' tightening generates the largest reallocation of lending. Our results indicate that a 1pp increase in the domestic capital requirements leads to a 4pp increase in the market share of foreign regulated banks. Second, we evaluate the change in capital flows when banks compete under comparable regulatory standards rather than heterogeneous requirements by imposing a common minimum capital requirement by equalizing Pillar 1 requirements across jurisdictions and removing G-SIB surcharges. The results indicate that the host country and the U.S. increase their market share by around 2pp, while European and Asian banks experience a decline. Third, we equalize the effective regulatory burden across jurisdictions to construct a "true" level playing field by equalizing the total cost of regulatory capital across jurisdictions, rather than the capital requirement level only. Our findings imply that countries with high marginal capital regulatory costs would be particularly better off and highlight the role of analyzing not only the capital levels, but the capital costs when discussing regulatory divergence impacts.

Overall, our findings make two contributions. First, we estimate a large and significant impact of regulatory divergence on bank capital flows and competitiveness. The result is informative about the optimal design of global banking regulation and addresses long-standing discussions about regulatory harmonization. Second, we uncover the significance of global bank lending that relies on representative offices and measure its response to regulatory divergence. Studying such an organizational form has been difficult since typically such information is not collected.

Related literature. Our work aligns with prior literature on the consequences of an uneven playing field in banking regulation, which has been largely theoretical. Prior work emphasizes divergent resolution regimes (Acharya (2003)), the trade-offs from harmonizing standards when regulatory quality differs (Morrison and White (2009)), and the cross-border reallocation of bank equity under national capital requirements (Bahaj and Malherbe (2024)). Relative to these contributions, we quantify the impact of regulatory divergence and explore the capital cost as the main channel. Our results indicate that an uneven playing field significantly affects banks subject to tight regulation.

A separate literature investigates the growth of non-traditional lending and the role of regulation in shaping it. Their perspective posits that regulatory burdens, such as higher capital requirements, may reduce banks' balance sheet capacity, leading to a shift in financial activity toward alternative intermediaries (e.g., Kashyap, Stein, and Hanson (2010), Acharya, Schnabl, and Suarez (2013), Harris, Opp, and Opp (2014)). The presence of regulatory requirements has been associated with the rise of fintechs (Buchak et al. (2018)), peer-to-peer (P2P) lending (De Roure,

Pelizzon, and Thakor (2022)), and shadow banks in syndicated loans (Irani et al. (2021)). There has also been quantitative work analyzing the substitution between traditional and shadow banks where there is a debate about whether the impact of capital requirements is large (Lee, Lee, and Paluszynski (2024)) or not (Dempsey (2025)). Our work provides the first detailed evidence on non-traditional lending of global banks that rely on representative offices. We document that they are economically significant and prevalent across countries. Our findings show that their expansion is associated with the difference in cross-border regulatory costs.

Our study also adds to the literature on regulatory arbitrage in cross-border banking. Prior work employed a capital-stringency index to show that international bank flows respond to relative regulatory tightness (e.g. Houston, Lin, and Ma (2012) and Karolyi and Taboada (2015)). However, Demirgüç-Kunt, Horváth, and Huizinga (2023) point out that most evidence of regulatory arbitrage pertains to the pre-GFC period, when many post-crisis rules were not yet in force. We extend the literature by showing novel evidence of regulatory arbitrage from bank lending through representative offices. Also, in contrast to earlier literature, our evidence is specifically from the post-GFC period. Methodologically, we exploit specific plausibly exogenous regulatory adjustments and leverage granular credit data for identification. Our results show that global bank lending through representative offices has a regulatory advantage over domestically regulated banks and that it expands with domestic regulatory tightening.

Outline. The remainder of the paper is organized as follows: Section 2 explains the institutional context. Section 3 describes the conceptual framework. Section 4 presents the data and shows evidence of the rise of global bank lending relying on representative offices and documents their pricing advantage. Section 5 examines the effect of regulatory divergence on the allocation of credit. Section 6 estimates the structural model and computes counterfactuals. We conclude in Section 7. Online Appendix provides further results, mathematical derivations, and estimation details.

2 Institutional Background

2.1 Representative Offices

2.1.1 Economic Rationale

Traditionally, representative offices were considered the initial step for global banks entering new markets as they help to expand their global footprint. They provide a cost-effective, low-risk way to assess a local market, establish relationships, and navigate a country landscape without committing to full-scale operations. While these offices often serve as entry points that can eventually lead to acquisitions, branches, or subsidiaries, several global banks have been operating solely through representative offices since it allows them to maintain market presence and offer selective services.

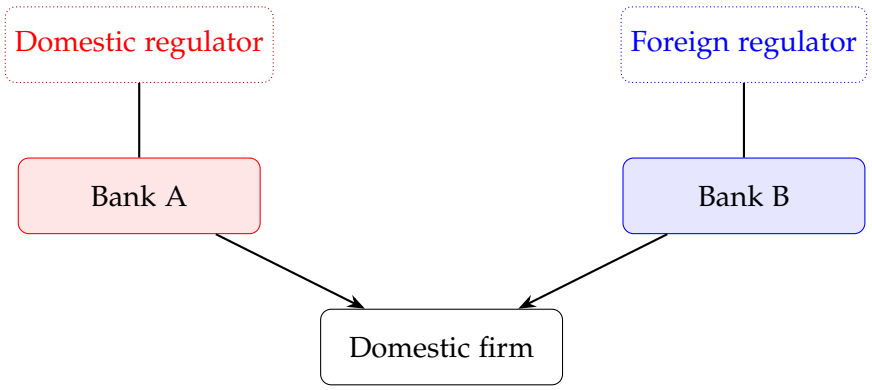
Banks can lend directly to borrowers across borders without the need to establish a branch or subsidiary as they rely on representative offices to facilitate loan transactions between firms operating in the domestic country and their parent banks. The loan operations supported by

these offices are funded by deposits or wholesale funding from the parent bank, as representative offices cannot raise funding directly. As is standard in international finance, most of the loans are dollar denominated. The role of the offices is to help guide the parent bank's loan decision-making process by offering insights into local market conditions, assessing the financial health of potential borrowers and the risk of local businesses, and understanding specific client needs.

To provide a specific example, consider Mitsubishi UFJ Financial Group (MUFG), which is one of the largest financial institutions in the world that manages globally around USD 3 trillion. The bank is present in South America through representative offices. It uses its global expertise to provide specialized financing solutions in the region, where it focuses on natural resources development.[8]

Lending via representative offices falls outside the domestic country's regulatory perimeter. Figure 1 summarizes which jurisdiction's rules apply to credit origination under each organizational form. Whereas the credit origination of a domestic bank or a foreign subsidiary is regulated by the domestic country, an identical loan from a global bank relying on a representative office follows the rules of a foreign regulator. Therefore, the existence of regulatory divergence implies that otherwise identical loans may be originated under different prudential rules.

Figure 1: Regulatory oversight by bank type



Note: The figure shows the regulatory oversight across bank regulators.

2.1.2 Peruvian Context

Articles 43-49 of the Peruvian Banking Law[9] and its supplementary regulations[10] govern the operations of representative offices in Peru. According to the law, representative offices are intermediaries that connect domestic firms with their parent institutions abroad. More specifically, they can advertise the services of their parent institutions to domestic firms. Examples of such cases include: i) borrowers seeking external funding, ii) firms looking to purchase or sell goods or services in foreign markets, and iii) financial institutions facilitating external financing. Im-

[8] See https://mufg.jp/dam/ir/report/annual_report/backnumber/pdf/cr_all2010_ja.pdf for details

[9] *Ley General del Sistema Financiero y del Sistema de Seguros y Orgánica de la Superintendencia de Banca y Seguros - Ley 26702.*

[10] For instance, *Circular RE-003-2018.*

portantly, they cannot carry out the operations themselves nor receive deposits. Notably, all the characteristics of the Peruvian law for representative offices are consistent with international standards.

Several prominent large global banks have been established as representative offices in Peru, including Bank of America, Bladex, BNP Paribas, Cooperativa Rabobank, JP Morgan Chase Bank, MUFG Bank, Natixis, and Sumitomo Mitsui. The Superintendency of Banking, Insurance, and Private Pension Fund Administrators (SBS) grants authorization to appoint a representative after evaluating its technical and economic soundness. Online Appendix A.1 includes a list of all representative offices operating during our analysis period. Moreover, we provide a detailed breakdown of market share by headquarters nationality, with France, Japan, the Netherlands, and the U.S. holding the largest shares.

Similar to several emerging economies, by law there are no foreign branch operations in the country.[11] Thus, representative offices are the only foreign regulated entities in the context that we analyze.

2.2 Regulatory Framework in Peru

The Peruvian prudential framework is largely aligned with the Basel regulations. Some of its relevant characteristics include the application of the risk-weighted standardized approach, use of the three-pillar framework (capital adequacy, supervision, market discipline), and Basel buffer measures (conservation and countercyclical buffers and LCR and NSFR requirements).

However, the regulation is tailored in two important aspects. First, the minimum capital ratio is 10% of risk-weighted assets (RWA), which is 2pp above the international standards. The higher minimum requirement is similar to other emerging markets that also aim to bolster resilience amid greater shock vulnerability: According to the 2019 Bank Regulation and Supervision Survey, the average minimum capital ratio of emerging markets under Pillar 1 was 10.2%, while for advanced economies it was 8.3%. Second, a different regulation feature is the treatment of foreign denominated credit risk. Since 2005, banks were required to classify the exposure of their loans to foreign exchange (FX) risk by using models of the repayment capacity of their borrowers. In case the borrower would be at risk of default following a 20% depreciation shock, it would be classified as exposed to FX risk.[12] The Peruvian regulator imposes an additional 0.8pp surcharge on loans classified as exposed to FX risk. As described in Gutierrez, Ivashina, and Salomao (2023), a $100 loan to an exposed borrower would require $0.80 in additional capital on top of the minimum $10 (10%) requirement, which makes a total requirement of $10.80.

[11] For more details about the presence of branches in emerging economies, see https://openknowledge.worldbank.org/entities/publication/c1807850-6bea-5604-b085-eeef0e0f0840

[12] The design of the approach distinguishes between a dollarized portfolio and one exposed to exchange rate risk as it recognizes that borrowers with foreign currency debt might not face a default risk. For instance, a borrower that generates revenues in foreign currency or holds a financial hedging strategy might be insulated from exchange rate risk variations.

3 Conceptual Framework

3.1 Conceptual Motivation

The competitive advantage of banks depends on the cost and stability of their funding. Competition in the banking sector is particularly sensitive to the liability side of their balance sheets, which is distinct from non financial sectors where product differentiation, branding or operational scale dominate. The access to cheap and reliable funding is the fulcrum on which performance turns (Hanson, Kashyap, and Stein (2011)). In that regard, the introduction of capital regulation influences the funding cost of banks through the private cost of capital (Baker and Wurgler (2015)).

Consequently, our analysis links capital regulatory divergence to the pricing and credit allocation. A unilateral capital requirement increase in the domestic country increases the equity that domestic regulated banks need to back their loan portfolio, while foreign regulated banks can continue to finance their portfolios with the same cost. As a result, this creates a difference in marginal costs across banks that may compete for the same borrowers and extend credit in the same currency. From the perspective of the borrower, a credit cost gap might create pressure to shift toward the cheaper lenders.

To illustrate the capital cost mechanism, we construct a simple model which shows how increased capital requirements affect lending prices and market shares. A key feature of the model is that there is a clear mapping between the results obtained and the underlying structural demand and supply parameters. The detailed proofs are available in Online Appendix B.

3.2 Simple Analytical Model

3.2.1 Firm-Side Credit Demand

Let firms be indexed by $f \in \{1, ..., N_F\}$. Each corporate firm f seeks to finance $Q_f > 0$. We model the firm choice of a lender using a standard discrete choice framework commonly used in industrial organization (Berry (1994); Berry, Levinsohn, and Pakes (1995); Nevo (2000)). At time period t, firm f selects a bank $b \in \Theta_b$ that maximizes its indirect utility from borrowing.

The per-period utility flow that firm f obtains from borrowing from b at time t:

$$V_{fbt} = \beta_0 + \beta_1 r_{fbt} + \beta_2 X_{bt} + \xi_{bt} + \epsilon_{fbt}$$

where r_{fbt} denotes the interest rate charged by bank b to firm f. X_{bt} and ξ_{bt} are the vector of observed and unobserved bank-time characteristics, respectively. ϵ_{fbt} represents the time varying idiosyncratic preference of firm f for bank b. Consistent with standard models of loan demand, we assume $\beta_1 < 0$, which implies that higher interest rate reduces the indirect utility obtained from the bank loan.

Given these preferences, and under the standard assumption that ϵ_{fbt} is i.i.d. type-I extreme

value, the probability that firm f selects bank b in period t is:

$$s_{fbt} = \frac{exp\left(\beta_0 + \beta_1 r_{fbt} + \beta_2 X_{bt} + \xi_{bt}\right)}{\sum_b exp\left(\beta_0 + \beta_1 r_{fbt} + \beta_2 X_{bt} + \xi_{bt}\right)} \tag{1}$$

Conditional on needing to finance Q_{ft}, the expected demand for credit of firm f from bank b at time t, C_{fbt}, is given by:

$$C_{fbt} \equiv Q_{ft} s_{fbt}$$

Following the assumption that $\beta_1 < 0$, credit demand is downward sloping in the interest rate, r_{fbt}. This implies that holding other characteristics fixed, an increase in the interest rate leads to a decrease in s_{fbt} and therefore lowers C_{fbt}.

Considering that observed default in corporate loans is rare, we treat default risk as second order and abstract from modeling the default margin. Accordingly, our model can be interpreted as describing bank choice and loan demand conditional on repayment.

3.2.2 Bank-Side Credit Supply

We consider a fixed number of banks, divided into two types: one subject to domestic capital requirements, $b \in \Theta_{b^D}$, which we label a domestically regulated bank, and another regulated by their parent jurisdiction, $b \in \Theta_{b^F}$, which we refer to as a foreign regulated bank, with $\Theta_b = \Theta_{b^D} \cup \Theta_{b^F}$. Within each type, banks are modeled as identical.

Every bank b is required to maintain a minimum capital requirement that should be at least a fraction $\underline{K}_b \in (0,1)$ of the value of its loans as capital. We allow these fractions to differ by regulatory regime: $\underline{K}_b = \underline{K}_D$ for all $b \in \Theta_{b^D}$ and $\underline{K}_b = \underline{K}_F$ for all $b \in \Theta_{b^F}$, with $\underline{K}_D \neq \underline{K}_F$. We denote the total value of bank b capital by K_b. Moreover, the marginal cost of supplying one unit of credit for bank b is denoted by mc_{bt}.

We assume that there is Bertrand–Nash competition in interest rates: each bank sets its loan rate r_{fbt} to maximize profits subject to the capital requirement and taking the firm-level demand C_{fbt} as given:

$$\max_{r_{fbt}} \ \Pi_b = \sum_f \left(r_{fbt} - mc_{bt}\right) C_{fbt}$$

$$\text{s.t. } \underline{K}_b \textstyle\sum_f C_{fbt} \leq K_b$$

The optimal price rule is then given by:

$$r_{fbt} = \underbrace{\gamma_b\left(\underline{K}_b\right)}_{\text{capital requirement cost}} + \underbrace{mc_{bt}}_{\text{marginal cost}} - \underbrace{\frac{1}{\beta_1\left(1 - s_{fbt}\right)}}_{\text{markup}} \tag{2}$$

Equation (2) decomposes the loan rate into three components: regulatory, technological, and markup. We denote the cost of the capital requirement per loan for bank b in equilibrium as

$\gamma_b\left(\underline{K}_b\right)$, where $\gamma_b{}'(\underline{K}_b) \geq 0$. This component shows that it is not only the level of the capital requirement that matters for loan pricing, but also the cost of the requirement. The technological component is given by the marginal cost of funds mc_{bt}. Finally, a markup term reflects the markup of bank b in serving firm f.

3.3 Model Implications and Empirical Object of Interest

3.3.1 Central Predictions

Based on our simple framework, we derive testable predictions about the effect of capital regulation divergence across countries. In particular, we examine how an increase in domestic capital requirements affects the market share of credit supplied by domestically regulated banks relative to foreign regulated banks.

Proposition 1. *An increase in domestic capital requirements has a non-decreasing effect on the loan rates charged by domestically regulated banks relative to foreign regulated banks. Specifically, the impact is:*

$$\frac{d\left(r_{fb\in\Theta_{bD}} - r_{fb\in\Theta_{bF}}\right)}{d\underline{K}_{b\in\Theta_{bD}}} = \gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right) s_{fb\in\Theta_{bF}} s_{fb\in\Theta_{bD}} \geq 0$$

Higher domestic capital requirements create a trade-off for domestically regulated banks because they might either pass the cost to their borrowers through higher loan rates or reduce their interest margins. Moreover, the reduction of their lending capacity due to the higher cost of capital pressures these banks to increase their lending rates. On the other hand, foreign regulated lenders, which are not directly affected by the domestic capital requirement, might raise their prices to exploit their higher market power if their relative lending share increases. In equilibrium, the loan rate of domestic regulated banks increases relative to that of foreign regulated banks. Furthermore, in our framework, the marginal regulatory cost of the domestic capital requirement and the credit shares from domestic and foreign regulated banks are sufficient statistics for the impact of regulatory divergence on relative loan rates.

Proposition 2. *An increase in domestic capital requirements has a non-increasing effect on the market share of domestically regulated banks relative to that of foreign regulated banks. Specifically, the impact is:*

$$\frac{ds_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}} = \beta_1\gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right) s_{fb\in\Theta_{bD}} s^2_{fb\in\Theta_{bF}} \leq 0$$

Proposition 1 stated that an increase in domestic capital requirements leads domestic regulated banks to raise their loan rates relative to foreign regulated banks. In markets where customers are very sensitive to price changes, even small price increases can push demand of borrowers toward the cheapest lenders. As a result, this would generate a reallocation of demand away from the now more expensive domestically regulated banks and a decline in their market share. Proposition 2 shows that the reallocation effect can be decomposed into three sufficient statistics: the firm sensitivity to loan rates, the marginal regulatory cost of the domestic

capital requirement, and the credit shares across bank types. The magnitude of the effect is our central object of interest.

3.3.2 Discussion of Assumptions

First, our simple model abstracts from the impact of capital requirements on bank default. In practice, tighter requirements are designed to enhance banks' loss-absorbing capacity and the resilience of the banking system. Introducing this feature could imply that, in addition to raising lending costs, higher capital requirements reduce default risk, which in turn makes it cheaper for banks to lend. As a result, the net increase in banks' effective marginal cost is smaller, which dampens the magnitude of the effects in our proposition. However, since our application focuses on corporate firms, this effect is likely to be quantitatively small. In our setting, corporate loan default is less than 0.5%.

Second, we assume a fixed set of banks, so our analysis of how regulatory divergence affects market shares is conducted conditional on the extensive margin dynamics of the banking sector. If we allowed for entry and exit, a higher domestic capital requirement would make domestically regulated banks exit more likely and foreign regulated entry more attractive. Therefore, in that case, the reallocation of credit toward foreign regulated institutions would be even higher, and our quantification would be a lower bound of the true effect.

Third, we consider that banks within each type are identical. Allowing for heterogeneity within types would not overturn our baseline prediction, because the comparative statics with respect to domestic capital requirements operate at the type level: heterogeneity mainly redistributes market shares within bank types rather than changing the direction of credit reallocation across types.

4 The Rise of Global Bank Lending via Representatives

4.1 Data Description

4.1.1 Transaction Level Registry

Domestically regulated banks are required to file monthly reports about their loan operations to the financial regulator. This information resembles a traditional credit registry, in that it is a stock, but it tracks all loan contract terms rather than only outstanding balances. We observe interest rates, currency, loan amounts, origination and maturity dates. The data has been collected by SBS since February 2020. Our sample covers the period from February 2020 to September 2024. Although this stock loan-level dataset has not been previously used for academic research, a previous flow version was used by Gutierrez, Ivashina, and Salomao (2023).

Representative offices in Peru report the universe of transactions carried out by their parent institutions in the country to the financial regulator on a quarterly basis. The information includes interest rates, currency, loan amounts, and residual maturity, grouped into five maturity buckets[13] plus one default bucket. Our data period spans from December 2018 to September

[13] Under 30, 30–90, 90–120, 120–360, and over 360 days

2024. To the best of our knowledge, such granular information is novel in academic research and provides the most comprehensive coverage of global bank activities in a country compared to existing sources.

Our sample of firms corresponds to those classified as corporate.[14] To ensure comparability and economic relevance, we restrict the sample to loans of at least US$1 million. We winsorize interest rates at the 1st and 99th percentiles.

4.1.2 Additional Peruvian Information

First, we employ credit registry data that record all outstanding credit balances between domestically regulated banks and their clients. It follows the standard design of credit registries. The report contains monthly credit balances by currencies for each borrower–lender pair. Moreover, it includes information about the risk classification of the borrower.[15] The advantage of using this data is that it spans further back than our loan-level registry. Our sample starts in July 2010 and ends in September 2024.

Second, due to the supervisory requirement, domestically regulated banks are required to calculate and report whether their borrowers are exposed to exchange rate risk or not based on a counterfactual exchange rate depreciation of 20%. The sample covers all historical records, with data available from July 2010 onward.

Third, we use information on firms' industry classification and export status from the Peruvian Tax Regulator, *Superintendencia Nacional de Aduanas y de Administración Tributaria* (SUNAT). The industry categories correspond to the International Standard Industrial Classification (ISIC) Revision 4. The export-status variable denotes whether a firm is an exporter or not. We link these records via the firm tax identifier.

Fourth, we employ financial statements reported to the regulator. The information of domestically regulated banks is reported to the regulator with monthly frequency since 2010. Additionally, we also rely on information of corporate loan debtors reported to banks, which is collected on an annual basis. From this source, we obtain firm level measures of capital, investment, and sales, that we complement with the number of workers reported by the Private Pension Fund System, the primary retirement system for corporate employees.

4.1.3 Cross-Country Information

We hand-collect information on the presence of representative offices across a sample of forty jurisdictions where global banks are not primarily based using publicly available lists of institutions on the financial regulators' websites. While it would be ideal to have data on the operation volume or the total credit amount, such information is either unavailable or not publicly reported. Additionally, we obtain the total number of commercial banks for each country.

We complement our analysis with a set of country level characteristics. Specifically, we use

[14] These correspond to those firms classified by SBS as "*Corporativo*", which are firms with annual sales greater than 20 million soles (about 6.5 million dollars).

[15] Borrowers are classified as: normal (0 days past due), potential problem (1–60 days), deficient (61–120 days), doubtful (121–365 days), and loss (more than 365 days).

indicators for financial development, economic development, and doing business from the World Bank. In addition, the indicator of rule of law is retrieved from the Worldwide Governance Indicators. All variables are obtained for the year 2004, except for the Doing Business indicator, which is collected from 2019 due to data availability.

4.1.4 Syndicated Loan Data

We rely on DealScan data that contains comprehensive information on syndicated loan transactions worldwide. The information is maintained by the Loan Pricing Corporation (LPC). The database contains detailed deal and facility level characteristics such as: loan amounts, maturity, pricing terms, covenants, collateral requirements, industry, and borrower credit ratings. Each loan record includes information on the identity and roles of participating lenders, which allows to analyze the syndicate composition and the lender relationships.

4.2 Cross-Country Evidence

To assess the relative magnitude of representative offices, we compare them with respect to the number of domestically regulated banks for each country in Figure 2. A higher value of the ratio implies a greater participation of representative offices. The average ratio for the sample is 0.43, indicating that there are at least 4 representative offices for every 10 domestically regulated banks.

Following the literature on foreign bank participation and institutional development, we explore the correlation between the ratio of participation of representative offices and four lagged variables: rule of law, financial development, ease of doing business, economic development (GDP). The variables together explain around 30% of the variation. Figure 3 displays the scatterplots as well as the R-squared measures for each variable. The highest correlation is with past financial development, suggesting that representative offices tend to enter countries with higher financial development.

4.3 Economic Relevance

Using the granular information from Peru, we are able to measure the size and evolution over time of global bank lending that relies on representative offices, relative to domestically regulated banks. Figure 4 - Panel A displays the relevance of representative-office–mediated lending. At the start of the sample period, they accounted for 16% of the dollar corporate credit, gradually increasing to 23% by the end. When measured with respect to total corporate credit, their share increased from 8% to 13%.

In emerging markets, the degree of loan dollarization is a metric used to assess the risks associated with the accumulation of dollar debt. As such, omitting foreign regulated bank lending in the calculation underestimates the risk. The presence of representative offices increases the degree of dollarization because they only provide loans in dollars to firms whose revenues might not be in dollars. Figure 4 - Panel B shows the evolution of the dollarization of corporate loans considering the credit extended by representative offices. By including representative offices in the calculation, loan dollarization is, on average, 5pp higher than traditional measures.

4.4 Loan Pricing Advantage and the Role of Regulatory Jurisdiction

To assess whether global banks have a comparative lending advantage, we examine whether loan rates differ between domestic and foreign regulated banks. We start by looking into the non-parametric comparison of interest rates on dollar-denominated credit across both types of institutions. Table 1 summarizes the evolution of their average lending rates between 2020 and 2024. Foreign regulated banks lend at lower rates, with an average differential of 0.47pp. They are consistently cheaper over time, which is a pattern that reflects structural differences.

However, a simple rate comparison may reflect different bank or borrower features. In other words, the underlying loan differentials may involve different firms or contractual characteristics, so we might be comparing heterogeneous marginal costs or markups across borrowers. To interpret the interest rate differentials, and motivated by equation (2), we consider that each bank's lending rate is a function of the following three components:

$$\underbrace{r_{fbt}}_{\text{loan rate}} = \underbrace{\gamma_b\left(\underline{K}_b\right)}_{\text{capital requirement cost}} + \underbrace{mc}_{\text{marginal cost}} + \underbrace{mkp}_{\text{markup}} \tag{3}$$

To isolate the effect of differences in regulatory jurisdiction on loan pricing, we compare interest rates while controlling for differences in marginal costs and market power. In addition, we compare loans to the same borrower or same sector with similar contract features, which narrows the comparison on bank-specific factors rather than borrower-specific marginal costs and market power components. Specifically, we use the following regression for our baseline analysis:

$$r_{fbt} = \delta \cdot FR_b + \alpha_0 mc + \alpha_1 mkp + X\varphi + \eta_{g(f)t} + v_{fbt} \tag{4}$$

where each observation represents a transaction, f the firm, b the bank, and t the time. r_{fbt} denotes the interest rate. FR_b equals 1 if the institution is a foreign regulated bank and 0 otherwise. δ aims to account for the differences in capital requirement costs between jurisdictions. mc is a combination of several factors including: Fed funds interest rate (captured by time fixed-effects), bank characteristics like size (scale economy gains), foreign-bank status (intragroup funding access), industry specialization, and the share of non-performing loans (higher risk premia). mkp is measured by the net interest margin, defined as the average bank rate minus the monetary policy rate in the bank's headquarters country. X includes a G-SIB dummy to control for the higher capital requirements imposed on global systemically important banks as well as loan controls such as the logarithm of the amount and tenor. $\eta_{g(f)t}$ denotes either the industry-time or firm-time fixed effects.

Table 2 displays the results of all our specifications. In Columns (1) to (4), we report results comparing similar borrowers (either within the same industry or the same firm) under comparable contractual terms. Columns (5) to (8) display results including bank controls that proxy for the elements in our decomposition. In Online Appendix C, we discuss in detail the construction

and interpretation of each control. The results show that the residual loan differential across institutions is about 0.5–0.8pp, and is significant even after controlling for observable differences in marginal costs, markups, and contractual terms. Although this exercise does not exploit exogenous variation, the estimate of δ might reflect differences tied to the jurisdictional banking regime costs. In the next sections, we use event studies to isolate more cleanly that a significant fraction of the interest rate differential is driven by regulatory regime disparities.

In Online Appendix C, we verify that the baseline results are robust to several alternative specifications: we restrict the sample of domestically regulated banks to foreign banks with subsidiaries only, allow for heterogeneous transmission of the federal funds rate, and control for the monetary policy rate in the headquarters country of the bank.

5 Credit Allocation under Regulatory Divergence

5.1 Evidence from the Adoption of Basel III

5.1.1 Event description and empirical setting

The Peruvian supervisor made changes to the capital requirements as part of its transition from Basel II to Basel III. Two significant changes were made in January 2023. The first was the introduction of a capital conservation buffer set at 2.5% of Risk-Weighted Assets (RWA).[16] The Common Equity Tier 1 capital must cover such buffer as well as the existing economic cycle and market concentration buffers. The second modification was the restructuring of the capital framework: the Tier 3 capital, introduced under Basel II, was eliminated, and the Tier 1 capital was divided into the Common Equity Tier 1 and the Additional Tier 1. The required Tier 1 rate under the new regulation is 6% of RWA, which is 1.5pp higher than in Basel II.

We interpret the reform as an increase in the effective regulatory constraint faced by domestic regulated banks relative to foreign regulated banks. This interpretation is supported by the fact that similar regulatory changes for foreign regulated banks took place before 2020, as advanced countries had adopted the regulation earlier. In Peru, however, due to the unexpected onset of Covid-19, the reform was ultimately implemented in 2023, which, to some extent, generates exogenous timing variation for our analysis. Consistent with an unexpected and plausible exogenous regulatory shock, there is a 2pp increase in the capital adequacy ratio right at the time the regulation was implemented, which is evident from Figure A.2 of Online Appendix A.2.

We analyze the Basel III transition of the domestic country using the granular loan registry data, where we observe firms borrowing from domestic and foreign regulated banks at a quarterly frequency. Our main dependent variable is loan size (in logs) while interest rate and default are alternative margins of analysis.

5.1.2 Loan quantities

To analyze the impact on quantities, we follow the standard Khwaja and Mian (2008) approach. Specifically, we compare the same borrower across both types of institutions, one im-

[16] A three-year time frame was provided by the financial regulator to meet the requirement.

pacted by the implementation of the rule (domestic regulated) and another not impacted (foreign regulated). We analyze the credit amounts before and after the introduction of the regulatory change as follows:

$$ln\left(c_{fbt}\right) = \vartheta \cdot FR_b \times CapReq_t + \eta_{g(f)t} + X\beta + v_{fbt} \tag{5}$$

where c_{fbt} is the loan amount. $CapReq_t$ is a dummy equal to 1 after January 2023 and 0 otherwise. $\eta_{g(f)t}$ denotes either the industry-time or firm-time fixed effects. X contains the remaining interaction terms and bank controls.

Our parameter of interest is ϑ that captures the change evolution of domestic regulated lending relative to foreign regulated banks after the introduction of the capital requirement regulation. Under similar simplifying assumptions as Section 3, our reduced form estimation of ϑ captures a function of the structural parameters similar to Proposition 2: demand elasticity and the marginal regulatory cost of domestic capital requirement. We provide a full derivation of this relationship in Online Appendix D.1.

Table 3 summarizes the findings in Columns (1)-(2). The results imply that after the domestic system transitioned towards Basel III there was a relative increase of lending by foreign regulated banks. Comparing the same firm across its lenders, we estimate an increase of around 18%. This implies that after a rise of 1pp in domestic capital requirements, lending of foreign regulated banks increases by approximately 7-9%.[17]

A potential identification concern with our estimates is that they might capture pre existing differences in the response of banks when regulation changes rather than the causal effect of the capital requirement increase. For instance, some institutions might adjust more lending due to the new regulatory conditions, and such behavior could be correlated with the intensity of the regulatory change. Another possibility is that foreign banks might respond to the change in capital requirements by adjusting their intragroup funding, which would confound the regulatory impact with the foreign status of the bank. To address these possibilities, we add an interaction term between the regulatory change and the pre shock bank characteristics such as size, foreign ownership, G-SIB status, and non-performing loans. Columns (2) and (4) of Table 3 show that the baseline results are robust after including these control variables.

Another concern is related to the anticipatory effects of the regulation. Specifically, it could be that domestically regulated banks anticipated the change as part of the industry consultations or discussions before the implementation. Under that alternative, part of the regulatory effect might be realized in the pre treatment period because affected banks might want to smooth out the impact, which would make our estimates a lower bound (in absolute terms) of the true effect as our coefficients would be biased toward zero. However, as we discussed earlier, the unexpected regulatory adjustment at the implementation provides evidence against anticipation. As shown in the monthly changes of capital adequacy ratios in Figure A.2 of Online Appendix

[17] We compute the elasticities by dividing the estimated coefficient (18%) by either the observed increase in capital requirements (2pp, yielding 9%) or the size of the additional capital buffer (2.5pp, yielding 7.2%).

A.2, domestically regulated banks did not build capital requirements before the change, which is inconsistent with anticipatory behavior. Moreover, in Appendix E.1 we estimate the pre-trends of the baseline regression and we did not find any significant difference in the evolution before the shock across banks with different regulatory regimes.

An additional consideration is related to the timing of the policy implementation. The adoption of the policy years after the Covid crisis and the fact that it was passed under an economic reactivation mandate suggest that it was implemented to minimize disruption to domestic credit supply. In such a case, our estimates would also be conservative estimates of the true effect given that the coefficients would be biased towards zero.

5.1.3 Heterogeneous lending response

The lender substitution generated by regulatory divergence might reflect different lender preferences to keep or attract certain types of borrowers. To understand the different sensitivities, in Online Appendix E.2, we extend our baseline regression to include a set of firm characteristics: size, exposure to exchange rate depreciation, risk category, and productivity measured by the marginal revenue product of capital. Our results show that the heterogeneous transmission is concentrated among large borrowers, firms classified as exposed to exchange rate risk, and less productive firms. Taken together, the results suggest that the credit reallocation towards foreign regulated lenders due to the change in domestic regulation is concentrated among large and structurally riskier firms.

5.1.4 Loan prices

We analyze the impact on interest rates by estimating the time series of the differential in rates of domestic and foreign regulated global banks by including a time-varying dummy δ_t in equation (4). Similar to an impulse response, the strategy allows us to trace the full dynamic path of rates around the event. Figure 5 displays the evolution of interest rate differentials under several specifications.

The evidence shows two important results that are consistent with the cost channel mechanism. First, we observe that immediately after the adoption of the regulation, there is a significant increase in the cheapness of foreign regulated compared to domestic regulated banks. Notably, during the period of the discontinuous jump observed in capital requirements, there is a sharp increase in interest rate differentials. Second, the average level of foreign regulated cheapness is persistently greater after the regulatory implementation.

5.1.5 Loan default

A motive to establish higher capital requirements is to enhance financial stability. One potential consequence then is a reduction in loan default for domestically regulated banks. However, a relevant aspect to emphasize is that the competition between domestically and foreign regulated banks is concentrated among corporate firms, which are large and exhibit low default rates compared to the broader firm distribution. In fact, the average bank level non-performing loan ratio for corporate firms is about 0.5%. More directly, we test whether after the regulatory change

there was a decline in default probability between domestically and foreign regulated banks in Online Appendix E.3. Our results show that there is no significant impact for the firms in our analysis.[18]

5.1.6 Bank responses in other markets

The regulatory shock adds pressure to domestically regulated banks due to their competition with foreign regulated banks. Given the market retrenchment in dollar-denominated corporate lending, they might want to substitute towards other markets to mitigate the shock. In Appendix E.4 we provide suggestive evidence about their response in other markets by comparing across the distribution of domestically regulated banks with different competitive pressure with foreign regulated banks. First, we find that those with more pressure increased their dollar-denominated portfolio towards lending to financial institutions and government (institutional borrowers). Second, our results are not consistent with lending substitution toward local currency corporate loans. Finally, our evidence suggests that those banks with higher pressure increased slightly their risk taking in dollar lending to small and micro enterprises.

5.1.7 Real effects

We assess the transmission to the real economy by analyzing the change in outcomes across firms with different borrowing exposure on domestically regulated banks. The idea is to test whether firms relying more on domestically regulated banks experienced larger real effects due to the increase in local capital requirements. Only if they were able to offset the shock, we would not observe any differential impact. We explore the impact on firm inputs, such as capital and labor, and outputs, such as sales. We estimate the following specification:

$$o_{ft} = \psi \times Share\,DR_{f,pre} \times Post + \iota_f + \iota_t + \epsilon_{ft}$$

where o_{ft} denotes the outcome for firm f (in logs) at time t, such as the number of workers, capital, and sales. $Share\,DR_{f,pre}$ represents the borrowing share of firm f from the domestically regulated banks before the regulatory adjustment. $Post$ is a dummy that takes the value of one after the Basel III transition and zero otherwise. ι_f and ι_t denote firm and time fixed effects.

The parameter of interest, ψ, captures the differential real effects for firms that were more exposed to domestically regulated banks. Building on the assumptions of Section 3 and adding a standard firm level problem with a Cobb-Douglas production function and monopolistic competition in its product market, the estimated ψ is a function of two components: the semi-elasticity of the outcome with respect to the firm borrowing cost and the increase in the capital cost from the banks that they are borrowing from due to the higher capital requirement cost of domestically regulated banks. The Online Appendix D.3 shows the derivation in detail.

[18] It is plausible that the tighter requirements may have been translated into lower default rates in other segments where defaults are more common such as the case of retail or small business loans. Although examining such segments is outside the scope of our analysis, prior research has found that default rates of small firms are more responsive than large firms.

Our results are reported in Table 4. We find that the total quantity of credit remains similar and the average loan rates increase, but the effects are not statistically significant. Regarding firm inputs and outputs, the effects are not significant. These results suggest limited real effects from the tightening of domestic capital requirements across borrowers with different degrees of borrowing from domestically regulated banks. The fact that at the firm level there are no effects might be related to the substitution capacity of borrowers across lenders. In the model section we will test whether the demand is elastic, which would be consistent with the results.

5.2 Evidence from a Bank Transition Across Regimes

5.2.1 Event description and sample selection

We also exploit the transition of a financial institution that switched its status from representative office to subsidiary of a foreign bank that took place within our sample period. This conversion shifted regulatory jurisdiction from the foreign to the domestic authority, which increased the minimum capital requirement for lending of the bank by 1.8pp.[19] The intermediary has a presence on several continents and it operated as a representative office in Peru for several years before changing its organizational form. A main motive for the change was to expand its business to reach smaller clients. The new subsidiary status also allows it to obtain funding through deposits in the domestic country.[20]

Due to the supervisory discretion during the process, the transition was unknown to its borrowers and competitors. Therefore, it is unlikely that its competitors preemptively responded or that their existing borrowers shifted demand in anticipation. Consequently, our analysis is restricted only to those firms who had an existing credit relationship with the bank before the event because the transition process is plausibly exogenous for that specific group.

5.2.2 Evidence on loan quantities and prices

We measure the evolution of loan amounts and interest rates after the change in the organization status, while accounting for time, firm and loan controls. To be more specific, we regress the following:

$$y_{fbt} = \phi \cdot I_b \times Switch_t + \eta_{ft} + X\beta + v_{fbt}$$

where y_{fbt} is either the interest rate or the loan amount. I_b is a dummy variable equal to 1 for the institution involved in our event study, and 0 otherwise. $Switch_t$ is a dummy variable equal to 1 if the period is after the change in organizational status, and 0 otherwise. X contains the individual terms of I_b and $Switch_t$, which will be absorbed when fixed effects are included.

[19] During the sample of analysis, the difference in minimum capital requirements between the host and the parent jurisdiction was 1pp. Considering the additional 0.8pp for dollar-denominated lending, it gives a total of 1.8pp.

[20] Note that in general there is a trade-off of choosing between setting up a representative office or a subsidiary. The former presents a less costly but more restricted form of presence, while the latter broadens the scope of clients and local funding sources (such as deposits) at the cost of higher expenses and regulatory compliance in the host country. In the case of large global organizations, such as global systemically important banks (G-SIBs), the choice of representative office is justified since they have access to group financing and capital markets and can attract a wider range of clients. For smaller international organizations (e.g., regional banks), a subsidiary is more appealing as it helps them access domestic deposits and broaden their clientele.

The coefficient ϕ represents the change in the interest rate of the institution compared to other intermediaries after the change in the organizational form. η_{ft} are firm-time fixed effects. Similar to our previous event and consistent with Proposition 2 of Section 3, the reduced form estimate of ϕ is a function of the demand elasticity and the marginal regulatory cost of the parent capital requirement. We present a complete derivation of the relationship in Online Appendix D.2.

Table 5 summarizes the findings of our parametric approach. The results indicate that loan rates increased by at least 1.8pp after the institution transitioned from a foreign to a domestically regulated bank. The magnitudes imply that a 1pp increase in capital requirements increases interest rates by 1pp and the results are robust across specifications. Consistent with the capital cost channel, we also observe that the increase translates into a decline in loan quantities. The conservative estimates indicate that firms borrowing from the transitioned bank experienced a decline of around 22%, which implies that after a 1pp capital requirement rise, there is a 12.2% market-relative contraction in lending. Overall, the estimate is sizable and aligns with our earlier results.

5.2.3 Identification assumption discussion

Our identifying assumption requires that the transition of a representative office into a foreign subsidiary represents an exogenous supply shock that is orthogonal to borrower-specific demand conditions, after controlling for firm-time fixed effects. Therefore, within a given firm and period, the variation in credit outcomes across its lenders can be interpreted as arising from differences in the supply shocks of lenders. Similar to a standard difference in difference strategy, the identification does not require an exogenous assignment of the transition, nor equality in outcome levels between firms borrowing from the transitioning banks and those borrowing from other institutions.

A threat to identification is the potential anticipatory effects. As discussed, due to the supervisory discretion exercised throughout the process, the shock was unanticipated by both borrowers and other banks. More formally, for the transitioning institution, we detect no significant deviations prior to the shift, which suggests no anticipatory adjustment. Figure A.4 of Online Appendix E.5 shows that no significant deviations occurred before the change.

An alternative interpretation of the results is that the change might reflect the higher operating costs from setting up the subsidiary[21] rather than an increase in capital requirements. We rule out this potential interpretation for three reasons: First, following its transition, the institution did not establish any new offices or create branches. Second, the share of administrative expenses and real estate investments relative to total assets did not change around the transition year. Third, even in short windows when significant operating cost adjustments are unlikely, the effect remains significant, as shown in Columns (2) and (4) of Table 5.

[21] This could include marketing expenses, setting up branches in the country, increasing the number of employees, among others.

5.2.4 Real effects

As our previous findings pointed out, firms reliant on the institution experienced higher credit costs and a contraction in lending due to the increase in capital requirements when the bank transitioned from a foreign regulated to a domestically regulated bank. We examine how this regulatory divergence shock translates the higher credit costs into changes in several real outcomes.

Similar to our previous analysis, we focus on the set of firms that borrowed from the institution prior to its transition. Our approach measures how much the real outcomes changed after the event by looking at whether firms that took more loans from the bank were affected more. We use the following regression:

$$o_{ft} = \beta \times Share_{f,pre} \times Post + \iota_f + \iota_t + \epsilon_{ft}$$

where o_{ft} denotes the outcome for firm f (in logs) at time t, such as the number of workers, physical and intangible capital, and sales. $Share_{f,pre}$ represents the borrowing share of firm f from the transitioning institution. $Post$ is a dummy that takes the value of one after the intermediary transition and zero otherwise. ι_f and ι_t denote firm and time fixed effects. Our results are reported in Table 6.

The results show that there is a decline in credit alongside reductions in the number of workers and sales. The estimates indicate that following the regulatory divergence shock, a firm which borrows 50% from the transitioning bank decreased its demand for labor by 2.2% and sales dropped by 0.18%. Moreover, a back of the envelope calculation implies that a 1pp rise in capital requirements leads to a decrease of 1.22% in labor and 0.1% in sales.[22]

5.3 Evidence from a Capital Requirement on Dollar Loans

5.3.1 Event description

We study capital requirements for dollar-denominated lending. The Peruvian regulator imposed an additional capital requirement on loans labeled as exposed to exchange rate risk in 2010. The additional charge was set at 0.25% of the total loan amount.[23] The regulator modified the framework years after the policy was implemented. Specifically, they set a new schedule for regulatory surcharges with the following rates: 0.40% in December 2013, 0.60% in December 2014, and 0.80% in December 2015. We focus on the initial regulatory adjustment of the capital requirement for dollar-denominated loans in December 2013 because it provides a clean setting for our analysis. The window precedes the entry of large global banks as representative offices in Peru that took place in 2015 and 2016, which could have reflected new market opportunities for

[22] We calculate the estimates dividing 2.2% and 0.18% over the rise in capital requirements of 1.8pp

[23] Importantly, the regulation is applicable even if a bank matches its foreign currency-denominated assets and liabilities. In that sense, the regulation accounts for any underlying risk arising from the potential inability of a borrower to repay its foreign currency debt after an exchange rate depreciation.

global banks or substantial funding for expansion in the region.[24] It was also unaffected by the enduring effects of the global financial crisis that were still impacting the syndicated loan market in the period around 2010. Notably, around the time of the adjustment, no other major policies were adopted.

There are two key advantages to using this policy instrument. First, the dollar-denominated capital requirement is specific to emerging markets, generating a persistent divergence increase between domestically regulated and foreign regulated banks, whose headquarters are primarily located in advanced economies. During the period of this analysis (2013-2014), the minimum capital requirement was 8% of the risk-weighted assets for advanced economies, and 10% for emerging markets, and after the full implementation of the dollar-denominated requirement, it would increase to 10.8%. Second, prior work noted that regulations can adjust endogenously to conditions in global capital markets (e.g., Karolyi and Taboada (2015)). In contrast, the dollar capital requirement was introduced for prudential reasons and was unrelated to conditions in global capital markets.

5.3.2 Sample selection and variable construction

As our granular Peruvian data only cover the period after 2018, we rely on syndicated loan market data from DealScan for our examination. We explore the lending behavior of banks participating in syndicated loans to South American countries in which domestically regulated banks participate, chosen to ensure comparability of business opportunities and geographic specialization. Our analysis focuses on banks serving as lead arrangers because they typically hold the largest share of the facility and act as administrative agents whose role is to coordinate the syndicate and to share information of the borrower.

Our variable of interest is the market share of a bank in a given country-year, which we compute as the ratio between the total loan amount of the bank in that country over the total loan volume in that country-year, s_{bct}. The loan amount is allocated pro rata across the lead arrangers. As a complementary metric, we construct a bank participation rate that we define as the number of syndicated loans in which a bank participates within a given country-year divided by the total number of syndicated loans in that country-year.

5.3.3 Bank participation and market share

We begin by showing the evolution of domestically regulated banks' market share in the syndicated loan market around the event in Table 7. The average market share of domestically regulated banks in Peru declined from 9.8% in the pre-event period to 3.1% in the post-event period, a reduction of 6.7 percentage points. By contrast, their activity in the other South American markets in which they operated was essentially unchanged: their average participation remained stable at around 4% across the event window.

We further evaluate the individual responses across institutional types induced by the event.

[24]The global banks that established a representative office during that period were Bank of China, Caixabank, Banco Sabadell, and Banco General.

We focus on institutions that participated at least once by providing syndicated loans to Peruvian firms over the sample period. Our analysis shows that 100% of domestically regulated banks decreased their participation after the event, which is consistent with the interpretation of the event being a treatment. In contrast, 77% of foreign regulated global banks expanded their market participation.

Our analysis is formalized by using a difference-in-differences-in-differences (DDD) strategy comparing foreign regulated and domestically regulated banks' lead-arranger participation in Peru relative to other countries, before and after the regulatory adjustment. Specifically, we compute:

$$s_{bct} = \beta \cdot FR_b \times Peru_c \times Post_t + \alpha_{bt} + \alpha_{ct} + \alpha_{bc} + \epsilon_{bct} \tag{6}$$

where the period of analysis is denoted by $t \in \{2013, 2014\}$, the bank by b, and the country by c. s_{bct} is the lending market share measure. FR_b equals one if the institution is a foreign regulated bank and zero otherwise. $Peru_c$ is a dummy variable that denotes whether the country is Peru or not. $Post_t$ is a dummy variable that equals one in the post-regulation year and zero in the pre-regulation year. Country-time fixed effects (α_{ct}) control for country-specific demand conditions. Bank-time fixed effects (α_{bt}) capture time-variant bank characteristics such as risk appetite, while bank-country fixed effects (α_{bc}) absorb stable characteristics of each bank's operations within a given country.

Table 8 presents the results of equation (6). Columns (1) and (3) use the loan-volume measure, whereas Columns (2) and (4) rely on the participation measure. For interpretation, we calculate the magnitudes of the response dividing the regression estimates (measured in percentages) by the increase in capital requirements (0.8pp).[25]

Our estimates imply that a 1pp capital requirement increase leads to a 10pp relative market share expansion of foreign regulated global banks that rely on representative offices with respect to domestically regulated intermediaries, after controlling for bank-time, country-time and bank-country effects. Moreover, the participation results show that such banks expand their syndicated loan participation by 17.5pp following a 1pp capital rise.

Although our findings are centered on global bank lending that relies on representative offices, the results also extend beyond it. Columns (3)–(4) of Table 8 display the results considering all foreign regulated banks, that is, we also include those regulated by foreign jurisdictions operating without representative offices as the comparison group for domestically regulated banks. The magnitudes are around the baseline estimates.

[25]Note that this capital charge only applies if the firm is exposed to exchange rate risk or becomes exposed at some point of the duration of the loan. As we discuss below, firms classified as exposed to exchange-rate risk accounted for less than 3% of borrowing in the syndicated loan market before the regulation, whereas one year after its implementation this share had risen to around 65%. Moreover, syndicated loans tend to have long maturities, so in our sample period they are fully exposed to the phase-in of the regulation. Considering these aspects, for a conservative estimate we consider a 0.8pp capital increase.

5.3.4 Cross-country capital flow reallocation

If foreign regulated banks are indeed expanding in the domestic market after the regulatory change, we should observe that they are increasing their funding to finance the loan transactions, either by increasing their existing funds or reallocating resources from other countries. We therefore analyze with our data whether global banks redirected resources to Peru at the expense of the other countries.

Specifically, we examine global banks' portfolio allocations and test whether the increase coincided with shifting funds toward Peru at the expense of the other comparable countries. Our dependent variable is then the loan portfolio share of bank b's portfolio that is allocated to country c at time t, ω_{bct}. Because this share is standardized by the bank's total loan supply, it is unaffected by shocks to the bank's overall lending capacity. Instead, it reflects the bank's geographic allocation of lending in response to prevailing economic conditions. We estimate a similar regression to equation (6) to assess this possibility:

$$\omega_{bct} = \vartheta \cdot FR_b \times Peru_c \times Post_t + \alpha_{bt} + \alpha_{ct} + \alpha_{bc} + \epsilon_{bct}$$

Table 9 shows the estimates. We compare the portfolio of foreign regulated and domestically regulated banks in Column (1). Because these results may reflect not only the incentives of foreign regulated banks to expand but also the retrenchment of domestically regulated banks, in Column (2) we introduce an alternative comparison group that is likely unaffected by the event: multilateral development banks. This allows us to tease out the incentives of foreign regulated banks to expand. As a robustness, in Columns (3) and (4), we also present the results expanding our comparable countries to all South American markets.

Our results indicate that foreign regulated banks significantly shifted their lending toward the country that tightened its regulatory requirements, even after controlling for bank-time, country-time, and bank-country specific factors. The results are statistically meaningful across specifications. Overall, the findings are consistent with a regulatory arbitrage view in which global banks expand their lending relying on representative offices after an increase in capital regulatory tightness.

5.3.5 Heterogeneous firm borrowing response

We analyze the heterogeneous implications of the capital cost channel by testing whether firms exposed to exchange rate risk tend to borrow more from foreign regulated banks after the capital regulatory constraint adjustment. The mechanism would predict that since domestically regulated banks face a higher capital requirement cost when lending to firms exposed to exchange risk, in equilibrium there should be an increase in their borrowing from foreign regulated banks.

Figure 6 depicts the fraction of borrowers labeled as exposed to exchange rate risk that participated in the syndicated loan market. Before the regulation changed, they accounted for at

most 3% of borrowing, but in the year after the change their share jumped to about 65% and then stabilized at around 30% in subsequent years. Although this evidence is consistent with a cost mechanism, another possible interpretation is related to targeting and extraction. Specifically, it could be that foreign regulated banks are actively targeting borrowers identified as exposed to exchange rate risk to earn higher profits, which would predict an increase in lending to such a group of firms. However, this would require access to detailed information on borrowers' risk exposure, which they are unlikely to possess, as such data are collected mainly by domestically regulated banks due to regulatory requirements and are absent from public or traditional balance sheets, where magnitudes are reported in an aggregated currency.

In addition to our event study, the granular loan registry allows us to examine additional heterogeneous implications in a later period (2018–2024) using the universe of loans. Table A.8 in Online Appendix E.6 shows that firms exposed to FX are 6pp more likely to borrow from foreign regulated banks and receive a 2pp higher share of dollar funding from them. The result holds even after controlling for credit risk and the share of dollar borrowing. Furthermore, in years of significant exchange rate depreciation when the regulation is expected to bind more tightly for domestically regulated banks, firms exposed to FX increase their borrowing from foreign regulated banks, which is consistent with borrowers shifting toward lower cost lenders. As a result, borrowers partially mitigate the impact of the regulation by switching towards the lenders outside the regulation scope.

6 Structural Model Estimation and Counterfactuals

In this section, we take the demand and supply framework developed in Section 3 to the data and use it to conduct counterfactual policy analysis. The structural estimation proceeds in three steps. First, we estimate the demand of bank credit using a model of discrete choice where firms select among lenders. Second, using the demand estimates and the optimal pricing condition of the bank, we recover the shadow cost of regulatory capital. Third, we compute counterfactual experiments by using the estimated model and solving for each policy scenario the implied equilibrium market shares.

6.1 Model Estimation

6.1.1 Demand Estimation

Following the preferences specified in Section 3 and considering the standard assumption that ϵ_{fbt} is i.i.d. type-I extreme value, the probability that firm f selects bank b in period t has the multinomial logit form of equation (1). The logit structure implies a standard share inversion: after imposing the normalization of the outside option and absorbing the component of utility common to all alternatives within a given firm-time choice set, we can derive the following logit demand equation.

$$ln\left(s_{fbt}\right) = \beta_0 + \beta_1 r_{fbt} + \beta_2 X_{bt} + \alpha_{ft} + \xi_{bt}$$

The demand equation implies a linear function between the interest rate and the logarithm of the share. However, the sensitivity parameter cannot be identified using ordinary least squares

(OLS) because the endogeneity of prices biases the estimate. One potential source of bias is that equilibrium rates and quantities depend simultaneously on demand and supply conditions. Another possible bias is that loan rates are chosen endogenously by banks and can be correlated with unobserved non price attributes, ξ_{bt}, that also affect demand (e.g., banks jointly adjust rates and non price terms such as other contract features).

In that sense, to estimate β_1 we use an instrumental variables strategy that allows us to isolate the variation in loan rates driven by bank level pricing conditions rather than unobserved borrower demand factors. Specifically, we instrument the loan rate r_{fbt} using the monetary policy rate in the jurisdiction where the bank is headquartered, Z_{fbt}. The instrument proxies for exogenous movements in the marginal funding cost of the bank, and, as a result, its pricing incentives. Identification using instrumental variable relies on two assumptions: relevance and exogeneity. The first requires that the monetary policy rate of the parent country should be correlated with the loan rate. The second requires that, conditional on firm-time fixed effects, the monetary policy rate of the parent country should affect the loan demand of a given borrower only through its pass-through to the lending rate. Importantly, note that the firm-time fixed effects absorb the impact that foreign monetary policy may have on borrower demand, which rules out its effect on broader macroeconomic channels. We therefore estimate:

$$ln\left(s_{fbt}\right) = \beta_0 + \beta_1 r_{fbt} + \beta_2 X_{bt} + \alpha_{ft} + \varepsilon_{fbt} \quad with \;\; E\left[Z_{fbt}\varepsilon_{fbt}|X_{bt}, \alpha_{ft}\right] = 0$$

where ε_{fbt} contains the unobserved bank-time demand component.

We report our estimates in Panel (a) of Table 10. Column (1) shows the OLS estimate, while Column (2) displays the instrumental variables (IV) results. The F-statistic of the first stage is above the standard threshold for weak instruments, which strongly suggests that the instrument is relevant. Our preferred estimation strategy is the IV because it isolates the variation in loan pricing that arises from the supply side when the exclusion restriction is satisfied. Our estimates imply a statistically significant loan demand price elasticity of around -2.9, which indicates an elastic demand. The difference between our IV and OLS estimates suggests a positive relationship between the interest rate and the unobserved error term, which might be consistent with the existence of relationship intensity, private information, or match quality that raise loan rates and volume. In Online Appendix G.1, we show that the estimator is robust and the magnitudes are quantitatively similar even after including an additional set of controls and extending the sample.

6.1.2 Supply Estimation

For each loan, bank b earns a loan rate r_{fbt} for lending to firm f at time t. On the cost side, it faces a marginal cost of supplying one unit of credit for bank b denoted by mc_{bt} and the capital requirement cost, $\gamma_b \underline{K}_b$, where γ_b is the shadow cost of capital requirement and $\underline{K}_b$ is the total

requirement.[26] We assume Bertrand–Nash competition in loan rates: each bank chooses its loan rate r_{fbt}, taking firm-level demand C_{fbt} as given.

$$\max_{r_{fbt}} \ \Pi_b = \sum_f \left(r_{fbt} - mc_{bt} - \gamma_b \underline{K}_b\right) C_{fbt}$$

The optimal bank pricing condition is similar to equation (2). The loan rate can be decomposed into three components: the capital requirement cost, $\gamma_b \underline{K}_b$, the marginal cost, mc_{bt}, and a markup term capturing market power.

$$r_{fbt} = \gamma_b \underline{K}_b + mc_{bt} - \frac{1}{\beta_1 \left(1 - s_{fbt}\right)}$$

Using our demand estimates, we can net out the endogenous markup to obtain an "effective" rate. Define

$$r^e_{fbt} \equiv r_{fbt} + \frac{1}{\beta_1 \left(1 - s_{fbt}\right)}$$

Substituting the term into the pricing rule gets

$$r^e_{fbt} = \gamma_b \underline{K}_b + mc_{bt}$$

As a result, variation in r^e_{fbt} reflects changes in two components: the capital requirement and marginal lending costs. We separate the components in three steps. First, we parameterize the marginal cost of a bank using observable funding cost shifters, W_{bt}, bank fixed effects, μ_b, and u_{bt} an unobserved shock. We assume the following functional form: $mc_{bt} = \theta' W_{bt} + \mu_b + u_{bt}$. Second, we impose a parsimonious structure on the shadow value of the capital requirement by allowing it to vary only by regulatory regime: $\gamma_b = \gamma_H$ for domestically regulated banks and $\gamma_b = \gamma_P$ for foreign regulated banks. Finally, conditional on the marginal cost structure, we identify (γ_H, γ_P) from the systematic comovement between r^e_{fbt} and $\underline{K}_b$ implied by the effective rate equation. Crucially, to back out the shadow capital cost(γ_H, γ_P), we require changes in the level of capital requirements, which we obtain from two of our event studies that generate predetermined changes in minimum capital requirements across regulatory regimes.

Estimation of γ_H. We use the Basel III event that increased the minimum capital requirement for domestically regulated banks, but left foreign regulated banks unchanged. This allows us to have a clean difference in capital requirement change across regimes: after the implementation of the policy, any increase in the differential between the effective rates of domestically and

[26] Besides tractability, our structural modeling choice of the total capital requirement cost is economically motivated: we are focusing on a segmented division of banks that provide loans to corporate firms, which makes it unlikely that they take as given the regulatory cost rather than optimize their capital structure. This is particularly relevant for representative offices as they operate as an extension of their parent institution and their capital structure is not independent.

foreign regulated banks can be attributed to capital requirement cost increase. More formally, we estimate:

$$r^{e}_{fbt} = \zeta \cdot FR_b \times Post_t + \theta' W_{bt} + X\beta + \alpha_{ft} + v_{fbt}$$

where r^{e}_{fbt} denotes the estimated effective rate for firm f from bank b at time t. FR_b is an indicator equal to one if bank b is a foreign regulated bank (and zero otherwise), and $Post_t$ is an indicator equal to one for the period following the Basel III adjustment (and zero otherwise). W_{bt} is a vector of monetary-policy rates in the bank's headquarters jurisdiction, and X includes the individual interaction terms in the specification as well as average loan characteristics. α_{ft} captures unobserved firm–time heterogeneity, and v_{fbt} is the idiosyncratic error term.

Given the model structure, the coefficient of the interaction term in the regression satisfies $\zeta = -\gamma_H \triangle \underline{K}_H$. In Online Appendix F.1, we provide the full derivation of the equation. The intuition of the identification is that after netting out the markup and controlling for marginal costs, the remaining variation in the effective rate, r^{e}_{fbt}, captures the increase of the higher capital requirement cost of domestically regulated banks. As a result, we can recover the domestically regulated shadow cost of capital as follows:

$$\widehat{\gamma}_H = -\frac{\widehat{\zeta}}{\triangle \underline{K}_H}$$

Panel (b) of Table 10 displays the results. There is a positive and statistically significant increase of the effective interest rate differential between domestically and foreign regulated banks after the Basel III implementation. As a result, our regression estimates imply a shadow value of 0.29 for domestically regulated banks.

Estimation of γ_P. We exploit the organizational form transition observed in our setting where the regulatory oversight of an institution changed from foreign to domestic regulation. Under the assumption that the transition only shifts the capital requirement, the variation in the effective rate r^{e}_{fbt} around the transition allows us to identify the variation in capital requirement costs, conditional on the observable cost controls and fixed effects. Specifically, we estimate:

$$r^{e}_{fbt} = \phi \cdot I_b \times Switch_t + \Gamma' W_{bt} + X\beta + \eta_{ft} + \varepsilon_{fbt}$$

where r^{e}_{fbt} denotes the estimated effective rate for firm f from bank b at time t. I_b is an indicator equal to one for the institution involved in our event study (and zero otherwise), and $Switch_t$ is an indicator equal to one for periods after the change in organizational status (and zero otherwise). W_{bt} is a vector of monetary policy rate in the bank's headquarters jurisdiction, and X includes the individual interaction terms in the specification as well as average loan characteristics. η_{ft} captures unobserved firm time heterogeneity, and ε_{fbt} is the idiosyncratic error term.

According to the model, the interaction effect implies $\phi = \gamma_H \underline{K}_H - \gamma_P \underline{K}_P$. We present the full

derivation of the equation in Online Appendix F.2. Intuitively, the source of the identification comes from within the transitioning institution: the switch from foreign to domestic regulatory oversight increases the required capital, conditional on the firm-time fixed effects and controls.

Hence, the change in r^e_{fbt} around the transition maps to the change in capital requirements. We therefore identify the foreign regime shadow cost of capital as follows:

$$\widehat{\gamma}_P = \frac{\widehat{\gamma}_H \underline{K}_H - \widehat{\phi}}{\underline{K}_P}$$

The results of the switch based event study are shown in Panel (c) of Table 10. The transition to domestic regulation is followed by a significant relative increase in effective loan rates for the transitioning institution, in line with a larger capital requirement under domestic oversight. Using this estimate in conjunction with the estimated domestic regulatory cost, we back out a foreign regime regulatory cost of 0.11.

6.1.3 Procedure for Computing Counterfactuals

For conducting the counterfactual capital requirements exercises, we change the requirements of a group of banks and calculate the resulting equilibrium loan rates and market shares predicted by the model we have estimated. Since we keep constant the estimated parameters of the demand system and marginal cost, the policy change has an impact on pricing through the regulatory part of the pricing condition of banks. Therefore, the counterfactual equilibrium is the loan rates that simultaneously generate market shares consistent with the demand system and satisfy the best response pricing conditions of banks under the new minimum requirement.

Starting from the equilibrium rate structure, we solve for the policy counterfactual by iterating on a three-step routine. First, we evaluate the demand system to get counterfactual shares at the current candidate rates. Second, we obtain the rates that incorporate the new regulatory costs resulting from the change in capital requirements and optimize markups given the expected shares, where marginal costs and demand are kept fixed. Lastly, we stabilize the process using a damped algorithm. Details on the procedure can be found in Online Appendix F.3.

6.2 Counterfactual Exercises

In this part, we examine a set of counterfactual policy exercises where the changes in capital constraints are translated into equilibrium effects using the calibrated model. The exercises provide a measure of the impact in regulatory capital changes on the distribution of loans among banks through endogenously adjusting interest rates and lender selection in equilibrium.

6.2.1 Regulatory Divergence Impact

We compute a counterfactual to measure the impact of a capital regulation adjustment of each jurisdiction. For each jurisdiction, we make an identical variation in capital regulation and calculate the equilibrium changes in distribution of credit shares among the banks. Given the model structure, the change in regulation affects the movement of capital through differentials in funding costs, incentive pricing, and ultimately the credit allocation among the banks. The first

column of Table 11 presents the findings showing that an increase of 1pp in capital regulation decreases the market share of banks under domestic jurisdiction by 3.7pp. This estimate is similar in magnitude to the reduced form estimates obtained in Section 5, but has an advantage of being the aggregate effect of the model. Using the model, we can also decompose the total effect into a pure effect of regulation and the additional effect due to strategic response adjustment, as presented in Appendix F.4.

Regarding the impact of foreign jurisdictions, we find that European banks receive the biggest share of the domestic regulatory shock, while the U.S. banks have the highest influence across jurisdictions. Column (1) of Table 11 shows that after a domestic regulatory shock, European banks gain 45% of the loss of market share resulting from domestic regulation, while Asian banks 20%, and the US 6%. Additionally, we identify which regulatory regime changes have the biggest influence across jurisdictions by applying to each of them 1pp change in capital requirements and measuring its effect on other jurisdictions. The details of this procedure are given in Online Appendix G.2. The results show that the U.S. is by far the most influential jurisdiction.

6.2.2 Capital Level Equalization

A recurring concern in regulatory discussions is that under the current regulatory standards certain jurisdictions maintain higher capital adequacy ratios. Motivated by this, we consider an equalization counterfactual that removes cross-country dispersion in Basel surcharges to understand the distributional impact of the credit allocation under such scenario and assess how much of the cross-jurisdiction heterogeneity in bank capital flows is attributable to differences in the level of regulation, as opposed to differences in fundamentals such as the regulatory cost of capital, funding costs, and demand conditions. To implement the exercise, we equalize the minimum capital requirement (Pillar 1) of all jurisdictions and eliminate the additional charges on the systemically important global banks (G-SIB).

The second column of Table 11 reports the equalization counterfactual. We find that domestically regulated banks increase their share by 2.1pp driven by a reduction in their capital requirements, as they are required higher Tier 1 capital. Regarding foreign jurisdictions, the U.S. gains 1.65pp due to the decrease in G-SIB add ons, while the most affected is Europe with a 3.38pp decline, which experienced the largest reduction in the aggregate rebalancing across jurisdictions. In Online Appendix G.3, we analyze the heterogeneous impact across firm and bank margins. Larger and more leveraged firms experienced a decline in their borrowing share, explained by the increase in interest rates and by their relatively larger share on European and Asian banks. Regarding the impact across bank types, the largest reallocation is from more to less profitable banks, driven by the greater reduction in market power.

6.2.3 Total Capital Cost Equalization

We examine a counterfactual in which we equalize the cost of capital regulation across jurisdictions. Imposing a common regulatory cost on lenders motivates a "true level playing field" from the regulatory cost perspective because the only remaining differences in credit arise from

non regulatory components such as lending operational costs or demand fundamentals rather than cross-jurisdiction variation in regulations. In the model, $\gamma_b K_b$ represents the regulatory cost of capital per unit of credit provided by the bank and is the regulatory component of the pricing equation of banks.

We display the counterfactual results in the last column of Table 11. Our findings point toward a significant impact for the domestic country due to its higher capital cost compared to foreign regulated banks. As we uncovered in the structural estimation, the domestic capital requirement cost is almost twice that of foreign regulated banks. Thus, when equalizing total capital costs, there is a sizable decline in its lending costs for domestically regulated banks. Overall, this highlights the relevance of understanding not only the cross-country variation of capital levels but also capital costs to assess the impact of capital regulation.

6.3 Extensions and Robustness

In this subsection, we discuss different extensions to the baseline model and its implications for the quantifications of the counterfactual exercises.

6.3.1 Extensive Margin Response

In our previous exercises, we have maintained the assumption that the aggregate firm financing amount, Q_{ft}, does not respond to changes in capital requirements. This condition is standard in models with multinomial logit demand systems. One possibility to include an external margin response is to estimate a linear relationship between Q_{ft} and a function of capital requirements, which would allow us to quantify the impact of an increase in capital requirements on the quantity of credit at the firm level. This strategy would be similar to our real effects regressions estimates in Section 5, which showed small quantitative effects on firm credit. Including this feature does not change the distribution of profits across bank types. However, the profit of domestically regulated banks only marginally declines with respect to the baseline result: by an additional 0.03pp for each 1pp increase in domestic capital requirements. Appendix G.4 provides the details of the calculation.

6.3.2 Default Adjustment

The baseline model considers that loans are fully repaid. However, ignoring default could mechanically bias upward the estimates of shadow capital costs. For that reason, we incorporate a default probability for each loan in the profit function of the bank. This generates a pricing function that has a markup adjusted by a function of the default. For tractability of our counterfactuals, we estimate a linear probability model of default that has as an explanatory variable the interest rate. We show the detailed information about the extension in Appendix G.5. Our estimates are quantitatively similar to the baseline. Intuitively, the default probability is small and not very sensitive to capital requirement changes.

6.3.3 Demand System with Random Coefficients

The demand in the baseline model assumes that the sensitivity to the loan characteristics of different banks is similar across firms. However, this assumption could restrict the possibility that firms reallocate differently given a shock. Moreover, the logit assumption imposes the Indepen-

dence of Irrelevant Alternatives (IIA) issue, which implies that the substitution across two banks depends on their share regardless of their similarity. Considering these issues, similar to Berry, Levinsohn, and Pakes (1995), we estimate a demand system with random coefficients where the parameters of the interest rate sensitivity are log-normally distributed. Appendix G.6 shows the details of the extension. Overall, the results suggest that the impact of a pure regulatory shock is half of the baseline, but the statistical fit is noisier than the logit baseline.

6.3.4 Alternative Demand Microfoundations

Our quantitative results rely on the multinomial logit demand system that implies the linear demand equation that we estimate. Although we derived the linear equation by considering that firms obtain an indirect value from the loan characteristics, our estimated equation could be also obtained using other three microfoundations. First, firms could choose the banks that maximize the value of a constant elasticity of substitution (CES) composite of projects financed through bank loans subject to an expenditure constraint. Second, firms could assign their different financing needs to the cheapest lender when bank efficiencies are Fréchet distributed. Third, it could also be rationalized if firms pay to process information about loan terms before choosing their banks.

6.4 Aggregate and Welfare Implications

In the previous subsections, we have documented a significant reallocation impact from unilateral regulatory adjustments in a given jurisdiction. However, there is still the question of whether this is only a positive statement or also has aggregate and welfare implications. In this part, we discuss the interpretation of our estimates through the lens of our model and well established facts in international finance and banking: the flightiness of foreign capital.

Studies that document the dynamics of foreign capital flows robustly conclude that they are flighty during domestic crises (see for example Broner et al. (2013) or Forbes and Warnock (2012)). The behavior of financial intermediaries is also part of the broader fact: it has been shown that foreign banks reduce their cross-border lending more than domestic banks when a crisis unfolds (e.g., Giannetti and Laeven (2012)). The literature has also related the foreigner fickleness to the amplification of fire sale costs during distress, which generates that the private equilibrium of capital flows is not optimal as foreigners do not account for the pecuniary externality.

One way to rationalize the fickleness of foreign capital is by considering that the required return on risky assets for foreigners increases more than for domestic agents during crisis episodes (e.g., Caballero and Simsek (2020)).[27] We can add this assumption into our model either through an increase in the marginal cost or in the capital cost of foreign regulated banks. Without loss of generality, we consider that there are a normal and a crisis period, with the capital cost of foreign regulated banks being higher during the latter state. By itself this assumption generates a sharper lending contraction during crisis compared to the normal period due to the direct increase in the capital costs of parent regulated banks and the higher markups that domestically

[27] Among the different micro fundamentals that might endogenize the feature are differences in uncertainty, regulation, information, etc.

regulated banks would charge. An implication from the model is that harmonization of capital requirements reduces the lending contraction because it limits the degree of market share reallocation toward domestically regulated banks in crisis. Importantly, this effect is stronger when market shares respond more strongly to capital requirements adjustments. In Appendix H.1, we provide the detailed derivations.

Another aspect to consider in the discussion is the role of funding costs. Deposits might not constrain the capacity of domestically regulated banks to fill the gap for two reasons: First, the largest source of funding of domestically regulated banks in our sample is insured deposits, which tend to be sticky even in crisis periods. Second, flight to quality of deposits during crisis generates a reallocation within the banking system toward the safest institutions, but it might not significantly impact the aggregate lending. In contrast, a more relevant channel is the cost of issuing equity during crisis. Prior work has identified that raising bank equity during crisis is costly due to adverse selection or moral hazard (e.g., Hanson, Kashyap, and Stein (2011) or Myers and Majluf (1984)). Including this assumption into our baseline model generates an additional motive for why domestically regulated banks might not fully replace foreign regulated banks when they exit. In this case, harmonization mitigates the aggregate lending decline during crisis by increasing the market share of domestically regulated banks in normal times, which mitigates the costliness of equity issuance during crises. Furthermore, this effect is larger when the market shares are more responsive to capital requirement changes. Appendix H.2 formalizes this result.

7 Concluding Remarks

This paper analyzes the impact of regulatory divergence on a domestic banking system. Using granular Peruvian data, we study the implications of regulatory divergence on the competition between domestically and foreign regulated banks. Our main result implies that after a 1pp rise in domestic capital requirements, foreign regulated banks expand their market share by 7-10% relative to domestically regulated banks, even for the same borrower.

A central lesson of modern banking regulation is that international capital standards have become a cornerstone of global financial stability. Yet policy debates have persistently emphasized a second rationale: preserving a level playing field across countries. Even so, the competitive implications have been empirically underexplored in the academic literature. Our evidence shows this rationale is economically meaningful: when capital standards tighten in one jurisdiction but not in others, credit significantly shifts toward lenders operating outside that jurisdiction's regulatory perimeter.

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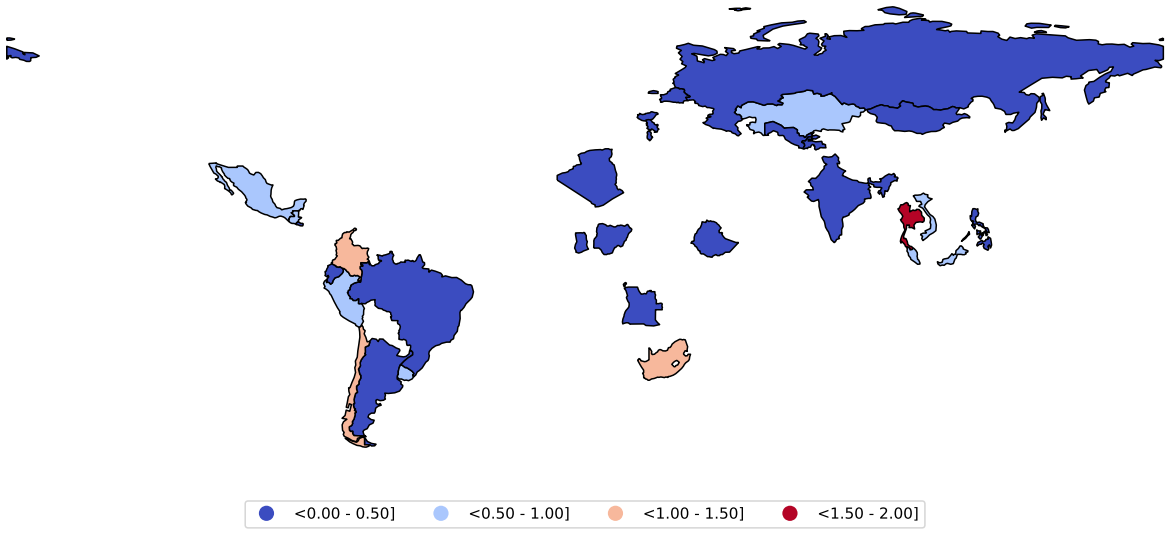
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Figures and Tables

Figures

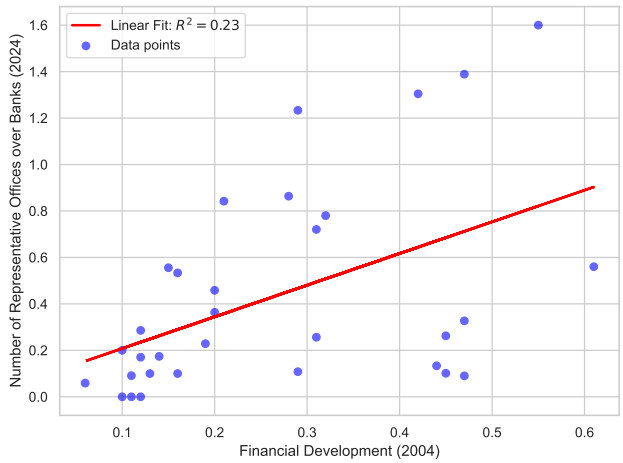
Figure 2: Ratio of the Number of Representative Offices over Banks



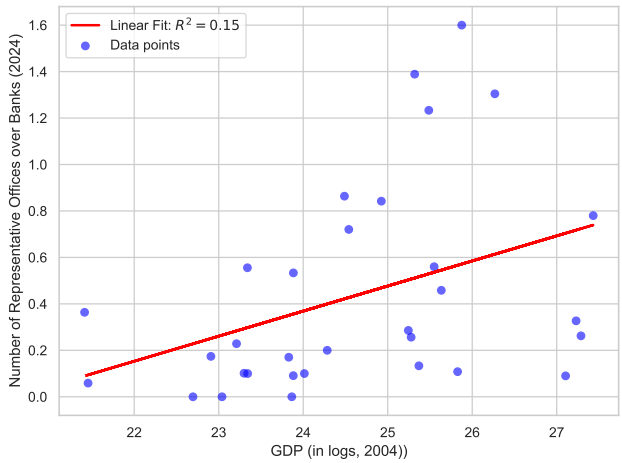
Note: The figure measures the number of representative offices over commercial banks for several countries in which global banks are not based. Every country that we report had at least one representative office. Data correspond to the early 2020s.

Figure 3: Representative Offices Presence and Country Characteristics

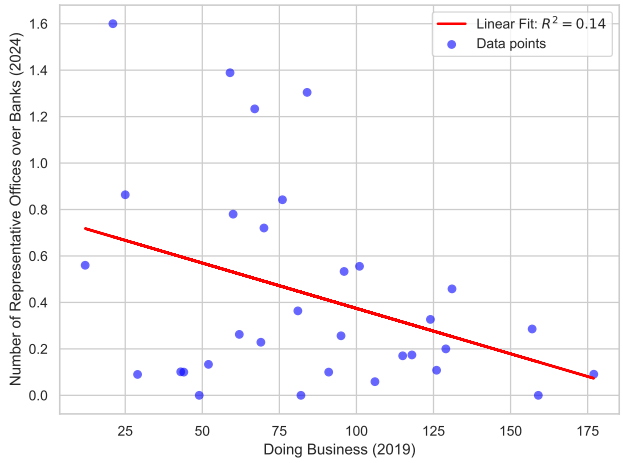
(a) Financial Development



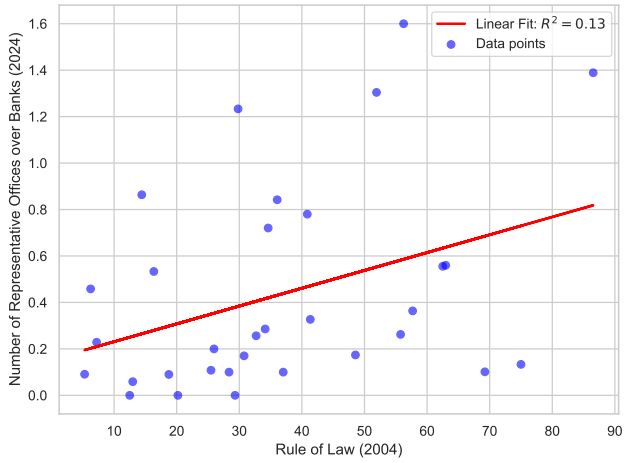
(b) Past Economic Development



(c) Doing Business



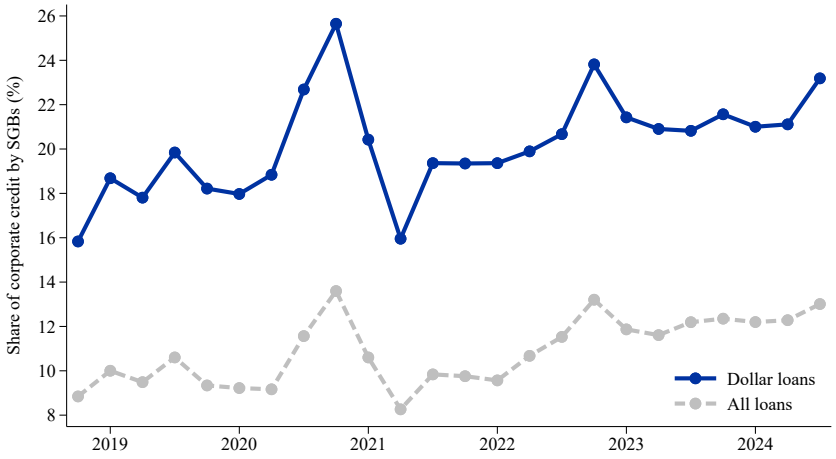
(d) Rule of Law



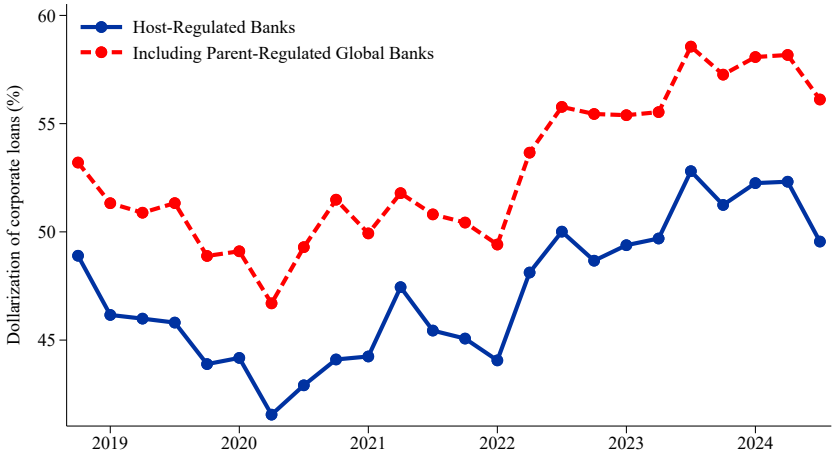
Note: The figures depict the correlation between the number of representative offices over commercial banks in each country and measures of financial development, economic development, doing business, and rule of law. The ratio measuring the presence of representative offices is computed for the early 2020s. Most explanatory variables are measured in 2004, with the sole exception of the Doing Business metric that is measured in 2019.

Figure 4: Relevance of Global Bank Lending Relying on Representative Offices

(a) Credit Participation

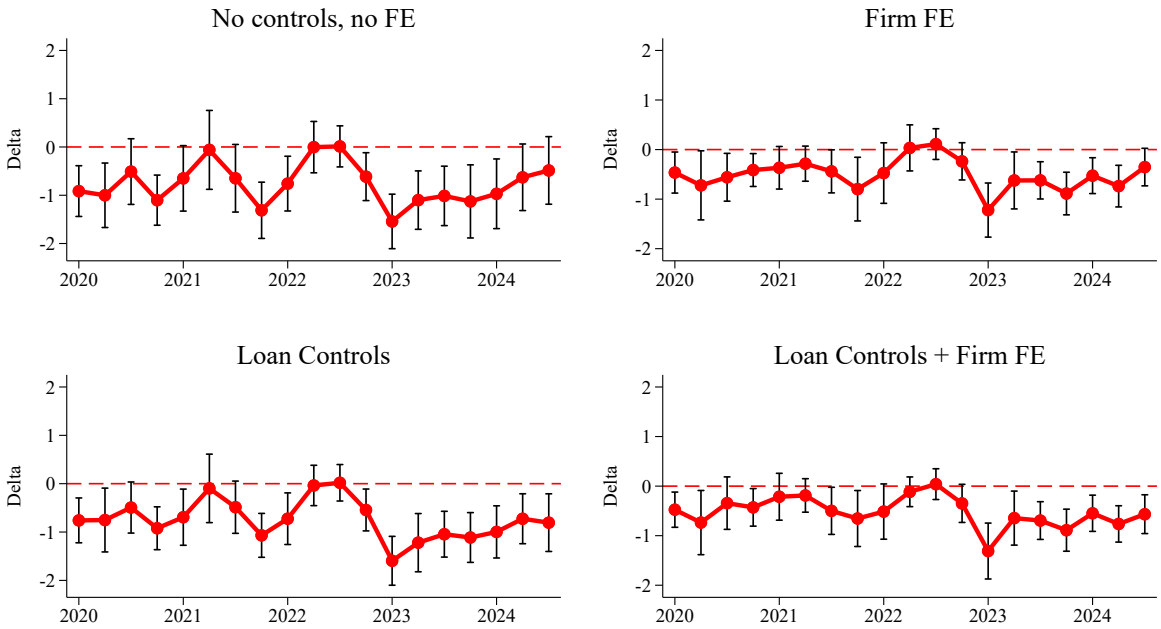


(b) Hidden Risk



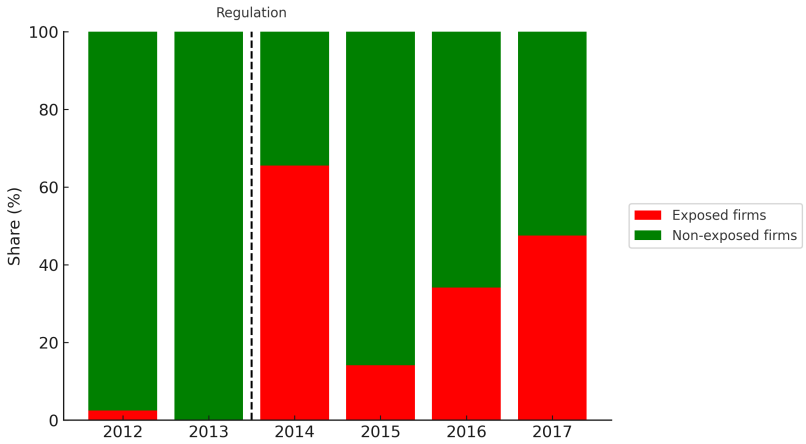
Note: These figures display the relevance of global bank lending that relies on representative offices. Panel (a) shows the share of dollar-denominated and total credit of corporate firms funded by parent-regulated global banks. Panel (b) depicts the dollarization of corporate loans after accounting for parent-regulated global bank lending. Data spans from 2018q4 to 2024q3.

Figure 5: Parent-regulated Global Bank Cheapness over Time



Note: These figures show the estimated δ_t coefficients from the following equation: $r_{fbt} = \delta_t \cdot FR_b + X\beta + v_{fbt}$. We display the estimates using different controls and fixed-effect combinations. Data spans from 2020q1 to 2024q3.

Figure 6: Composition of the syndicated loan market by firm type



Note: The figure displays the share of borrowing from the syndicated loan market for Peruvian firms across firm types. We split the firms across those labeled as exposed to exchange rate risk in the previous year by host-regulated banks and those who were not. Data spans from 2012 to 2017.

Tables

Table 1: Interest Rate Differentials Across Institution Types

	Average difference in bank rates across bank types					
	2020	2021	2022	2023	2024	All periods
Foreign regulated - Domestic regulated	-0.165	-0.317	-0.324	-1.022	-0.535	-0.469
Foreign regulated - Domestic-owned under domestic regulation	-0.189	-0.289	-0.295	-0.846	-0.325	-0.392
Foreign regulated - Foreign-owned under domestic regulation	-0.143	-0.343	-0.357	-1.201	-0.760	-0.550

Note. This table presents the difference between average interest rates across foreign regulated banks and domestic regulated banks for different years. We also disaggregate domestic regulated banks between domestic owned and foreign owned (subsidiaries). Data spans from 2020q1 to 2024q3.

Table 2: Parent-Regulated Global Banks Cheapness

Dep. r_{fbt}	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FR_b	-0.488***	-0.535***	-0.519***	-0.486***	-0.499***	-0.578***	-0.850***	-0.841***
	(-5.09)	(-5.83)	(-3.56)	(-3.55)	(-3.35)	(-3.76)	(-4.52)	(-4.86)
Bank size					-0.0481*	-0.0611**	-0.211***	-0.203***
					(-1.83)	(-2.37)	(-5.96)	(-6.22)
Foreign bank					-0.0930*	-0.134***	-0.0821	-0.121**
					(-1.80)	(-2.74)	(-1.35)	(-2.05)
GSIB					0.473***	0.495***	0.261	0.301*
					(3.22)	(3.42)	(1.63)	(1.96)
Excess Specialization					0.00127	0.000240	-0.00723*	-0.00579
					(0.44)	(0.09)	(-1.71)	(-1.56)
Share NPL					-0.00820	0.00437	0.0299*	0.0410**
					(-1.17)	(0.55)	(1.95)	(2.25)
Profitability					0.122***	0.0977***	0.124***	0.101***
					(5.15)	(4.34)	(4.01)	(3.50)
Firm × Time FE	✓	✓			✓	✓		
Industry × Time FE			✓	✓			✓	✓
Loan Controls		✓		✓		✓		✓
Num obs	25,883	25,576	26,709	26,387	25,883	25,576	26,709	26,387

Note. This table presents the results of estimating $r_{fbt} = \delta \cdot FR_b + \theta \cdot Z_b + X\beta + v_{fbt}$, where f represents the firm, b the bank, and t the quarter-year. The unit of observation is a loan transaction. r_{fbt} is the interest rate. FR_b equals 1 if the intermediary is a parent-regulated global bank and 0 otherwise. Z_b denotes a set of bank-level controls including: bank size, foreign bank dummy, GSIB dummy, excess specialization, non-performing loans, and aggregate profitability. X includes log loan amount and loan tenor as the set of loan controls and also either industry-quarter or firm-quarter fixed effects. The industry is 4-digit ISIC. Robust standard errors are clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Data spans from 2020q1 to 2024q3.

Table 3: Basel III Transition

Dep. $ln\left(c_{fbt}\right)$	(1)	(2)	(3)	(4)
$FR_b \times CapReq_t$	0.183*	0.210**	0.223	0.267*
	(1.82)	(2.07)	(1.62)	(1.94)
Firm $\times$ Time FE	✓	✓		
Industry $\times$ Time FE			✓	✓
Cap.Req $\times$ Bank Controls		✓		✓
Remaining Interactions	✓	✓	✓	✓
Num obs	27,096	27,071	27,788	27,727

Note. This table presents the results of estimating $ln\left(c_{fbt}\right) = \vartheta \cdot FR_b \times CapReq_t + \eta_{g(f)t} + X\beta + v_{fbt}$, where c_{fbt} is the loan amount. FR_b equals 1 if the institution is a parent-regulated global bank and 0 otherwise. $CapReq_t$ is a dummy equal to 1 after January 2023 and 0 otherwise. ϑ represents the change in the outcome following the regulatory modification. Bank controls, measured as 2022 pre-shock averages, include bank size (log corporate dollar credit portfolio), dummy of foreign ownership, dummy of GSIB, excess specialization, share of NPLs. $\eta_{g(f)t}$ are either industry-time or firm-time fixed effects. X contains the individual terms of the interaction and for Columns (2) and (4) includes the interaction between $CapReq_t$ and bank controls. Standard errors are clustered by bank. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 4: Real Effects of Basel III Transition

	Credit	Interest Rate (%)	Number of Workers	Capital	Sales
$Share\,DR_{f,pre} \times Post$	-0.0170	0.00432	0.223	0.187	0.146
	(-0.08)	(1.15)	(1.29)	(1.38)	(1.29)
Firm FE	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓
Remaining Interactions	✓	✓	✓	✓	✓
Num obs	6,186	5,050	5,845	2,241	2,237

Note. This table presents the results of estimating $o_{ft} = \beta \times Share\,DR_{f,pre} \times Post + \iota_f + \iota_t + \epsilon_{ft}$, where o_{ft} denotes the outcome for firm f (in logs) at time t, such as the number of workers, value of physical and intangible capital, and sales. Frequency of workers is quarterly, while for capital and sales it is semiannual. $Share\,DR_{f,pre}$ represents the borrowing share of firm f from domestically regulated banks before the regulatory change. $Post$ is a dummy that takes the value of one after the intermediary transition and zero otherwise. ι_f and ι_t denote firm and time fixed effects. We analyze two years before and after. Standard errors are clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 5: Credit Market Effects of Intermediary Regulatory Shift

	A. Interest Rates - r_{fbt}		*B. Quantities - $ln\left(c_{fbt}\right)$*	
	8 quarters	6 quarters	8 quarters	6 quarters
	(1)	(2)	(3)	(4)
$I_b \times Switch_t$	1.852***	2.000***	-0.229***	-0.265***
	(6.33)	(6.85)	(-2.84)	(-3.55)
Firm $\times$ Time FE	✓	✓	✓	✓
Remaining Interactions	✓	✓	✓	✓
Num obs	1,388	1,035	1,498	1,119

Note. This table presents the results of estimating $r_{fbt} = \beta \cdot I_b \times Switch_t + X\beta + \varepsilon_{fbt}$ and $ln\left(c_{fbt}\right) = \beta \cdot I_b \times Switch_t + X\beta + \varepsilon_{fbt}$. The unit of observation is a loan transaction. r_{fbt} and c_{fbt} are the rate of a loan and the credit amount, respectively. $Switch_t$ takes the value of 1 after the period in which the institution became a host-regulated bank. I_b takes the value of 1 for loans with the intermediary that switched status and 0 for other banks. X contains the individual terms of I_b and $Switch_t$, which will be absorbed when fixed effects are included. Our sample corresponds to the institutions that borrowed at least once from the institution that switched status before the event. We display results for event windows extending 6 and 8 quarters before and after the event. Standard errors are clustered by bank. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 6: Real Effects of Intermediary Regulatory Shift

	Credit	Interest Rate (%)	Number of Workers	Capital	Sales
$Share_{f,pre} \times Post$	-2.874***	0.00587	-4.415**	-0.163	-0.363**
	(-3.70)	(1.36)	(-2.22)	(-0.53)	(-2.41)
Firm FE	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓
Remaining Interactions	✓	✓	✓	✓	✓
Num obs	6,021	2,953	5,734	2,374	2,365

Note. This table presents the results of estimating $o_{ft} = \beta \times Share_{f,pre} \times Post + \iota_f + \iota_t + \epsilon_{ft}$, where o_{ft} denotes the outcome for firm f (in logs) at time t, such as total credit, average interest rate, sales, value of physical and intangible capital, and number of workers. Frequency of workers is quarterly, while for capital and sales it is semiannual. $Share_{f,pre}$ represents the borrowing share of firm f from the transitioning institution. *Post* is a dummy that takes the value of one after the intermediary transition and zero otherwise. ι_f and ι_t denote firm and time fixed effects. We analyze two years before and after. Robust standard errors are clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 7: Aggregate Response of Banks Around the Event

Statistic	Peru	Other Countries
Average market share of host-regulated banks before the event (%)	9.8%	3.7%
Average market share of host-regulated banks after the event (%)	3.1%	4.3%
Net variation (pp)	-6.7pp	+0.6pp
Host-regulated banks decreasing their share (%)	100%	
Parent-regulated global banks increasing their share (%)	77%	

Note. This table shows the observed average market share of host-regulated banks in the syndicated loan market one year before and after the event. We split it across country groups: Peru and the other countries. We also report the share of host-regulated banks that experienced a decline in market share after the event and the share of parent-regulated global banks that registered an increase in the Peruvian syndicated-loan market. The data spans one year after and before the regulatory adjustment of December 2013.

Table 8: Market Share Impact of Regulatory Divergence

Dep. s_{bct}	Rep. Offices		All Foreign Regulated Banks	
	Lending Share (%)	Loan Participation (%)	Lending Share (%)	Loan Participation (%)
	(1)	(2)	(3)	(4)
$FR_b \times Peru_c \times Post_t$	0.089**	0.145*	0.08***	0.161***
	(2.78)	(2.03)	(4.08)	(3.08)
Bank × Year FE	✓	✓	✓	✓
Country × Year FE	✓	✓	✓	✓
Bank × Country FE	✓	✓	✓	✓
Num obs	170	170	550	550

Note. This table presents the results of estimating $s_{bct} = \beta \cdot FR_b \times Peru_c \times Post_t + \alpha_{bt} + \alpha_{ct} + \alpha_{bc} + \epsilon_{bct}$, where s_{bct} is the market share of bank b in country c at time t. FR_b equals 1 if the institution is a foreign regulated bank and 0 otherwise. $Peru_c$ is a dummy variable that denotes whether the country is Peru or not. $Post_t$ is one after the regulation took place. α_{ct} denotes country-time fixed effects, α_{bt} are the bank-time fixed effects, and α_{bc} absorb bank-country characteristics. Robust standard errors are clustered by bank. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The data spans one year after and before the regulatory adjustment of December 2013.

Table 9: Capital Reallocation in Response to Regulatory Divergence

Dep. ω_{bct}	Baseline Countries		All South American Countries	
	vs Host	vs Mult. Devel.	vs Host	vs Mult. Devel.
$FR_b \times Peru_c \times Post_t$	0.419^{*}	0.360^{***}	0.412^{***}	0.227^{***}
	(2.00)	(3.02)	(2.00)	(2.06)
Bank $\times$ Year FE	✓	✓	✓	✓
Country $\times$ Year FE	✓	✓	✓	✓
Bank $\times$ Country FE	✓	✓	✓	✓
Num obs	170	140	272	300

Note. This table presents the results of estimating $\omega_{bct} = \beta \cdot FR_b \times Peru_c \times Post_t + \alpha_{bt} + \alpha_{ct} + \alpha_{bc} + \epsilon_{bct}$, where ω_{bct} is the portfolio share of bank b in country c at time t. FR_b equals 1 if the institution is a parent-regulated global bank and 0 otherwise. $Peru_c$ is a dummy variable that denotes whether the country is Peru or not. $Post_t$ is one after the regulation took place. α_{ct} denotes country-time fixed effects, α_{bt} are the bank-time fixed effects, and α_{bc} absorb bank-country characteristics. We display results using baseline countries, which are the ones in which the host-regulated banks participate, and also for all South American countries. Robust standard errors are clustered by bank. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The data spans one year after and before the regulatory adjustment of December 2013.

Table 10: Estimation of Structural Parameters

Panel (a): Estimation of β_1		
Dep. $ln\left(s_{fbt}\right)$	OLS	IV
r_{fbt}	-0.0358	-1.128***
	(-0.88)	(-3.12)
Firm × Time FE	✓	✓
Price elasticity (simple average)	-0.10	-3.09
Price elasticity (weighted average)	-0.09	-2.94
F-Statistic		11.27
Num obs	884	884

Panel (b): Estimation of γ_H		
Dep. r^e_{fbt}	(1)	(2)
$FR_b \times CapReq_t$	-0.572***	-0.579***
	(-4.18)	(-4.26)
Firm × Time FE	✓	✓
Remaining Interactions	✓	✓
Monetary Policy		✓
γ_H	0.29	0.29
Num obs	3,302	3,302

Panel (c): Estimation of γ_P		
Dep. r^e_{fbt}	(1)	(2)
$I_b \times Switch_t$	2.177***	2.007***
	(3.79)	(3.69)
Firm × Time FE	✓	✓
Remaining Interactions	✓	✓
Monetary Policy		✓
γ_P	0.09	0.11
Num obs	459	459

Note. This table presents the estimates of β_1, γ_H, γ_P according to its respective specifications described in Section 6. Each observation is a firm-bank-time observation. Panel (a) displays $ln\left(s_{fbt}\right) = \beta_0 + \beta_1 r_{fbt} + \alpha_{ft} + \varepsilon_{fbt}$ using both ordinary least squares (OLS) and instrumental variables (IV), where home-country monetary policy rates serve as instrument for r_{fbt}. Panel (b) computes $r^e_{fbt} = \zeta \cdot FR_b \times CapReq_t + \delta \cdot FR_b + X\beta + \nu_{fbt}$, while Panel (c) estimates $r^e_{fbt} = \phi \cdot I_b \times Switch_t + X\beta + \varepsilon_{fbt}$. The event studies use a symmetric window of eight quarters before and after the respective episodes, and their standard errors are clustered at bank level. X include individual interaction terms and monetary policy shocks. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 11: Counterfactual Exercises

Country Group	**Host Adjustment** (1)	**Capital Harmonization** (2)	**Capital Cost Harmonization** (3)
Host	-3.71	+2.12	+19.71
U.S.	+0.22	+1.65	-3.86
Europe	+1.71	-3.38	-0.64
Asia	+0.77	-0.30	-6.99

Note. This table shows the impact of the model counterfactuals. Column (1) shows the effect of a 1pp increase in host capital regulation. Column (2) displays a capital harmonization exercise by equalizing the Tier 1 requirements and removing the GSIB charges. Column (3) depicts the total capital cost harmonization results.

Online Appendix for "Regulatory Divergence and Bank Capital Flows"

Lucas Cisneros and Bryan Gutierrez

Contents

A Institutional Background of Peru 56
A.1 Representative Offices 56
A.2 Basel III Transition 58
B Model of Capital Cost Channel 59
B.1 Optimal Pricing Rule 59
B.2 Derivations of Propositions 59
C Further Evidence of Foreign Regulated Bank Cheapness 63
D Reduced Form Regressions and Structural Parameters 67
D.1 Mapping Basel Event Reduced-Form Estimates to Structural Parameters 67
D.2 Mapping Bank Transition Reduced-Form Estimates to Structural Parameters 68
D.3 Mapping Real Effects Reduced-Form Estimates to Structural Parameters 69
E Additional Empirical Exercises 73
E.1 Anticipatory Effects 73
E.2 Heterogeneous Lending Transmission 74
E.3 Default Impact of Basel III adjustment 75
E.4 Adjustment to Basel III of Domestically Regulated Banks 76
E.5 Switching Status of a Representative Office 78
E.6 Heterogeneous Firm Borrowing 78
F Structural Model Identification and Simulation 81
F.1 Derivation of Domestically Regulated Shadow Capital Cost 81
F.2 Derivation of Foreign Regulated Shadow Capital Cost 82
F.3 Simulation Details 82
F.4 Decomposition of Simulation Results 83
G Additional Structural Model Results 85
G.1 Additional Parameter Estimation Robustness Checks 85
G.2 Influence of Major Regulatory Jurisdictions 85
G.3 Heterogeneous Effects of Equalization on Banks and Firms 86

G.4 Extensive Margin Response 87
G.5 Loan Default 87
G.6 Demand System with Random Coefficients 88
H Aggregate Implications 88
H.1 Foreigner Fickleness 88
H.2 Costly Equity Issuance During Crisis 90

A Institutional Background of Peru

This Appendix section provides further information regarding the institutional background of Peru. Subsection A.1 offers supplementary details about representative offices in Peru. Subsection A.2 lays out additional context regarding the Basel III transition.

A.1 Representative Offices

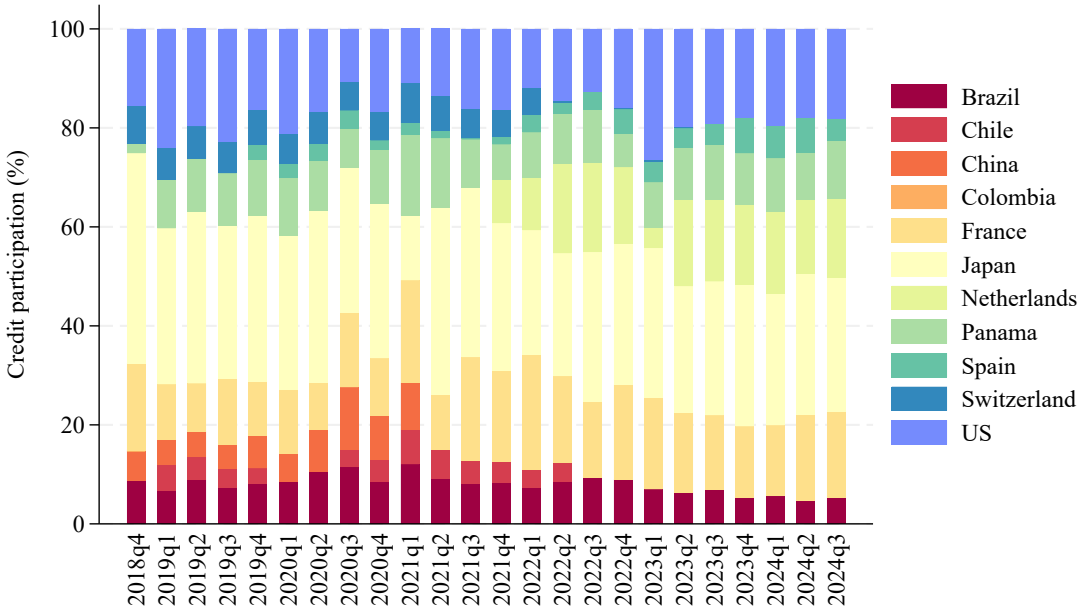
We present general information about representative offices operating in Peru. Table A.1 shows the representative offices operating in Peru as well as their country of origin. Moreover, Figure A.1 displays the participation by headquarters location.

Table A.1: Detail about Representative Offices

Representative Offices of Global Banks	Country of Origin
Itaú Corpbanca	Brazil
BCI	Chile
Bank of China	China
BNP Paribas	France
Société Générale	France
Natixis	France
MUFG Bank, Ltd.	Japan
Sumitomo Mitsui	Japan
Cooperativa Rabobank	Netherlands
Atlantic Security	Panama
Bladex	Panama
Banco General S.A.	Panama
Banco de Sabadell	Spain
Credit Suisse AG	Switzerland
Bank of America	United States
HSBC Bank USA N.A.	United States
JP Morgan Chase Bank	United States

Note. This table presents the names and countries of the representative offices that operated in Peru during our sample period.

Figure A.1: Participation of Parent-Regulated Bank Lending by Headquarters Origin

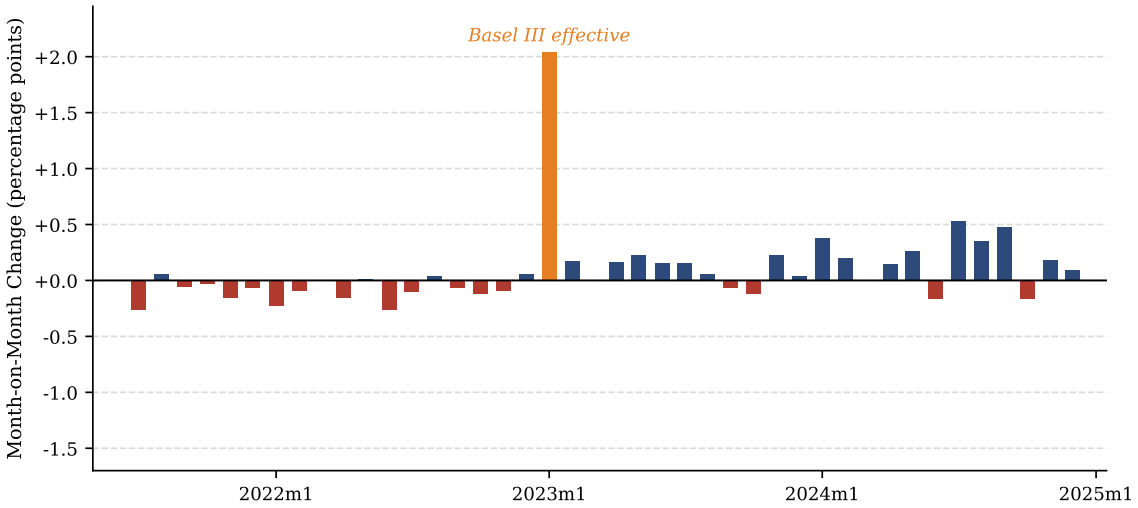


Note: This figure depicts the participation of representative offices by headquarters origin. The shares are computed with respect to the total USD credit to Peruvian firms by parent-regulated global banks in each period.

A.2 Basel III Transition

Peru's transition to Basel III became effective in 2023. Figure A.2 displays the evolution of the capital adequacy ratio of the aggregate Peruvian banking system. At the time of the implementation, the aggregate capital adequacy ratio of the banking system increased from 14.45 (Dec-22) to 16.49 (Jan-23), which represents an increase of 2.04pp.

Figure A.2: Capital Adequacy Ratio of Peruvian Banks



Note: This figure depicts the month on month change of the capital adequacy ratio of Peruvian Banks between 2022m1-2024m12. The orange bar depicts the period in which the regulation became effective. Blue bars represent positive changes, while red bars are negative changes. We exclude March observations as the capital adequacy ratios are affected due to the annual dividend distributions and income tax settlements.

B Model of Capital Cost Channel

This Appendix presents the derivations of the simple model developed in Section 3. In subsection B.1, we derive the optimal pricing rule condition from the bank maximization problem. In subsection B.2, we derive Propositions 1 and 2.

B.1 Optimal Pricing Rule

A bank maximizes the following problem:

$$\max_{r_{fbt}} \ \Pi_b = \sum_f \left(r_{fbt} - mc_{bt}\right) C_{fbt}$$

$$\text{s.t. } \underline{K}_b \textstyle\sum_f C_{fbt} \leq K_b$$

The Lagrangian problem is given by

$$\mathcal{L} = \sum_f \left(r_{fbt} - mc_{bt}\right) C_{fbt} - \lambda_b \left(\underline{K}_b \sum_f C_{fbt} - K_b\right)$$

The first order condition with respect to r_{fbt} is:

$$\frac{\partial \mathcal{L}}{\partial r_{fbt}} = C_{fbt} + \left(r_{fbt} - mc_{bt}\right) \frac{\partial C_{fbt}}{\partial r_{fbt}} - \lambda_b \underline{K}_b \frac{\partial C_{fbt}}{\partial r_{fbt}}$$

Considering that $C_{fbt} = Q_{ft} * s_{fbt}$ the first order condition is equivalent to

$$\frac{\partial \mathcal{L}}{\partial r_{fbt}} = s_{fbt} + \left(r_{fbt} - mc_{bt}\right) \frac{\partial s_{fbt}}{\partial r_{fbt}} - \lambda_b \underline{K}_b \frac{\partial s_{fbt}}{\partial r_{fbt}}$$

From the logit derivatives properties, we obtain:

$$\frac{\partial s_{fbt}}{\partial r_{fbt}} = \beta_1 s_{fbt} \left(1 - s_{fbt}\right)$$

Finally, solving for r_{fbt} using the first order condition and the logit property gives

$$r_{fbt} = \underbrace{\lambda_b \underline{K}_b}_{\text{capital requirement cost}} + \underbrace{mc_{bt}}_{\text{marginal cost}} - \underbrace{\frac{1}{\beta_1 \left(1 - s_{fbt}\right)}}_{\text{market power}}$$

B.2 Derivations of Propositions

The model generates the following predictions:

Proposition 1. An increase in domestic capital requirements has a non-decreasing effect on the loan rates charged by domestically regulated banks relative to foreign regulated banks. Specifically, the impact is:

$$\frac{d\left(r_{fb\in\Theta_{bD}} - r_{fb\in\Theta_{bF}}\right)}{d\underline{K}_{b\in\Theta_{bD}}} = \gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right) s_{fb\in\Theta_{bF}} s_{fb\in\Theta_{bD}} \geq 0$$

Proof. First, we obtain the derivative of $r_{fb\in\Theta_{bD}}$ with respect to $\underline{K}_{b\in\Theta_{bD}}$ using equation (2):

$$\frac{\partial r_{fb\in\Theta_{bD}}}{\partial \underline{K}_{b\in\Theta_{bD}}} = \gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right) - \frac{1}{\beta_1\left(1 - s_{fb\in\Theta_{bD}}\right)^2}\frac{ds_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}}$$

where the marginal cost of the capital requirement is denoted by $\gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right) \equiv \frac{\partial\left(\lambda_{b\in\Theta_{bD}}\underline{K}_{b\in\Theta_{bD}}\right)}{\partial \underline{K}_{b\in\Theta_{bD}}}$. Moreover, replacing $\frac{ds_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}}$ using the chain rule, $\frac{ds_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}} = \frac{ds_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}}\frac{\partial r_{fb\in\Theta_{bD}}}{\partial \underline{K}_{b\in\Theta_{bD}}}$, we get:

$$\frac{\partial r_{fb\in\Theta_{bD}}}{\partial \underline{K}_{b\in\Theta_{bD}}}\left(1 + \frac{1}{\beta_1\left(1 - s_{fb\in\Theta_{bD}}\right)^2}\frac{ds_{fb\in\Theta_{bD}}}{dr_{fb\in\Theta_{bD}}}\right) = \gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right)$$

Also, from standard logit demand properties we have $\frac{ds_{fb\in\Theta_{bD}}}{dr_{fb\in\Theta_{bD}}} = \beta_1 s_{fb\in\Theta_{bD}}\left(1 - s_{fb\in\Theta_{bD}}\right)$. Replacing the term and solving for $\frac{\partial r_{fb\in\Theta_{bD}}}{\partial \underline{K}_{b\in\Theta_{bD}}}$ implies:

$$\frac{\partial r_{fb\in\Theta_{bD}}}{\partial \underline{K}_{b\in\Theta_{bD}}} = \gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right)\left(1 - s_{fb\in\Theta_{bD}}\right)$$

Second, we obtain the derivative of $r_{fb\in\Theta_{bF}}$ with respect to $\underline{K}_{b\in\Theta_{bD}}$

$$\frac{\partial r_{fb\in\Theta_{bF}}}{\partial \underline{K}_{b\in\Theta_{bD}}} = -\frac{1}{\beta_1\left(1 - s_{fb\in\Theta_{bF}}\right)^2}\frac{ds_{fb\in\Theta_{bF}}}{d\underline{K}_{b\in\Theta_{bD}}}$$

To obtain $\frac{ds_{fb\in\Theta_{bF}}}{d\underline{K}_{b\in\Theta_{bD}}}$, we derived it from $s_{fb\in\Theta_{bF}} = s_{fb\in\Theta_{bF}}\left(r_{fb\in\Theta_{bF}}\left(\underline{K}_{b\in\Theta_{bD}}\right), r_{fb\in\Theta_{bD}}\left(\underline{K}_{b\in\Theta_{bD}}\right)\right)$, which following the chain rule implies the following:

$$\frac{\partial s_{fb\in\Theta_{bF}}}{\partial \underline{K}_{b\in\Theta_{bD}}} = \frac{\partial s_{fb\in\Theta_{bF}}}{\partial r_{fb\in\Theta_{bF}}}\frac{\partial r_{fb\in\Theta_{bF}}}{\partial \underline{K}_{b\in\Theta_{bD}}} + \frac{\partial s_{fb\in\Theta_{bF}}}{\partial r_{fb\in\Theta_{bD}}}\frac{\partial r_{fb\in\Theta_{bD}}}{\partial \underline{K}_{b\in\Theta_{bD}}}$$

Replacing the expression derived for $\frac{\partial r_{fb\in\Theta_{bF}}}{\partial \underline{K}_{b\in\Theta_{bD}}}$, using the standard logit properties, specifically $\frac{\partial s_{fb\in\Theta_{bF}}}{\partial r_{fb\in\Theta_{bF}}} = \beta_1 s_{fb\in\Theta_{bF}}\left(1 - s_{fb\in\Theta_{bF}}\right)$ and $\frac{\partial s_{fb\in\Theta_{bF}}}{\partial r_{fb\in\Theta_{bD}}} = -\beta_1 s_{fb\in\Theta_{bF}} s_{fb\in\Theta_{bD}}$, using the derived expression

for $\frac{\partial r_{fb\in\Theta_{bD}}}{\partial \underline{K}_{b\in\Theta_{bD}}}$, and considering symmetrical banks within each type, we get:

$$\frac{\partial s_{fb\in\Theta_{bF}}}{\partial \underline{K}_{b\in\Theta_{bD}}} = \beta_1 s_{fb\in\Theta_{bF}}\left(1 - s_{fb\in\Theta_{bF}}\right)\left(-\frac{1}{\beta_1\left(1 - s_{fb\in\Theta_{bF}}\right)^2}\frac{ds_{fb\in\Theta_{bF}}}{d\underline{K}_{b\in\Theta_{bD}}}\right) +$$

$$-\beta_1 s_{fb\in\Theta_{bF}} s_{fb\in\Theta_{bD}}\left(\gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right)\left(1 - s_{fb\in\Theta_{bF}}\right)\right)$$

Simplifying the expression we obtain:

$$\frac{\partial s_{fb\in\Theta_{bF}}}{\partial \underline{K}_{b\in\Theta_{bD}}} = -\beta_1 s^2_{fb\in\Theta_{bF}} s^2_{fb\in\Theta_{bD}}\gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right)$$

Finally, replacing into $\frac{\partial r_{fb\in\Theta_{bF}}}{\partial \underline{K}_{b\in\Theta_{bD}}}$ and simplifying gives:

$$\frac{\partial r_{fb\in\Theta_{bF}}}{\partial \underline{K}_{b\in\Theta_{bD}}} = \gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right) s^2_{fb\in\Theta_{bF}}$$

Third, we get

$$\frac{\partial r_{fb\in\Theta_{bD}}}{\partial \underline{K}_{b\in\Theta_{bD}}} - \frac{\partial r_{fb\in\Theta_{bF}}}{\partial \underline{K}_{b\in\Theta_{bD}}} = \gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right) s_{fb\in\Theta_{bF}} s_{fb\in\Theta_{bD}}$$

Since $0 \leq s_{fb\in\Theta_{bD}} \leq 1, 0 \leq s_{fb\in\Theta_{bF}} \leq 1$, and considering a marginal cost of the capital requirement positive, $\gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right) > 0$, the expression is non-negative. □

Proposition 2. An increase in domestic capital requirements has a non-increasing effect on the market share of domestically regulated banks relative to that of foreign regulated banks. Specifically, the impact is:

$$\frac{ds_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}} = \beta_1\gamma_b^{'}\left(\underline{K}_{b\in\Theta_{bD}}\right) s_{fb\in\Theta_{bD}} s^2_{fb\in\Theta_{bF}} \leq 0$$

From the chain rule, we can decompose the derivative as follows:

$$\frac{ds_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}} = \frac{ds_{fb\in\Theta_{bD}}}{dr_{fb\in\Theta_{bD}}}\frac{dr_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}}$$

From the logit demand properties, we have:

$$\frac{ds_{fb\in\Theta_{bD}}}{dr_{fb\in\Theta_{bD}}} = \beta_1 s_{fb\in\Theta_{bD}}\left(1 - s_{fb\in\Theta_{bD}}\right)$$

Substituting the term into the decomposition gives:

$$\frac{ds_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}} = \beta_1 s_{fb\in\Theta_{bD}} \left(1 - s_{fb\in\Theta_{bD}}\right) \frac{dr_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}}$$

Similar to the proof of proposition 1, we can obtain the derivative of $\frac{dr_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}}$. Replacing it into the previous expression gives:

$$\frac{ds_{fb\in\Theta_{bD}}}{d\underline{K}_{b\in\Theta_{bD}}} = \beta_1 \gamma_b^{'} \left(\underline{K}_{b\in\Theta_{bD}}\right) s_{fb\in\Theta_{bD}} \left(1 - s_{fb\in\Theta_{bD}}\right)^2$$

Under a downward-sloping demand curve, $\beta_1 < 0$, and a marginal cost of the capital requirement positive, $\gamma_b^{'} \left(\underline{K}_{b\in\Theta_{bD}}\right) > 0$, the expression is non-positive given that $0 \leq s_{fb\in\Theta_{bD}} \leq 1$.

C Further Evidence of Foreign Regulated Bank Cheapness

In this Appendix section, we present several robustness exercises to our main findings regarding foreign regulated global bank cheapness. We explain in detail the role of several bank characteristics in explaining the cheapness as shown in Table 2. Additionally, we conduct a series of robustness tests including: restricting the sample to foreign owned banks only, allowing for heterogeneous transmission of the federal funds rate, and controlling for the monetary policy rate in the bank's headquarters country.

Bank Specialization

We examine the role of bank specialization in explaining the cheapness. Foreign regulated global institutions may have specialized expertise in particular borrower segments or industries, which allows them to screen borrowers more effectively and, as a result, offer lower interest rates. For example, Banco Sabadell, at the launch of its representative office, announced its plans to finance major business groups and strategic infrastructure and energy projects in the country.[28] This highlights an advantage in serving infrastructure and energy firms, which might ultimately lead to lower interest rates compared to host-regulated banks that might be less specialized.

In order to assess the relevance of lending specialization, we employ the standard techniques in the banking literature developed by Paravisini, Rappoport, and Schnabl (2023) and Blickle, Parlatore, and Saunders (2023). Specifically, we define the degree of specialization of bank b at time t in sector S, using the 4-digit International Standard Industrial Classification (ISIC) to measure industry excess specialization, as follows:

$$Specialization_{bt}^{S} = \frac{\sum_{f \in S} Loans_{fbt}}{\sum_{S} \sum_{f \in S} Loans_{fbt}} - \frac{\sum_{b} \sum_{f \in S} Loans_{fbt}}{\sum_{b} \sum_{S} \sum_{f \in S} Loans_{fbt}}$$

We test whether the difference in bank specialization among foreign regulated and domestically regulated banks helps explain the cheapness. Table 2 presents the marginal impact of bank specialization on the foreign regulated cheapness while controlling for other bank characteristics, and we do not find a significant effect.

Credit Riskiness

An alternative reason might be that foreign regulated global banks prefer to maintain a safer portfolio than domestically regulated banks. By targeting less risky borrowers, they would have lower costs for monitoring, screening, or default, which allows them to provide cheaper credit. As previously shown, the cheapness holds even when comparing the same firm across both types of institutions. Moreover, we do not observe significant differences in loan default rates among institutions. In addition to comparing similar firms, Table 2 also incorporates a bank-level non-performing loan measure. The estimates are positive but not strongly significant across specifications.

[28] For more details see https://www.fundssociety.com/es/noticias/negocio/banco-sabadell-abre-una-oficina-de-representacion-en-lima/

Foreign Bank Ownership

Another explanation of the cheapness is that it may be attributable to bank ownership: foreign versus domestic rather than to the regulator's country of jurisdiction. If foreign-owned banks benefit from parent support, cross-border funding advantages, or distinct portfolio strategies, these ownership characteristics could drive systematically lower costs, independent of the regulatory environment within the host country.

We examine whether the cost advantage stems from foreign ownership structure rather than regulatory jurisdiction by incorporating an indicator variable equal to one for foreign-owned banks (and zero for domestic banks) in Table 2. We find that foreign-owned banks offer loans at lower interest rates than domestically owned banks by at most 0.13pp, a difference that is modest relative to the overall observed discount across banks with different regulatory regime. Additionally, in Table A.2 we restrict the sample to foreign-owned banks from the same country of origin only, which includes representative offices and foreign-bank subsidiaries. The results show that the cheapness remains statistically significant even in this restricted sample. Taken together, this suggests that foreign ownership does not significantly explain the cheapness.

Table A.2: Parent-Regulated Global Bank Cheapness - Foreign Banks with Same Origin

	Interest Rate (%)							
	A. All corporate firms				*B. Corporate firms borrowing from both institutions*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FR_b	-0.978***	-0.892***	-0.888***	-0.926***	-1.006***	-0.834***	-0.888***	-0.890***
	(-4.97)	(-4.49)	(-4.46)	(-4.93)	(-4.25)	(-3.50)	(-4.43)	(-4.69)
Industry × Quarter FE	✓	✓			✓	✓		
Firm × Quarter FE			✓	✓			✓	✓
Loan Controls		✓		✓		✓		✓
Num obs	9,244	9,074	8,635	8,513	4,251	4,194	4,145	4,088

Note. This table presents the results of estimating $r_{fbt} = \delta \cdot FR_b + X\beta + v_{fbt}$, where f represents the firm, b the bank, and t the quarter-year for the sample of banks with foreign ownership only. The unit of observation is a loan transaction. r_{fbt} is the interest rate. FR_b equals 1 if the institution is a foreign regulated bank and 0 otherwise. X includes log loan amount and loan tenor as the set of loan controls and also either industry-quarter or firm-quarter fixed effects. The industry is 4-digit ISIC. Robust standard errors are clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Data spans from 2020q1 to 2024q3.

Lending Scale and Market Power

Differences in bank lending size between foreign and domestically regulated banks could also help explain the observed difference in loan rates. Banks with larger loan portfolios may benefit from economies of scale in screening and monitoring, greater bargaining power with borrowers, and improved risk diversification. These advantages reduce their effective marginal cost of lending and can lead to lower loan rates. To evaluate this relationship, we construct a measure of corporate lending scale for each institution by adding its total loan amounts. Our results in Table 2 confirm the role of scale in lending, but the cheapness remains statistically significant.

Another potential explanation of the cheapness is that domestically regulated banks have higher market power in the local market than foreign regulated global banks. Banks with more

pricing power (e.g., dominant local position, strong relationships, niche specialization) can sustain larger markups over their marginal cost. We construct a bank-level net interest margin measure defined as the spread between the bank's average loan rate and its home monetary policy rate, which reflects the bank's markup. Table 2 displays its marginal impact on the cheapness. Banks with higher bank-level spreads charge higher loan rates, but its inclusion does not eliminate the statistical significance of the cheapness.

Monetary Policy Regimes and Bank Funding Conditions

Another potential factor driving the cheapness could be the monetary policy rate differentials at which banks can fund their operations. Due to the worldwide footprint of their operations, foreign regulated global banks might have an advantage in accessing dollar-denominated wholesale markets, while host-regulated banks do not. As dollar-denominated global wholesale markets tend to be significantly influenced by the Fed, its funds rate might explain the cheapness.

We test whether the different access to funding at the Fed funds rate for foreign regulated banks explains the cheapness. Table A.3 shows that it does not systematically explain the cheapness of foreign regulated global banks. The result is intuitive because host-regulated banks benefit from funding through local depositors with a strong preference for dollar assets. Gutierrez, Ivashina, and Salomao (2023) explored this idea using Peruvian data, showing that the preference for dollar savings and regulation helps explain why dollar credit is cheaper. Moreover, during our analysis period, the average Fed funds rate was 2.41% and the average dollar deposit rate was 2.0%. Thus, even if global banks funded their operations at the Fed funds rate, their costs would exceed those of host-regulated banks.

Table A.3: Fed Funds Rate and Parent-Regulated Global Bank Cheapness

Dep. r_{fbt}	*A. All corporate firms*				*B. Corporate firms borrowing from both institutions*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$FR_b \times US\ MP\ Rate$	-0.0128	-0.0512	-0.0317	-0.0518	-0.0205	-0.0701	-0.0317	-0.0569
	(-0.26)	(-1.07)	(-0.68)	(-1.17)	(-0.39)	(-1.31)	(-0.68)	(-1.28)
FR_b	-0.488**	-0.362*	-0.404**	-0.399***	-0.422*	-0.295	-0.404**	-0.382***
	(-2.43)	(-1.87)	(-2.56)	(-2.79)	(-1.83)	(-1.29)	(-2.54)	(-2.69)
Industry × Time FE	✓	✓			✓	✓		
Firm × Time FE			✓	✓			✓	✓
Loan Controls		✓		✓		✓		✓
Num obs	26,709	26,387	25,883	25,576	12,166	12,007	12,095	11,936

Note. This table presents the results of estimating $r_{fbt} = \delta \cdot FR_b + \theta \cdot FR_b \times US\ MP\ Rate_t + X\beta + \upsilon_{fbt}$, where f represents the firm, b the bank, and t the quarter-year. The unit of observation is a loan transaction. r_{fbt} is the interest rate. FR_b equals 1 if the institution is a foreign regulated bank and 0 otherwise. $US\ MP\ Rate_t$ is the Fed funds rate. X includes the individual term of the interaction, $US\ MP\ Rate_t$, as well as a set of loan controls, which includes: log loan amount and loan tenor. We also include industry-quarter or firm-quarter fixed effects in our specifications. The industry is 4-digit ISIC. Robust standard errors are clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Data spans from 2020q1 to 2024q3.

Another related but alternative explanation is associated with the access of foreign regulated banks to the wholesale markets in their country of origin. According to the banking literature, wholesale funding is sensitive to market conditions such as monetary policy rates. Thus, global

banks may benefit from lower funding costs linked to monetary policy rates in their parent countries, which could account for their cheapness. As reported in Table A.4, the cheapness is still significant even after including this factor.

Table A.4: Parent-Regulated Global Bank Cheapness and Parent Monetary Policy

	Interest Rate (%)							
	A. All corporate firms				*B. Corporate firms borrowing from both institutions*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FR_b	-0.237*	-0.237**	-0.223***	-0.295***	-0.175	-0.234*	-0.240***	-0.331***
	(-1.80)	(-2.01)	(-2.82)	(-3.57)	(-1.38)	(-1.82)	(-2.78)	(-3.51)
Home MP $Rate_b$	0.760***	0.751***	0.544***	0.540***	0.726***	0.705***	0.576***	0.565***
	(14.68)	(14.95)	(10.92)	(10.98)	(13.14)	(12.02)	(10.64)	(10.43)
Industry × Quarter FE	✓	✓			✓	✓		
Firm × Quarter FE			✓	✓			✓	✓
Loan Controls		✓		✓		✓		✓
Other Bank Controls	✓	✓	✓	✓	✓	✓	✓	✓
Num obs	26,709	26,387	25,883	25,576	12,166	12,007	12,095	11,936

Note. This table presents the results of estimating $r_{fbt} = \delta \cdot FR_b + \psi \cdot Parent\ MP + X\beta + v_{fbt}$, where f represents the firm, b the bank, and t the quarter-year. The unit of observation is a loan transaction. r_{fbt} is the interest rate. FR_b equals 1 if the institution is a foreign regulated bank and 0 otherwise. X includes a set of loan controls, which includes: log loan amount and loan tenor. We also include industry-quarter or firm-quarter fixed effects in our specifications. The industry is 4-digit ISIC. Robust standard errors are clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Data spans from 2020q1 to 2024q3.

D Reduced Form Regressions and Structural Parameters

This Appendix derives the mapping between the reduced form estimates of Section 5 and the structural parameters. We follow a similar setting to the one described in Section 3 or, more precisely, the one we develop in Section 6. In subsection D.1, we map the empirical identification of the Basel III transition event to a set of sufficient statistics. In subsection D.2, we link the empirical identification of the bank regime transition event to a collection of sufficient statistics. Finally, D.3 shows how the reduced form estimates of the real impact map into a set of structural parameters that connect the firm level decisions and credit markets.

D.1 Mapping Basel Event Reduced-Form Estimates to Structural Parameters

In this subsection, we provide a structural interpretation of the main coefficient of interest obtained from estimating the following baseline regression:

$$\ln C_{fbt} = \vartheta \cdot CapReq_t \times FR_b + \eta_{g(f)t} + X\beta + v_{fbt}$$

Loan demand. We begin by using the logit demand expressions that we derived in Section 6 where we obtained:

$$\ln s_{fbt} - \ln s_{fb_0t} = \beta_0 + \beta_1 r_{fbt} + \beta_2 X_{bt} + \xi_{bt} + \epsilon_{fbt}$$

Substituting $C_{fbt} = Q_{ft} * s_{fbt}$ and replacing the common firm-time terms into a firm-time fixed effect and the rest of unobserved terms into the error term, we have

$$\ln C_{fbt} = \beta_0 + \beta_1 r_{fbt} + \beta_2 X_{bt} + \eta_{ft} + v_{fbt}$$

Loan supply. Replacing the optimal pricing equation from Section 6 we have

$$\ln C_{fbt} = \beta_0 + \beta_1 \left(\gamma\left(\underline{K}_{b,t}\right) + mc_{bt} + \mu\right) + \beta_2 X_{bt} + \eta_{ft} + v_{fbt}$$

where μ represents a constant markup given symmetrical banks.

For the capital requirement term, we can use the indicator properties of the variables identifying whether the bank is foreign regulated or domestically regulated, FR_b, and the one identifying whether the regulation change already took place or not, $CapReq_t$. More specifically, we can write the capital requirements of any bank as follows:

$$\gamma\left(\underline{K}_{b,t}\right) = \gamma\left(\underline{K}_{b,t_0}\right) + \left[\gamma\left(\underline{K}_{H,t}\right) - \gamma\left(\underline{K}_{H,t_0}\right)\right] \cdot CapReq_t \times (1 - FR_b)$$

where t and t_0 denote the period after and before the regulatory change, respectively.

Parameter interpretation. Finally, replacing the capital requirement expression into the credit equation, we obtain:

$$\ln C_{fbt} = \vartheta \cdot CapReq_t \times FR_b + \eta_{g(f)t} + X\beta + v_{fbt}$$

where

$$\vartheta = -\beta_1 \left[\gamma\left(\underline{K}_{H,t}\right) - \gamma\left(\underline{K}_{H,t_0}\right)\right]$$

Using a Taylor approximation of $\gamma\left(\underline{K}_{H,t}\right)$ around the initial capital requirement level $\underline{K}_{H,t_0}$, we can decompose it as

$$\gamma\left(\underline{K}_{H,t}\right) \simeq \gamma\left(\underline{K}_{H,t_0}\right) + \gamma^{'}\left(\underline{K}_{H,t_0}\right)\left[\underline{K}_{H,t} - \underline{K}_{H,t_0}\right]$$

Therefore, we can approximate ϑ as

$$\vartheta \simeq -\beta_1 \gamma^{'}\left(\underline{K}_{H,t_0}\right)\left[\underline{K}_{H,t} - \underline{K}_{H,t_0}\right]$$

The expression is composed of three terms: borrower sensitivity to the interest rates, marginal regulatory cost of host capital requirement, and the increase in host capital requirements.

D.2 Mapping Bank Transition Reduced-Form Estimates to Structural Parameters

In this subsection, we derive a structural interpretation of the main coefficient of interest for the following reduced form regression:

$$\ln C_{fbt} = \phi \cdot I_b \times Switch_t + \eta_{ft} + X\beta + v_{fbt}$$

Loan demand and supply. Following a similar logic to the derivation in the previous subsection, we can obtain from the demand and optimal pricing equations

$$\ln C_{fbt} = \beta_0 + \beta_1\left(\gamma\left(\underline{K}_{b,t}\right) + mc_{bt} + \mu\right) + \beta_2 X_{bt} + \eta_{ft} + v_{fbt}$$

For the capital requirement term, we can use the indicator properties of the variables identifying the switching institution, I_b, and the one identifying whether the switch already took place or not, $Switch_t$. More specifically, we can write the capital requirements of any bank as follows:

$$\gamma\left(\underline{K}_{b,t}\right) = \gamma\left(\underline{K}_{b_0,t}\right) + \left[\gamma\left(\underline{K}_H\right) - \gamma\left(\underline{K}_P\right)\right] \cdot I_b \times Switch_t$$

Parameter interpretation. Finally, replacing the expression into the first equation gives us:

$$\ln C_{fbt} = \phi \cdot I_b \times Switch_t + \eta_{ft} + X\beta + v_{fbt}$$

where

$$\phi = \beta_1\left[\gamma\left(\underline{K}_H\right) - \gamma\left(\underline{K}_P\right)\right]$$

Alternatively, using the following first order approximation

$$\gamma\left(\underline{K}_H\right) \simeq \gamma\left(\underline{K}_P\right) + \gamma^{'}\left(\underline{K}_P\right)\left[\underline{K}_H - \underline{K}_P\right]$$

Therefore, we can approximate ϕ as

$$\phi \simeq \beta_1 \gamma^{'} \left(\underline{K}_P\right) \left[\underline{K}_H - \underline{K}_P\right]$$

The expression is composed of three terms: borrower sensitivity to the interest rates, marginal regulatory cost of host capital requirement, and the increase in capital requirements due to the switching in status.

D.3 Mapping Real Effects Reduced-Form Estimates to Structural Parameters

This subsection develops a structural interpretation of the main coefficient estimated in a real effects regression.

Basel III Transition

We begin by deriving a foundation for the following regression:

$$o_{ft} = \psi \times Share\, DR_{f,pre} \times Post + \iota_f + \iota_t + \epsilon_{ft}$$

Firm setup. We consider a representative firm with a standard production function with constant returns to scale. To produce a final good, the firm uses labor, L_{ft}, capital, K_{ft}, and its technology is defined by a total factor productivity denoted with A_{ft}. Specifically, the production function of output Y_{ft} is given by:

$$Y_{ft} = A_{ft} L_{ft}^{\alpha} K_{ft}^{1-\alpha}$$

The capital is funded by a combination of fixed equity endowment, E, and bank credit, C_{ft}.

$$K_{ft} = C_{ft} + E$$

The firm obtains credit from different banks, denoted by b: $C_{ft} \equiv \sum_b C_{fbt}$

Firm optimal input decisions. Labor is hired at the competitive wage w_t. The credit rate of bank b is r_{fbt}, which makes the average capital cost $\bar{r}_{ft} \equiv \sum_b s_{fb,pre} \cdot r_{fbt}$, where $s_{fb,pre}$ is the steady state share of borrowing from each bank.

The firm minimizes its production costs given the total output level, as follows:

$$\min_{L_{ft}, K_{ft}} \; w_t L_{ft} + \bar{r}_{ft} K_{ft} \quad \text{s.t.} \quad A_{ft} L_{ft}^{\alpha} K_{ft}^{1-\alpha} = Y_{ft}$$

Solving the optimization problem gives the following input demand choices:

$$K_{ft} = \frac{(1-\alpha)\, TC_{ft}}{\bar{r}_{ft}}$$

$$L_{ft} = \frac{\alpha\, TC_{ft}}{w_t}$$

where the total cost function is $TC_{ft} \equiv \alpha^{-\alpha}(1-\alpha)^{-(1-\alpha)} \frac{Y_{ft}}{A_{ft}} w_t^{\alpha} \bar{r}_{ft}^{1-\alpha}$.

Firm optimal output decision. A competitive firm buys intermediate varieties Y_{ft} from all firms f to produce a final good using the following technology:

$$Y_t = \left(\int_0^1 Y_{ft}^{\frac{\sigma-1}{\sigma}} df \right)^{\frac{\sigma}{\sigma-1}}$$

As a result, the demand for variety Y_{ft} is derived from a minimization cost across varieties of the final good producer:

$$\max_{Y_{ft}} \quad P_t \left(\int_0^1 Y_{ft}^{\frac{\sigma-1}{\sigma}} df \right)^{\frac{\sigma}{\sigma-1}} - \int_0^1 P_{ft} Y_{ft} \, df$$

where P_t is the final good price and P_{ft} the price of variety f. The solution gives the following demand for variety f:

$$Y_{ft} = \left(\frac{P_{ft}}{P_t} \right)^{-\sigma} Y_t$$

Firm f operates under monopolistic competition of its own variety. The optimization problem of the firm consist in choosing its variety price, P_{ft}, to maximize its profit as follows:

$$\max_{P_{ft}} \quad P_{ft} Y_{ft} - TC_{ft} \quad \text{s.t.} \quad Y_{ft} = \left(\frac{P_{ft}}{P_t} \right)^{-\sigma} Y_t$$

The optimal price is the standard markup pricing equation:

$$P_{ft} = \frac{\sigma}{\sigma - 1} \frac{TC_{ft}}{Y_{ft}}$$

Combining the price equation with product demand and using logs gives the following result:

$$\ln Y_{ft} = \sigma \ln A_{ft} - (1-\alpha)\sigma \ln \bar{r}_{ft} + \iota_t$$

where ι_t captures all the constant time factors. Using the expression and replacing into the input demand functions gives the following expressions

$$\ln K_{ft} = (\sigma - 1) \ln A_{ft} - [\alpha + (1-\alpha)\sigma] \ln \bar{r}_{ft} + \iota_t + c_K$$

$$\ln L_{ft} = (\sigma - 1) \ln A_{ft} - (1-\alpha)(\sigma - 1) \ln \bar{r}_{ft} + \iota_t + c_L$$

where c_K and c_L represent constant terms. More generally, we can write the relationship between an outcome variable and the average rate as follows:

$$\ln o_{ft} = \eta \ln \bar{r}_{ft} + \iota_f + \iota_t + \epsilon_{ft}$$

For small changes in $\ln \bar{r}_{ft}$ around $\ln \bar{r}_{f,pre}$

$$\ln \bar{r}_{ft} \approx \ln \bar{r}_{f,pre} + \frac{\bar{r}_{ft} - \bar{r}_{f,pre}}{\bar{r}_{f,pre}}$$

This gives the following expression

$$\ln o_{ft} = \varpi_o \left(\bar{r}_{ft} - \bar{r}_{f,pre} \right) + \iota_f + \iota_t + \epsilon_{ft}$$

Loan demand and supply. From the demand and supply of credit markets, the loan rate has the following form:

$$r_{fbt} = \gamma \left(\underline{K}_{b,t} \right) + mc_{bt} + \mu_{fbt}$$

Parameter interpretation. Given the regulatory change for domestically regulated banks, the capital costs can be written as follows:

$$\gamma \left(\underline{K}_{b,t} \right) = \gamma \left(\underline{K}_{b,t_0} \right) + \left[\gamma \left(\underline{K}_{DR,t} \right) - \gamma \left(\underline{K}_{DR,t_0} \right) \right] \cdot DR_b \times Post_t$$

Finally, replacing this expression into the optimal loan rate and using the derivation of the outcome equation it gives us:

$$\ln o_{ft} = \underbrace{\varpi_o \left[\gamma \left(\underline{K}_{DR,t} \right) - \gamma \left(\underline{K}_{DR,t_0} \right) \right]}_{\beta} \cdot \text{Share DR}_{f,pre} \times Post_t + \iota_f + \iota_t + \epsilon_{ft}$$

This is the estimated regression, where the outcome reduced form coefficients are given by $\beta_o \equiv \varpi_o \cdot \Delta\gamma_{DR}$. Specifically:

$$\beta_Y = -\frac{(1-\alpha)\sigma}{\bar{r}_{f,pre}} \cdot \Delta\gamma_{DR}, \qquad \beta_K = -\frac{\alpha + (1-\alpha)\sigma}{\bar{r}_{f,pre}} \cdot \Delta\gamma_{DR}, \qquad \beta_L = -\frac{(1-\alpha)(\sigma-1)}{\bar{r}_{f,pre}} \cdot \Delta\gamma_{DR}$$

Regulatory Switching Transition

We begin by deriving a foundation for the following regression:

$$o_{ft} = \beta \times Share_{f,pre} \times Post + \iota_f + \iota_t + \epsilon_{ft}$$

The procedure is identical to the case for Basel III transition with the only difference being that the capital cost only shifts for the transitioning institution, I:

$$\gamma \left(\underline{K}_{b,t} \right) = \gamma \left(\underline{K}_{b,t_0} \right) + \left[\gamma \left(\underline{K}_{I,t} \right) - \gamma \left(\underline{K}_{I,t_0} \right) \right] \cdot I_b \times Post_t$$

Then, following a similar logic to the derivation for Basel III, we obtain similar reduced form

coefficients:

$$\beta_Y = -\frac{(1-\alpha)\sigma}{\bar{r}_{f,pre}} \cdot \Delta\gamma_{I_b}, \qquad \beta_K = -\frac{\alpha+(1-\alpha)\sigma}{\bar{r}_{f,pre}} \cdot \Delta\gamma_{I_b}, \qquad \beta_L = -\frac{(1-\alpha)(\sigma-1)}{\bar{r}_{f,pre}} \cdot \Delta\gamma_{I_b}$$

E Additional Empirical Exercises

In this Appendix section, we provide a set of different complementary results. Subsection E.1 measures the anticipatory effects by depicting the pre-trends of the baseline regression for the Basel III adoption exercise. Subsection E.2 displays the heterogeneous transmission across firm types of the Basel III transition. Subsection E.3 shows the borrower default adjustment after the introduction of Basel III. Subsection E.4 offers suggestive evidence about the margins of adjustment of domestically regulated banks to Basel III adoption through their lending portfolio. Subsection E.5 provides evidence of parallel pre-trends for the organizational transition event study. Subsection E.6 presents evidence on the heterogeneous demand for parent-regulated global bank credit, using cross-sectional variation in firms' exposure to exchange-rate depreciation.

E.1 Anticipatory Effects

We estimate the pre-trends of the baseline regression by computing the following specifications:

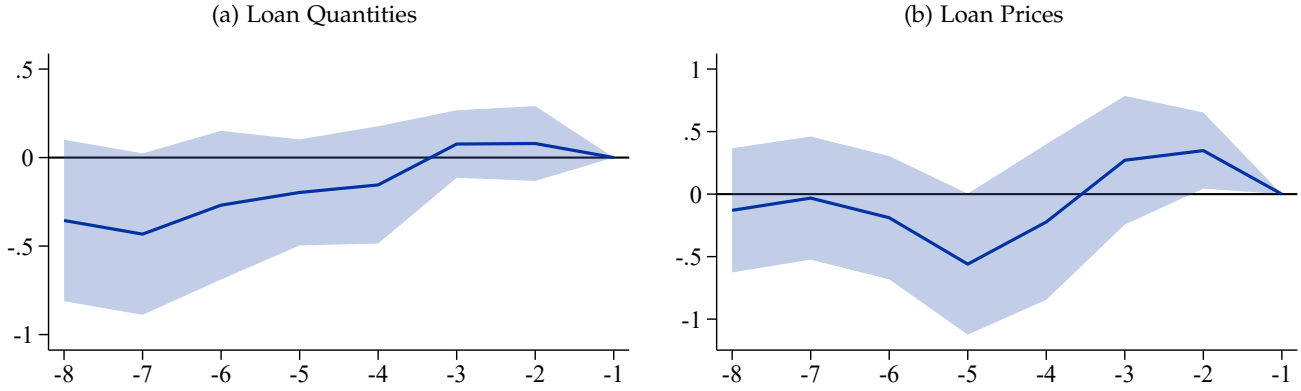
$$ln\left(c_{fbt}\right) = \phi_t \cdot FR_b \times CapReq_t + \eta_{g(f)t} + X\beta + v_{fbt}$$

$$r_{fbt} = \delta_t \cdot FR_b \times CapReq_t + \eta_{g(f)t} + X\beta + v_{fbt}$$

where X contains the remaining interaction terms and baseline bank controls, and $\eta_{g(f)t}$ represents the firm-time fixed effects.

Our analysis focuses on the coefficients before the regulatory adoption of Basel III, $\{\phi\}_{t<t_{shock}}$. Pre-trend coefficients would suggestively capture whether both groups of institutions might evolve similarly in the absence of the shock. Figure A.3 displays the estimated coefficients.

Figure A.3: Pre-Trend Coefficients of Basel III Adoption



Note: This figure shows the pre-trend estimates of $\widehat{\phi}_t$ obtained from $y_{fbt} = \phi_t \cdot FR_b \times CapReq_t + \eta_{ft} + X\beta + v_{fbt}$, where y_{fbt} represent either the amount of credit (in logs) or interest rates (in %). c_{fbt} is the loan amount. $CapReq_t$ is a dummy equal to 1 after January 2023 and 0 otherwise. $\eta_{g(f)t}$ denotes either the industry-time or firm-time fixed effects. X contains the remaining interaction terms and baseline bank controls.

E.2 Heterogeneous Lending Transmission

To study the heterogeneous transmission across firm types, we estimate the following regression:

$$ln\left(c_{fbt}\right) = \psi \cdot FR_b \times CapReq_t \times \Psi_f + \eta_{g(f)t} + X\beta + v_{fbt}$$

where Ψ_f is a firm characteristic before the regulatory shock. Specifically, we include borrower size, riskiness, exposure to exchange rate risk, and productivity. First, we consider that a borrower is large ($Large\,Borrower_f$ equals 1) if its outstanding debt is above the median firm and a small borrower if it is below the median ($Large\,Borrower_f$ equals 0). Second, we use the credit risk classification to define which firms are risky: those with days past due or considered with potential problems by their lenders were considered as risky ($Risky_f$ equals 1). Otherwise, they are not considered risky ($Risky_f$ equals 0). Third, we rely on the reported measure of firm exposure to exchange rate to define whether a firm is exposed ($Exposed\,to\,FX_f$ equals 1) or not ($Exposed\,to\,FX_f$ equals 0). Fourth, to measure firm productivity, we construct the measure of marginal revenue product of capital (MRPK) as the difference between firm sales and cost relative to capital. Then, we define as high MRPK firms those that are above the median ($High\,MRPK_f$ equals 1) and those below the median as low MRPK ($High\,MRPK_f$ equals 0).

Table A.5 displays the results. We find a heterogeneous transmission depending on the borrower size, exposure to exchange depreciation, and productivity. Although we do not find a statistically significant difference using the measure of past credit risk, the fact that we find larger effects for firms with exposure to exchange rate risk and lower productivity indicates that the reallocation toward foreign regulated lenders is concentrated in those that are structurally riskier in dollar credit, as well as large borrowing volumes.

Table A.5: Basel III Transition - Heterogeneous Firm Impact

Dep. $ln\left(c_{fbt}\right)$	(1)	(2)	(3)	(4)
$FR_b \times CapReq_t$	-0.149	0.167	-0.255	0.296**
	(-0.95)	(1.44)	(-1.43)	(2.32)
$FR_b \times CapReq_t \times Large\ Borrower_f$	0.354**			
	(2.49)			
$FR_b \times CapReq_t \times Risky_f$		0.272		
		(1.00)		
$FR_b \times CapReq_t \times Exposed\ to\ FX_f$			0.562**	
			(2.54)	
$FR_b \times CapReq_t \times High\ MRPK_f$				-0.344**
				(-2.34)
Firm $\times$ Time FE	✓	✓		
Cap.Req $\times$ Bank Controls		✓		✓
Remaining Interactions	✓	✓	✓	✓
Num obs	25,411	25,104	25,104	24,045

Note. This table presents the results of estimating $ln\left(c_{fbt}\right) = \psi \cdot FR_b \times CapReq_t \times \Psi_f + \eta_{g(f)t} + X\beta + v_{fbt}$, where c_{fbt} is the loan amount. FR_b equals 1 if the institution is a parent-regulated global bank and 0 otherwise. $CapReq_t$ is a dummy equal to 1 after January 2023 and 0 otherwise. Ψ_f is a firm characteristic including borrower size ($Large\ Borrower_f$), credit risk ($Risky_f$), exposure to exchange rate ($Exposed\ to\ FX_f$), and high productivity ($High\ MRPK_f$) as defined in E.2. ψ captures how the change in the outcome following the regulatory modification differs across firm characteristics. $\eta_{g(f)t}$ are firm-time fixed effects. X contains the individual terms of the interaction. Standard errors are clustered by bank. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

E.3 Default Impact of Basel III adjustment

We compare the default evolution among domestically and foreign regulated banks after the regulatory change by estimating the following regression:

$$d_{fbt} = \zeta \cdot FR_b \times CapReq_t + \eta_{g(f)t} + X\beta + v_{fbt}$$

where d_{fbt} is one if the loan of firm f from bank b is non performing at time t. $CapReq_t$ is a dummy equal to 1 after January 2023 and 0 otherwise. $\eta_{g(f)t}$ denotes either the industry-time or firm-time fixed effects. X contains the remaining interaction terms and bank controls.

Table A.6 shows the estimates. We find no significant differences in non performing loan behavior across bank types after the introduction of the regulatory change. This result might reflect the low default of corporate loans, which is, on average, less than 0.5% at the bank level.

Table A.6: Non Performing Evolution After Basel III Transition

Dep. d_{fbt}	(1)	(2)
$FR_b \times CapReq_t$	0.00228	-0.00403
	(1.31)	(-0.97)
Firm × Time FE	✓	
Industry × Time FE		✓
Remaining Interactions	✓	✓
Num obs	31,614	32,412

Note. This table presents the results of estimating $d_{fbt} = \zeta \cdot FR_b \times CapReq_t + \eta_{g(f)t} + X\beta + v_{fbt}$, where d_{fbt} denotes whether the loan is non performing or not. FR_b equals 1 if the institution is a parent-regulated global bank and 0 otherwise. $CapReq_t$ is a dummy equal to 1 after January 2023 and 0 otherwise. ζ represents the change in the outcome following the regulatory modification. $\eta_{g(f)t}$ are either industry-time or firm-time fixed effects. X contains the individual terms of the interaction. Standard errors are clustered by bank. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

E.4 Adjustment to Basel III of Domestically Regulated Banks

We analyze how domestically regulated banks adjust their portfolios to the Basel III adoption through three margins of adjustment. First, we examine the case where they reallocate their portfolio in other types of credit to mitigate the credit decline on the corporate loan market. Second, we explore whether following the decline of dollar denominated corporate loans, they shift the portfolio towards local denominated corporate loans. Finally, we analyze the risk taking behavior following the regulatory change.

To estimate the impact of the regulatory change on the portfolios, we compare the change of outcomes across the domestically regulated banks: those that were more exposed to the competition with foreign regulated banks relative to those less exposed. We measure exposure, $E_{b,t}$ of a given domestically regulated bank by computing the share of corporate firms that borrow from foreign regulated banks before the regulatory adjustment. Specifically, we estimate the following regression

$$o_{bt} = \chi \cdot E_b \times CapReq_t + X\beta + \xi_{bt}$$

where o_{bt} is the domestically regulated bank outcome. X includes bank size, foreign bank dummy, GSIB dummy, NPL share, profitability, as well as bank and time fixed effects.

Our results are shown in Table A.7. First, we find that domestically regulated banks shifted towards institutional lending after the regulatory shock. Second, they do not reallocate the dollar denominated corporate credit toward local currency. Third, there is an increase in the non performing loans of SME credit after the regulatory shock, but not in the total lending portfolio.

Table A.7: Response of domestically regulated banks to Basel III shock

Dep. o_{bt}	Share of Dollar Portfolio (%)				Dollarization of Corporate Loans		Non Performing Loans (%)			
	Institutional		SMEs				Institutional		SMEs	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$E_b \times CapReq_t$	0.214*	0.232**	-0.0054	-0.0024*	0.151	-0.0247	-0.0284	-0.024	0.706***	0.481***
	(1.93)	(2.45)	(-1.38)	(-1.92)	(1.44)	(-0.23)	(-1.37)	(-1.32)	(4.73)	(3.64)
Bank FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bank controls		✓		✓		✓		✓		✓
Remaining Interactions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Num obs	185	172	185	172	186	172	142	133	145	139

Note. This table presents the results of estimating $o_{bt} = \chi \cdot E_b \times CapReq_t + X\beta + \xi_{bt}$, where o_{bt} is the domestically regulated bank outcome. $E_{b,t}$ is the share of corporate firms that borrow from foreign regulated banks before the regulatory adjustment. $CapReq_t$ is a dummy equal to 1 after January 2023 and 0 otherwise. χ represents the change in the outcome following the regulatory modification. X includes bank size, foreign bank dummy, GSIB dummy, NPL share, profitability, as well as bank and time fixed effects. Standard errors are clustered by bank. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

E.5 Switching Status of a Representative Office

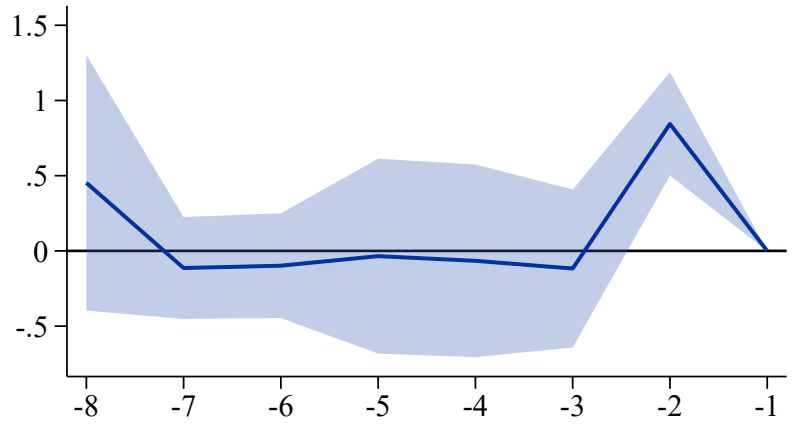
We explore the pre-trends in interest rates around the point at which the intermediary switches from a representative office to a foreign subsidiary. We estimate the dynamic evolution of interest rates, r_{fbt}, following the switch in organizational status while controlling for time, firm and loan controls. More precisely, we compute the following regression:

$$r_{fbt} = \phi_t \cdot I_b \times Switch_t + \eta_{ft} + X\beta + v_{fbt}$$

where I_b is a dummy variable equal to 1 for the institution involved in our event study, and 0 otherwise. $Switch_t$ is a dummy variable equal to 1 if the period is after the change in organizational status, and 0 otherwise. X contains the individual terms of I_b and $Switch_t$, which will be absorbed when fixed effects are included.

Figure A.4 displays the evolution of ϕ_t over 8 calendar quarters before the shock. During one of these quarters there were no operations due to the transition. Our results confirm that for most of the previous quarters we do not see significant anticipatory effects.

Figure A.4: Interest Rates Evolution of Intermediary Switching Status



Note: This figure shows the pre-trend estimates of $\widehat{\phi}_t$ obtained from $r_{fbt} = \phi_t \cdot I_b \times Switch_t + \eta_{ft} + X\beta + v_{fbt}$, where r_{fbt} is the interest rate. I_b is a dummy variable equal to 1 for the institution involved in our event study, and 0 otherwise. $Switch_t$ is a dummy variable equal to 1 if the period is after the change in organization status, and 0 otherwise.

E.6 Heterogeneous Firm Borrowing

Our analysis focuses on the extensive margin of borrowing from a foreign regulated bank and the share of dollar-denominated loans that they obtain from foreign regulated banks. We exploit the cross-sectional variation in firms' exposure to exchange rate depreciation. More precisely, we estimate the following regression:

$$s_{ft}^{GBR} = \phi \times Exposed\ to\ FX_{ft-1} + X\beta + \epsilon_{ft}$$

where s_{ft}^{GBR} represents the share of the loans that firm f maintains with foreign regulated banks at time t. $Exposed\ to\ FX_{ft-1}$ is the regulatory measure reported by domestically regulated banks that denotes whether firm f is considered as exposed to exchange rate depreciation at time $t-1$. ϕ captures the average difference in the share of dollar-denominated funding from foreign regulated banks between firms exposed and non-exposed to exchange rate depreciation. X includes the industry-time fixed effects and firm-level controls such as export status, credit rating, and the share of dollar borrowing.

Table A.8 summarizes the findings in Columns (1)-(2) and (5)-(6). The results indicate that firms exposed to FX are 6pp more likely to borrow from foreign regulated banks and receive a 2pp higher share of dollar funding from them. The result holds even after controlling for credit risk and the share of dollar borrowing. The significance after adjusting for dollar borrowing indicates that the effect arises from actual exposure to currency depreciation rather than from holding dollar denominated loan debt.

Consistent with our hypothesis, we should expect firms to rely more on foreign regulated banks during periods of pronounced exchange-rate depreciation. The depreciation makes the constraint more binding, increasing firms' incentive to seek parent-regulated credit. Within our sample period, we identified two years of significant exchange rate depreciation: 2020 and 2021. Over such years, the average annual exchange rate depreciation was 5.1% in 2020 and 11.1% in 2021, while for the remaining years, the depreciation was under 1.5%. These years were characterized by a combination of the Covid-19 crisis shock and political uncertainty surrounding an electoral period. Both episodes came as a surprise to financial and non-financial firms, whose predictions at the start of the year pointed to an appreciation of the local currency.

Using the identified years as periods of high depreciation, we split the sample to assess whether these years are driving our estimates. The results, shown in Columns (3)-(4) and (7)-(8) of Table A.8, confirm that the high depreciation years are precisely the ones in which the relationship is stronger. This pattern is consistent with borrowers moving to less-constrained lenders in order to circumvent the regulatory impact.

Overall, this suggests that domestically regulated banks not only lose market share, but also might be impacted by a risk externality: by funding firms exposed to exchange rate depreciation, foreign regulated global banks increase those firms' exchange rate risk, thereby elevating the default risk on host-regulated banks' pre-existing dollar loans. Thus, a potential unintended consequence of the rise of foreign regulated bank lending is that it could reduce the effectiveness of prudential policy and create hidden risk from host oversight.

Table A.8: Heterogeneous Borrower Response

	$I(s_{ft}^{GBR} > 0)$*100				s_{ft}^{GBR}*100			
	All periods		High FX depreciation	Low FX depreciation	All periods		High FX depreciation	Low FX depreciation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exposed to $FX_{f,t-1}$	6.958**	5.362*	8.288**	4.224*	2.154**	2.032*	4.114**	1.155
	(4.61)	(2.45)	(2.84)	(1.84)	(3.11)	(1.89)	(2.45)	(1.08)
Industry × Quarter FE	✓	✓	✓	✓	✓	✓	✓	✓
Firm controls		✓	✓	✓		✓	✓	✓
Num obs	9,149	7,498	2,442	5,047	9,149	7,498	2,442	5,047

Note. This table presents the results of estimating $s_{ft}^{GBR} = \alpha_{st} + \phi \times \text{Exposed to FX}_{f,t-1} + X\beta + \varepsilon_{fbt}$, where s_{ft}^{GBR} represents the share of the loans that firm f maintains with parent-regulated global banks at time t, Exposed to $\text{FX}_{f,t-1}$ is the regulatory measure reported by domestically regulated banks that denotes whether firm f is considered as exposed to exchange rate risk at time t-1. X includes the industry-quarter fixed effects and firm-level controls. Alternatively, we measure the riskiness of the firm by using its credit risk classification. Economic sector is 4-digit ISIC. Robust standard errors are clustered by firm. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

F Structural Model Identification and Simulation

This Appendix provides supporting derivations and implementation details for Section 6. Subsection F.1 derives the domestically regulated shadow cost of capital. Subsection F.2 derives the foreign regulated shadow cost of capital. Subsection F.3 provides details of the simulation design. Subsection F.4 shows a decomposition of the baseline results between regulatory and strategic effects.

F.1 Derivation of domestically regulated shadow capital cost

From the pricing equation, we obtained:

$$r^e_{fbt} = \gamma_b \underline{K}_b + mc_{bt}$$

We allow both the required capital level and the shadow value to differ across regulatory regimes. Let $FR_b \in \{0, 1\}$ indicate whether bank b is regulated under the parent regime ($FR_b = 1$) rather than the host regime ($FR_b = 0$). We then re-write the required-capital level and the shadow cost as:

$$\underline{K}_b = (1 - FR_b)\, \underline{K}_H + (FR_b)\, \underline{K}_P$$

$$\gamma_b = (1 - FR_b)\, \gamma_H + (FR_b)\, \gamma_P$$

Using the regime-specific definitions of required capital and the shadow cost, as well as exploiting the properties of the indicator function, we can rewrite the pricing equation as follows:

$$r^e_{fbt} = (1 - FR_b)\, \gamma_H \underline{K}_H + FR_b \gamma_P \underline{K}_P + mc_{bt}$$

Next, consider a discrete change in the capital regulation requirement of the domestic country at a known date, while the foreign regulated regime remains unchanged. Let $Post_t$ be an indicator equal to one after the policy change. We model the regulatory paths as

$$K_{H,t} = \underline{K}_H + \triangle K_H \times Post_t$$

$$K_{P,t} = \underline{K}_P$$

Substituting into the modified pricing equation we get:

$$r^e_{fbt} = \gamma_H \triangle K_H \times (1 - FR_b)\, Post_t + \gamma_H \underline{K}_H\, (1 - FR_b) + \gamma_P \underline{K}_P\, (FR_b) + mc_{bt}$$

Replacing the functional form of the marginal cost, we can write the empirical specification as:

$$r^e_{fbt} = \zeta\, [FR_b \times Post_t] + \theta' W_{bt} + \alpha_{ft} + X\beta + v_{fbt}$$

where $\zeta = -\gamma_H \triangle \underline{K}_H$ and X captures the individual interaction terms of the regression. Therefore, once we estimate ζ, we can recover the domestic regulatory parameter as follows:

$$\widehat{\gamma}_H = -\frac{\widehat{\zeta}}{\triangle \underline{K}_H}$$

F.2 Derivation of parent-regulated shadow capital cost

Let $PostSwitch_{bt} \in \{0, 1\}$ capture the regime switch. The indicator equals one for the transitioning institution after the switch to host-country capital regulation and equals zero otherwise. Alternatively, in the terms of our regression estimates on the empirical side, $PostSwitch_{bt} = I_b \times Switch_t$, with I_b identifying the transitioning institution and $Switch_t$ denoting post-switch periods.

We then rewrite the required capital level and the shadow cost as follows:

$$K_{b,t} = (1 - PostSwitch_{bt})\, K_{bt}^P + (PostSwitch_{bt})\, K_{bt}^H$$

$$\gamma_{b,t} = (1 - PostSwitch_{bt})\, \gamma_P + (PostSwitch_{bt})\, \gamma_H$$

As in the case of the domestic regulatory change, we can use the definitions of the required capital and the shadow cost of the foreign regulated institutions, and exploiting the indicator function we can rewrite the pricing equation as follows:

$$r_{fbt}^e = \gamma_P \underline{K}_P + (PostSwitch_{bt})\, \gamma_H \underline{K}_H + mc_{bt}$$

$$r_{fbt}^e = \gamma_P \underline{K}_P + (\gamma_H \underline{K}_H - \gamma_P \underline{K}_P)\, (PostSwitch_{bt}) + mc_{bt}$$

Replacing the functional form of the marginal cost, we can write the empirical specification as:

$$r_{fbt}^e = \phi I_b \times Switch_t + \Gamma' W_{bt} + X\beta + \eta_{ft} + \upsilon_{fbt}$$

where $\phi = \gamma_H \underline{K}_H - \gamma_P \underline{K}_P$ and X captures the individual interaction terms of the regression. Therefore, once we estimate ϕ, we can recover the parent regulatory parameter as

$$\widehat{\gamma}_P = \frac{\widehat{\gamma}_H \underline{K}_H - \widehat{\phi}}{\underline{K}_P}$$

F.3 Simulation Details

For our counterfactual exercises, we solve the new equilibrium by using the following algorithm:

Algorithm. Equilibrium under counterfactual capital requirements

1. **Require:** We take as given the estimated demand parameters $(\hat{\beta}_0, \hat{\beta}_1, \hat{\beta}_2$, and $\hat{\varsigma}_{fbt})$ and the supply parameters $\hat{\gamma}_b$. Additionally, we use the observed equilibrium rates and shares (r_{fbt}, s_{fbt}), the product characteristics X_{bt}, and the counterfactual required capital change $\Delta\bar{K}_b$.
2. **Numerical settings:** We implement the damped fixed-point algorithm with under-relaxation parameter $\rho = 0.25$ and convergence tolerance $\kappa = 10^{-6}$ (in rate units), and a maximum of 5,000 iterations.
3. **Initialize:** We initialize the simulation at the observed equilibrium, setting $r_{fbt}^{(0)} = r_{fbt}$ and $s_{fbt}^{(0)} = s_{fbt}$ and normalizing the outside option value to 1.
4. **For** $k = 0, 1, 2, \ldots$, we iterate using the following steps:
   (a) **Update shares at the current iterate.** Given $r_{fbt}^{(k)}$, compute the implied choice probabilities
   $$s_{fbt}^{(k)} = \frac{\exp(\hat{\beta}_0 + \hat{\beta}_1 r_{fbt}^{(k)} + \hat{\beta}_2 X_{bt} + \hat{\varsigma}_{fbt})}{1 + \sum_b \exp(\hat{\beta}_0 + \hat{\beta}_1 r_{fbt}^{(k)} + \hat{\beta}_2 X_{bt} + \hat{\varsigma}_{fbt})}.$$
   (b) **Construct candidate rates.** Using the baseline-anchored update that requires only the policy-induced change in required capital, form
   $$r_{fbt}^{\text{cand},(k)} = r_{fbt} + \hat{\gamma}_b \, \Delta\bar{K}_b + \frac{1}{\hat{\beta}_1(1 - s_{fbt}^{(0)})} - \frac{1}{\hat{\beta}_1(1 - s_{fbt}^{(k)})}.$$
   (c) **Damped update.** Update the rate iterate via under-relaxation,
   $$r_{fbt}^{(k+1)} = (1 - \rho)\, r_{fbt}^{(k)} + \rho\, r_{fbt}^{\text{cand},(k)}.$$
   (d) **Convergence check.** We stop when
   $$\max_{fbt} | \, r_{fbt}^{(k+1)} - r_{fbt}^{(k)} \, | < \kappa.$$
5. **Outcomes.** At convergence, we compute the counterfactual equilibrium rates $r_{fbt}^{\star}$ and the implied shares $s_{fbt}^{\star} = s(r_{fbt}^{\star})$.

F.4 Decomposition of Simulation Results

We decompose the total baseline impact of our counterfactual, $s_{fbt}^{counterfactual}$, between a pure regulatory effect, s_{fbt}^{reg}, and a markup adjustment, s_{fbt}^{mp}, as follows:

$$s_{fbt}^{reg} = \frac{exp\left(\widehat{\beta}_0 + \widehat{\beta}_1 r_{fbt} + \widehat{\beta}_1 \widehat{\gamma}_b \triangle \underline{K}_b + \widehat{\beta}_2 X_{bt} + \widehat{\varsigma}_{fbt}\right)}{1 + \sum_b exp\left(\widehat{\beta}_0 + \widehat{\beta}_1 r_{fbt} + \widehat{\beta}_1 \widehat{\gamma}_b \triangle \underline{K}_b + \widehat{\beta}_2 X_{bt} + \widehat{\varsigma}_{fbt}\right)}$$

$$s_{fbt}^{mp} = s_{fbt}^{counterfactual} - s_{fbt}^{reg}$$

The measure of s_{fbt}^{reg} computes a pure regulatory impact by including the mechanical effect of the increase in interest rates due to the change in regulation. We compute the markup adjustment is then constructed as the residual between the simulation result obtained from following the routine as described in F.3, $s_{fbt}^{counterfactual}$, and the measure of regulatory impact, s_{fbt}^{reg}.

G Additional Structural Model Results

This Appendix provides additional results related to the structural model and counterfactual exercises. Subsection G.1 shows additional robustness results for the estimation of the model parameters. Subsection G.2 displays an influence measure of regulatory pressure by each major jurisdiction. Subsection G.3 shows the bank and firm heterogeneous impacts of the equalization counterfactual. Subsection G.4 discusses the implications of including an extensive margin response. Subsection G.5 shows the quantitative estimates of including loan default. Subsection G.6 estimates the demand system using a model with heterogeneous interest rate sensitivities.

G.1 Additional Parameter Estimation Robustness Checks

We assess the robustness of our baseline demand parameter estimates through two complementary exercises. First, we include a set of bank level characteristics that might influence the firm decision to borrow from a given bank. Specifically, we consider two variables: the number of years since the domestic establishment of the financial institution, Age, and a measure of bank industry specialization, Excess Specialization. Second, we show the results using the full sample. Overall, the estimated coefficients are similar to the baseline and imply an elastic demand.

Table A.9: Robustness Exercises of β_1

Dep. $ln\left(s_{fbt}\right)$	*A.* Firms borrowing from both types				*B.* All firms			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
r_{fbt}	-1.128**	-1.523**	-1.034***	-1.435***	-1.132**	-1.402**	-1.030**	-1.293***
	(-2.38)	(-2.35)	(-2.59)	(-2.64)	(-2.28)	(-2.40)	(-2.51)	(-2.70)
Age		0.00666***		0.00775***		0.00450***		0.00518***
		(2.97)		(3.54)		(4.01)		(4.66)
Excess Specialization			1.437***	2.323***			1.457***	2.137***
			(3.34)	(3.80)			(3.14)	(3.80)
Firm × Time FE	✓	✓	✓	✓	✓	✓	✓	✓
Num obs	835	835	835	835	1,690	1,690	1,690	1,690

Note. This table presents the estimates of β_1 according to its respective specifications described in Section 6. Each observation is a firm-bank-time observation. Panel A displays the instrumental variables (IV) estimates of $ln\left(s_{fbt}\right) = \beta_0 + \beta_1 r_{fbt} + \alpha_{ft} + X\beta + \varepsilon_{fbt}$, where home-country monetary policy rates serve as instrument for r_{fbt}, using the sample of firms that borrow from both types. Panel B replicates Panel A using all the firms. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

G.2 Influence of Major Regulatory Jurisdictions

To assess the influence of each major jurisdiction's regulation on bank capital flows, we proceed as follows: First, we compute total market share impact of a 1pp increase separately for each country. Second, we calculate the total change that it generates on other countries. Third, we aggregate the total change at the major jurisdiction level by weighting each country measure using its respective credit share. Finally, for comparability, we normalize the major jurisdiction estimate by its initial market share. The results in Table A.10 show that the U.S. is by far the most influential major jurisdiction, followed, with a substantial gap, by Asia and Europe.

Table A.10: Regulatory Pressure Influence

Treated Country Group	Total Impact
U.S.	11.43
Europe	2.10
Asia	3.34
Rest	1.01

Note. This table shows the influence of the regulatory adjustment of a given country on the rest. We simulate a 1pp increase of each jurisdiction and measure the sum of the market share variation that it generates across countries. We normalize the measure by initial market share size.

G.3 Heterogeneous Effects of Equalization on Banks and Firms

We evaluate the heterogeneous impacts of the equalization counterfactual. After solving the simulation, we aggregate the outcomes according to different characteristics and compare them with respect to the baseline situation. Using this strategy, we compute the market share and interest rate changes associated with the counterfactual and then we aggregate them across heterogeneous characteristics. For banks we examine size, foreign ownership, non-performing loan rates, and profitability, while for firms we focus on size, riskiness and leverage.

Our results for banks displayed in Panel (a) of Table A.11 reveal that the most relevant source of heterogeneity is the bank profitability: under the scenario of equalization of capital levels, credit is reallocated from banks that are more profitable to those that are less profitable. Regarding firm heterogeneity, in Panel (b) of Table A.11 we display that the largest reallocation is from firms with more leverage to those with less leverage. Additionally, our analysis of the cost of credit by firm type reveals that it increases particularly for safer firms compared to riskier ones.

Table A.11: Heterogeneous Effects of Equalization

Panel (a): Bank Heterogeneity

Comparison Group	Market Share Change
Large - Small	-0.02pp
Foreign - Domestic	0.04pp
High NPL - Low NPL	0.00pp
High Profitable - Less Profitable	-0.21pp

Panel (b): Firm Heterogeneity

Comparison Group	Market Share Change	Interest Rates Change
Large - Small	-0.06pp	0.01pp
Risky - Safe	-0.008pp	-0.09pp
Levered - Unlevered	-0.14pp	0.015pp

Note. Panel (a) shows the market share and interest rates differential impacts across bank types. Panel (b) shows the market share and interest rate differential impacts across firm types.

G.4 Extensive Margin Response

To incorporate the response of the extensive margin of borrowing, we can rely on the reduced form estimates of

$$Ln\left(C_{ft}\right) = \alpha + \gamma K_{ft} + \delta X + \varepsilon_{ft}$$

where $K_{ft} \equiv \sum \omega_{fbt} K_{bt}$ represents the capital requirements of the banks from which the firm borrows. In Section 5, we show that there is a small effect of the capital requirement adjustments on the firm level credit: the results of Subsection 5.1 indicate a non-significant effect, while Subsection 5.2 finds that a 1pp increase in capital requirement burden from the banks a firm borrows from leads to a 0.8% reduction in firm credit. Overall, adding this adjustment in the model would not affect the distribution of the market shares across lenders, but it would reduce the aggregate profits from domestically and foreign regulated banks. Specifically, an increase of 1pp in domestic capital requirements would reduce the profits of domestically regulated banks by 3.8pp.

G.5 Loan Default

We include the loan default probability in the profit function of bank as follows:

$$\max_{r_{fbt}} \ \Pi_b = \sum_f s_{fbt}\left(r\right) C_{fbt}\left(r_{fbt}\left(1 - D_{fbt}\left(r_{fbt}\right)\right) - mc_{bt} - \gamma_b \underline{K}_b\right)$$

The optimal price rule is then given by

$$r_{fbt} = \frac{\gamma_b \underline{K}_b + mc_{bt}}{1 - D_{fbt}} - \frac{1}{\beta_1\left(1 - s_{fbt}\right) - \frac{\frac{\partial D_{fbt}}{\partial r_{fbt}}}{D_{fbt}}}$$

We assume the following linear probability model for the default function:

$$D_{fbt} = \vartheta + \zeta r_{fbt} + \varepsilon_{fbt}$$

Our estimates of $\widehat{\zeta}$ are around 0.0015 and the baseline default probability is less than 1%. For the computation of the counterfactuals, we proceed similarly to the baseline model, but with the difference that we need to update $D_{fbt}^{(k)}$ every iteration as follows: $D_{fbt}^{(k)} - D_{fbt}^{(0)} = \zeta\left(r_{fbt}^{(k)} - r_{fbt}^{(0)}\right)$, which given the value of ζ implies a small change in the default probability. Under this case, we can even simplify the iteration as follows

$$r^{(k)} - r^{(0)} \simeq \frac{\gamma \triangle K}{1 - \widehat{D}_{fbt}} + \left[\frac{1}{\widehat{\beta}_1\left(1 - s_{fbt}^{(0)}\right) - \frac{\widehat{\zeta}}{\left(1 - \widehat{D}_{fbt}\right)}} - \frac{1}{\widehat{\beta}_1\left(1 - s_{fbt}^{(0)}\right) - \frac{\widehat{\zeta}}{\left(1 - \widehat{D}_{fbt}\right)}}\right]$$

Using the adjusted equation in the simulation algorithm, we compute the baseline estimates. Our results are similar to the baseline: after 1pp increase in capital requirements the market share of

domestically regulated banks declines by 3.44pp, which is only 0.27pp (3.71-3.44) lower than the baseline case. Overall, this is consistent with the small default value and insensitive response to interest rates.

G.6 Demand System with Random Coefficients

In the baseline model we assume a common interest rate sensitivity to bank borrowing across firms, β_1. To allow for the possibility of heterogeneous preferences across firms, we follow the standard method of Berry, Levinsohn, and Pakes (1995) that considers that the price coefficient is firm specific and log normally distributed: $\beta_{1f} = -\exp(\mu + \sigma_1 \nu_f)$, where $\nu_f \sim N(0,1)$. Given the specification form, the unconditional market share is given by:

$$s_{fbt} = \int \frac{\exp\left(\delta_{bt} + \sigma\nu\, r_{fbt}\right)}{\sum_{b'} \exp\left(\delta_{b't} + \sigma\nu\, r_{fb't}\right)} d\Phi(\nu)$$

where $\delta_{bt} \equiv \beta_0 + \beta_1 r_{fbt} + \beta_2 X_{bt} + \xi_{bt}$ is the mean utility. The integral is approximated by Monte Carlo simulations with a fixed set of draws given that it has no closed form.

We estimate the log-normal parameters(μ, σ_1) with the nested fixed-point GMM procedure of Berry, Levinsohn and Pakes (1995). The observed inside shares are computed as $s^{\text{obs}}_{fbt} = \frac{\text{Loan}_{fbt}}{\text{Total Loans}_{ft}}$, where the total lending includes also the bank borrowing outside the dollar denominated corporate loan market. Following the Berry (1994) logit inversion, we compute $\delta_{fbt} = \ln s^{\text{obs}}_{fbt} - \ln s^{\text{obs}}_{f0t}$. We choose $(\mu, \ln\sigma_1)$ to minimize the GMM value $\left\|\frac{1}{n} Z'\xi(\mu,\sigma_1)\right\|^2$, where Z_b is the same excluded supply-side shifter used to instrument the interest rate in the baseline demand estimation and $\xi_{bt} \equiv \delta^*_{bt} - \bar{\beta}_1 r_{fbt} - \beta_0$.

We proceed similar to the baseline analysis for the counterfactual exercises with the only difference that each firm has a specific sensitivity to interest rates, β_{1f}. Our estimates imply $\widehat{\mu} = -0.731$ and $\widehat{\sigma} = 0.188$. The estimates imply that a pure domestic regulatory shock generates around a 2pp market share decline. However, the model fit is only weakly identified relative to the baseline logit: the GMM value has little curvature in σ.

H Aggregate Implications

H.1 Foreigner Fickleness

We extend the baseline model by assuming that there is a normal and crisis period denoted by $g \in \{N, C\}$. The only difference across states in the model is that during crisis foreign regulated banks face a higher capital cost, γ_P. In addition to that, we interpret the outside option s_0 as the case where the firm chooses not to borrow.

In this setting, the aggregate lending is denoted by $L = M(1 - s_0)$, where M is the total market size. Under the assumption that the market size is similar across states, we can rewrite the decline in lending between crisis and normal periods as follows:

$$C \equiv \triangle L = M\left(s_0^N - s_0^C\right)$$

Foreigner fickleness has a direct impact on the lending decline as the higher γ_P has two effects that increase the borrowing cost: the direct effect is that it raises the cost of lending for parent regulated banks, while the indirect effect is that it increases the markups for domestically regulated banks. The direct effect can be derived from $\frac{\partial r_P^g}{\partial \gamma_P} = \underline{K}_P \left(1 - s_p^g\right) > 0$. The derivation is analogous to the one previously derived for $\frac{\partial r_P^g}{\partial \underline{K}_P}$. The indirect effect can be obtained in two steps: i) from the logit properties, the cross-derivative is positive $\frac{\partial s_H^g}{\partial r_P} > 0$, which implies that the increase in r_P^g due to γ_P is translated towards a higher domestically regulated share. ii) from the pricing equation, a higher s_H^g has a positive effect on r_H^g. As a result, using the chain rule of $s_0^g\left(r_H^g, r_P^g\right)$ given the cross-substitution across products and the higher rates in crisis periods, we get $C < 0$.

To study the effect of harmonization, without loss of generality, we consider as a starting point $K_P < K_H$. Thus, our comparative static is $\frac{\partial C}{\partial \underline{K}_P}$. Using the chain rule has the following form:

$$\frac{\partial C}{\partial \underline{K}_P} = M\beta_1 \left[\bar{s}_0^N \left(\bar{s}_H^N \frac{\partial r_H^N}{\partial \underline{K}_P} + \bar{s}_P^N \frac{\partial r_P^N}{\partial \underline{K}_P} \right) - \bar{s}_0^c \left(\bar{s}_H^c \frac{\partial r_H^C}{\partial \underline{K}_P} + \bar{s}_P^c \frac{\partial r_P^C}{\partial \underline{K}_P} \right) \right]$$

Under the assumption that during crisis the market share of foreign regulated banks becomes small due to the fickleness, $\bar{s}_P^c \simeq 0$, we can simplify the expression using the cross derivative property of the logit function ($\frac{\partial s_H^C}{\partial r_P^C} = -\beta_1 \bar{s}_H^c \bar{s}_P^c$) as follows:

$$\frac{\partial C}{\partial \underline{K}_P} = M\beta_1 \bar{s}_0^N \left[\bar{s}_H^N \frac{\partial r_H^N}{\partial \underline{K}_P} + \bar{s}_P^N \frac{\partial r_P^N}{\partial \underline{K}_P} \right]$$

Operating the derivatives inside the bracket $\frac{\partial r_P^N}{\partial \underline{K}_P} = \gamma_P(1 - \bar{s}_P^N)$ and $\frac{\partial r_H^N}{\partial \underline{K}_P} = -\frac{1}{\beta_1\left(1-\bar{s}_H^N\right)^2} \frac{\partial s_H^N}{\partial \underline{K}_P} \equiv -\frac{1}{\beta_1\left(1-\bar{s}_H^N\right)^2} \varepsilon_{s_H, K_p}$ and replacing it into the derivative:

$$\frac{\partial C}{\partial \underline{K}_P} = M\beta_1 \bar{s}_0^N \left[-\frac{\bar{s}_H^N}{\beta_1 \left(1 - \bar{s}_H^N\right)^2} \varepsilon_{s_H, K_p} + \gamma_P \bar{s}_P^N (1 - \bar{s}_P^N) \right]$$

Given that the sign of the terms inside the brackets is positive, we have $\frac{\partial C}{\partial \underline{K}_P} < 0$, which implies that an increase in harmonization will reduce the contraction of lending during crises. Moreover, note that there is a negative relationship between ε_{s_H, K_p} and $\frac{\partial C}{\partial \underline{K}_P}$. More formally, we have:

$$\frac{\partial \left(\frac{\partial C}{\partial \underline{K}_P} \right)}{\partial \varepsilon_{s_H, K_p}} = -M\bar{s}_0^N \left[\frac{\bar{s}_H^N}{\left(1 - \bar{s}_H^N\right)^2} \right] < 0$$

This implies that the more sensitive the market share of domestically regulated banks to changes in capital requirements (in this case of the foreign regulator), the sharper will be the effect of harmonization on mitigating the reduction of lending contraction during crisis. Furthermore,

if we consider as a baseline host market share $\bar{s}_H^N = 0.8$ and outside share $\bar{s}_0^N = 0.05$, the derivative will be -1. Therefore, under a baseline calibration, a one unit increase in the sensitivity of the market share to capital requirement leads to a one unit more effectiveness of harmonization in shrinking the lending contraction in crisis.

H.2 Costly Equity Issuance During Crisis

In addition to the assumptions in subsection H.1, in this part we consider that issuing additional equity is costly during crisis. Specifically, we assume a per unit issuance cost $\alpha(A)$, where A is the total additional issuance during crisis. Moreover, we consider that $\alpha(A)$ is convex, which implies that $\alpha^{'}(A) > 0$ and $\alpha^{''}(A) > 0$. Under these considerations, the optimal pricing equation is given by

$$r_H^C = \gamma_H \underline{K}_H + \varphi(A) - \frac{1}{\beta_1(1-\bar{s}_H^C)}$$

where $A \equiv M\left(s_H^C - s_H^N\right)$ and $\varphi(A) \equiv \alpha(A) A$. Also, note that $\frac{\partial \varphi(A)}{\partial \underline{K}_P} = \varphi^{'}(A) M\left(\frac{\partial s_H^C}{\partial \underline{K}_P} - \frac{\partial s_H^N}{\partial \underline{K}_P}\right)$. As before, we can compute the comparative statistics as follows:

$$\frac{\partial C}{\partial \underline{K}_P} = M\beta_1\left[\bar{s}_0^N\left(\bar{s}_H^N\frac{\partial r_H^N}{\partial \underline{K}_P} + \bar{s}_P^N\frac{\partial r_P^N}{\partial \underline{K}_P}\right) - \bar{s}_0^c\left(\bar{s}_H^c\frac{\partial r_H^C}{\partial \underline{K}_P} + \bar{s}_P^c\frac{\partial r_P^C}{\partial \underline{K}_P}\right)\right]$$

Regarding the specific terms, we can derive $\frac{\partial r_H^C}{\partial \underline{K}_P} = M\varphi^{'}(A)\left(\frac{\partial s_H^C}{\partial \underline{K}_P} - \frac{\partial s_H^N}{\partial \underline{K}_P}\right) - \frac{\frac{\partial s_H^C}{\partial \underline{K}_P}}{\beta_1\left(1-s_H^C\right)^2}$. Using the logit properties, we can derive $\frac{\partial s_H^C}{\partial \underline{K}_P} = -\beta_1\gamma_P\bar{s}_H^C\bar{s}_P^C(1-\bar{s}_P^C)$. As a consequence, under the assumption that $\bar{s}_P^c \simeq 0$, we get $\frac{\partial r_H^C}{\partial \underline{K}_P} \simeq -M\varphi^{'}(A)\frac{\partial s_H^N}{\partial \underline{K}_P}$. Terms from the normal period are identical to the ones derived in subsection H.1. Taking all the results together, we get

$$\left.\frac{\partial C}{\partial \underline{K}_P}\right|_{\alpha>0} = \left.\frac{\partial C}{\partial \underline{K}_P}\right|_{\alpha=0} + M\beta_1\bar{s}_0^c\bar{s}_H^c M\varphi^{'}(A)\,\varepsilon_{s_H,K_p}$$

Given that we previously obtained that $\left.\frac{\partial C}{\partial \underline{K}_P}\right|_{\alpha=0} < 0$ and considering the signs of the individual terms of $M\beta_1\bar{s}_0^c\bar{s}_H^c M\varphi^{'}(A)\,\varepsilon_{s_H,K_p}$, we get

$$\left.\frac{\partial C}{\partial \underline{K}_P}\right|_{\alpha>0} \leq 0$$

Furthermore, an increase in ε_{s_H,K_p}

$$\frac{\partial\left(\left.\frac{\partial C}{\partial \underline{K}_P}\right|_{\alpha>0}\right)}{\partial \varepsilon_{s_H,K_p}} = \frac{\partial\left(\left.\frac{\partial C}{\partial \underline{K}_P}\right|_{\alpha=0}\right)}{\partial \varepsilon_{s_H,K_p}} + M\beta_1\bar{s}_0^c\bar{s}_H^c M\varphi^{'}(A)$$

Considering our previous result derived that implies $\frac{\partial\left(\left.\frac{\partial C}{\partial \underline{K}_P}\right|_{\alpha=0}\right)}{\partial \varepsilon_{s_H,K_p}} < 0$ and $M\beta_1\bar{s}_0^c\bar{s}_H^c M\varphi^{'}(A)$ is negative, we obtain $\frac{\partial\left(\left.\frac{\partial C}{\partial \underline{K}_P}\right|_{\alpha>0}\right)}{\partial \varepsilon_{s_H,K_p}} < 0$