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Abstract

Lending to corporates in foreign currencies can expose banks to substantial currency risk. Using global syndicated loan data, we find that a one-standard-deviation increase in exchange rate volatility increases loan spreads by approximately 20 basis points for loans made in a currency different from the lenders'. This implies excess interest of approximately USD 2.55 million for loans of average size and duration. We show that our finding is mostly attributed to credit constraints and deviations from perfect competition in international lending markets. Borrowers can lower the extra cost by forming strong lending relationships with their banks.

Keywords: Global syndicated loans; Foreign currency lending; Exchange rate risk; Bank market power; Relationship lending.

JEL classification: G21; F31; F33; F34.

1. Introduction

Banks' cross-border claims toward the nonbanking sector have expanded considerably in recent decades, amounting to USD 13.1 trillion as of September 2017 (BIS, 2018). About 20% (USD 2.6 trillion) of these claims are in foreign currencies, and the market is expanding substantially toward emerging market economies. These facts naturally raise questions about the role that exchange rate risk plays in international bank lending and, specifically, on the pricing of loans in foreign currency. How important is the exchange rate risk banks bear when lending in a different currency? Do banks pass this risk to their borrowers in the form of higher cost of loans, and is this cost economically important? How different is this cost across borrowing firms with different firm characteristics, riskiness, and lending relationships with the banks? These are the questions addressed in this paper.

There are two sides to exchange rate risk in cross-border lending: foreign firms borrowing in the lender's currency - henceforth foreign-currency borrowing - which implies exchange rate risk for the borrower (demand-side risk), and lending to foreign firms in the borrower's currency - henceforth foreign-currency lending - which implies exchange rate risk for the lender (supply-side risk). Such foreign-currency lending has significantly increased over the last three decades, despite the credit market freeze during the global financial crisis. Syndicated foreign-currency lending reported in Dealscan reached about USD one trillion in 2015 and has surpassed syndicated foreign-currency borrowing since 2000 (Figure 1). In this paper, we examine whether and how banks price exchange rate risk in foreign-currency lending. Despite the existence of a substantial literature on cross-border lending foreign-currency borrowing (e.g., Francis and Hunter, 2012; Brown, Kirschenmann, and Ongena, 2014; Niepmann and Schmidt-Eisenlohr, 2017), the effect of exchange rate risk on foreign-currency lending has not received much attention.

[Insert Figure 1 about here]

Exchange rate risk is costly for lenders, implying a higher lending rate or higher loan fees. Higher lending costs create a competitive disadvantage for affected borrowers compared to firms that can access the domestic credit market and thus face no exchange rate risk on their loans. The higher cost of credit can have significant implications for the profitability and international competitiveness of borrowers engaging in foreign currency lending, especially given that in our data these firms appear on average to be less risky (i.e., they are more profitable and have less leverage) than firms borrowing in the bank's currency.

Our empirical analysis focuses on the causal effect of exchange rate risk on the cost of credit and other corporate loan characteristics. We use data from the global syndicated loan market. These data are ideal for our setting because they are at the loan level, which is helpful to achieve adequate identification of causal effects, and they include bank loans to several countries, provide information about several loan characteristics, and can be matched with the exchange-rate conditions prior to loan origination.

The dataset covers the period 1984-2016, although most loans originate from 1994 onward, and includes more than 100,000 loan deals. Our main outcome variable is the all-in-drawn spread (AISD), which includes the loan spread over LIBOR plus any facility fee. The main explanatory variable is a measure of exchange rate risk based on the realized volatility of the bilateral exchange rate between the borrower's and the lender's (i.e., the lead lenders of the syndicate) countries over a one-month, three-month, or six-month period. Alternatively, we use forward-looking measures of exchange rate risk (i.e., measures based on forward, rather than spot, rates).

We draw causal inferences from an approach that has two important characteristics. First, we compare the differential effect of exchange rate risk on the cost of credit between loans denominated in a currency different from the lender's currency (the treatment group) and loans denominated in the lender's currency (the control group). In principle, exchange rate risk

should have a strong effect only on the treatment group, and any effect on the control group should reflect macroeconomic risk and ideally be captured by relevant macroeconomic control variables. This approach is very similar to the differences-in-differences (DiD) approach by Rajan and Zingales (1998), who identify the effect of financial development on growth, and of many other studies from that point onward.

Second, the multiple loan facilities per firm every year allow the fielding of "firm times year" fixed effects, which allows us to control for time-varying demand-side (firm-year) forces that might affect the relation between exchange rate risk and loan spreads. Intuitively, these forces include any exchange rate risk borrowers face - that is, the demand-side exchange rate risk in foreign-currency borrowing documented in the previous literature (Francis and Hunter, 2012; Bergbrant, Francis, and Hunter, 2016; Niepmann and Schmidt-Eisenlohr, 2017).

We find that the effect of exchange rate risk on AISD is both statistically and economically significant. For example, a one-standard-deviation increase in our measure of exchange rate risk based on the three-month volatility of the exchange rate yields an AISD that is approximately 20 basis points higher for loans made in a currency different from the lender's compared to those made in the lender's currency. Economically, this is a large effect, equal to a 7% higher AISD compared to the average in our sample, highlighting a substantial cost to borrowing firms vis-à-vis international competitors that (can) borrow in their bank's currency.

We further show the importance of this cost by calculating the extra interest payments for these firms. For the average loan size and maturity, an AISD that is 20 basis points higher corresponds to approximately USD 2.55 million in higher interest expense over the loan's duration. Thus, we can infer that foreign exchange risk implies substantially higher cost of credit for firms borrowing in a currency different than their lenders' compared to firms borrowing in their banks' domestic currency.

Several sensitivity tests show that these baseline findings are robust. The most important of these tests are the following five. First, we use different sets of fixed effects (e.g., Jimenez et al., 2014). These include "bank times year" fixed effects that saturate the model from time-varying bank-side explanations of the findings, as well as "country-per-year" fixed effects that saturate the model from the effects of country-pair characteristics that might be otherwise captured by our measures of exchange rate risk (e.g., Jimenez et al., 2014). Second, we use specifications with different control variables to show that the results are not driven by a "bad controls problem". Third, given that the number of loans differs by country or country-pair, we use a weighted-least-squares approach (e.g., Delis, Hasan, and Ongena, 2017). Fourth, the results are robust when using a Heckman-type model, which considers the probability of a firm borrowing in a currency different than the lenders' currency to account for endogeneity (Dass and Massa, 2011). Fifth, we show that our specifications are robust to the exclusion of fixed effects and the inclusion of more than 30 control variables characterizing the within-year monetary environment as well as institutional and economic differences between the lenders' and borrowers' countries.

We conduct additional analysis to understand the reasons behind our main finding on the pricing of exchange rate risk in foreign-currency lending, especially given that banks can hedge against this risk. First, we consider variation in liquidity of hedging instruments in the foreign exchange market, measured using bid-ask data for forward rates across currencies and time. Even though we find evidence that our liquidity measures directly affect the cost of credit, the relation between exchange rate risk and the cost of credit remains intact whereas liquidity does not cause heterogeneity in that relation, being unable to explain the differences in loan pricing observed in the data across firms. Next, we turn to measures of credit constraints and bank market power. We find that in countries with higher credit to the private sector as a share of GDP the relation between exchange rate risk and the cost of credit is significantly weaker.

Similarly, our main finding is significantly stronger as bank market power (measured by the Lerner index) increases. Thus, we identify domestic credit constraints and market power of lenders as the most significant factors causing heterogeneous effects in the nexus between exchange rate risk and the cost of credit.

Overall, these findings yield the natural question of whether the affected firms can do anything to remedy this competitive disadvantage. We consider two potential strategies. The first involves firms formulating repeated lending relationships with their lead lender(s). We provide evidence that firms with at least one more loan with the same lead arranger in the last two years prior to the current loan are exposed to significantly lower cost of credit compared to firms for which the current loan is the first with the specific lead lender. We thus contend that establishing a long-term relationship with the lender is key to mitigate the increased cost of credit due to exchange rate risk. The second strategy is to enhance the loan contract with more covenants (or with specific covenants) and to change the structure of the syndicate by including more banks in the loan syndicate or by changing the share of the lead lender. However, we find that such practices do not mitigate the impact of exchange rate risk in loan pricing equations, and that therefore cross-sectional variation in these aspects of the loan does not affect the loan spreads.

The rest of the paper proceeds as follows. Section 2 highlights the reasons for foreign-currency lending. It also relates our study to the existing literature and further highlights the novelty of our work relative to that literature. Section 3 discusses the data set and the empirical specification. Section 4 presents and discusses our main empirical results, showing the impact of exchange rate risk on the cost of credit. Section 5 shows the importance of bank-firm relationships as a remedy for the increased cost of credit. Section 6 concludes the paper. An Internet Appendix provides a number of additional results, mainly related to robustness checks.

2. Motivation for foreign-currency lending and related literature

Banks lend to foreign firms in the firms' currencies for two interrelated reasons. First, they finance projects with positive net present values, and banks aim to overcome credit constraints for the relevant firms. This is evident in the fact that most foreign-currency lending occurs from banks in larger and more developed financial markets to firms in smaller and less developed ones. [1] Second, foreign-currency loans might be more profitable than alternative lending opportunities in the domestic market. Perhaps unsurprisingly, there is self-selection: firms involved in foreign-currency lending are large, well-established, and profitable, with an international focus for their operations (Allayannis et al., 2003; Brown and De Haas, 2012).

The three most closely related studies to ours are Francis and Hunter (2012), Bergbrant, Francis, and Hunter (2016), and Niepmann and Schmidt-Eisenlohr (2017). The first two use data on syndicated loans to analyze how firms' general exposure to exchange rate risk (i.e., because of their foreign operations) affects the cost of credit. Firms' exposure is measured by the residual from a regression of firm returns on an exchange rate index and stock market returns. The difference in the scope of these two papers compared to our study is the focus on exchange rate risk of firms in general and not of foreign-currency lending, and the associated implications for firms borrowing in a currency different than the lenders' currency. In fact, in our study we aim to control for such firm exchange rate risk (demand-side) and identify the bank's (supply-side) pricing of exchange rate risk.

Niepmann and Schmidt-Eisenlohr (2017) use loan-level data from U.S. banks' regulatory filings and find that a firm with debt denominated in foreign currency is more likely to become past due on its loans than a firm with local currency debt. This study is different from ours because it focuses on what we define as foreign-currency borrowing (foreign firms

[1] Specifically, Dealscan lists 6,082 syndicated loan facilities from lenders headquartered in developed countries to borrowers headquartered in developing countries during 1989-2016. These facilities are in the borrowers' currencies and amount to USD 819 billion.

borrowing in the lender's currency), and on the probability of loan non-repayment (i.e., credit risk). Therefore, we address a different question in that we focus on the implications for the cost of credit in foreign-currency lending.[2]

Several other studies relate to our research, with most of them analyzing the reasons for cross-border lending. Brown, Kirschenmann, and Ongena (2014), for example, use unique data on loans from a Bulgarian bank and show how the currency of the loan is determined. Brown and De Haas (2012) show that foreign banks lend more in foreign currency to corporate clients, but this is not because of better access to wholesale funding. Bacchetta and Merrouche (2016) identify the reasons behind the increase in foreign-currency borrowing by European firms and suggest that this occurs when European lending standards tighten and Euribor spreads increase. Brown, Ongena, and Yeşin (2011) show that exchange rate volatility is not a key driver of foreign currency borrowing, but what matters is weak corporate governance and the absence of capital controls.

Further, there is a large literature on how exchange rate risk in general (not via lending) affects firm performance. For example, Francis, Hasan, and Hunter (2008) show the importance of exchange rate movements for returns across virtually all U.S. industries, by separating the currency risk premium on industry stock returns into the component stemming from industrialized countries and the component stemming from other important trading partners from the emerging economies. Other relevant studies include Aghion et al. (2004), Kamil (2012), and Kim, Tesar, and Zhang (2015), among others. Finally, several other papers look into the role of foreign bank presence (e.g., Bonin, Hasan, and Wachtel, 2005; Haselmann and Wachtel, 2011; Bräuning, and Ivashina, 2017).

[2] Niepmann and Schmidt-Eisenlohr (2017) use data for U.S. banks, which in their context has the advantage of including many more loans, not just syndicated loans. This reflects their focus on how changes in exchange rates affect credit risk. However, the global syndicated loans market is more suitable for our objectives in this paper, given the focus on the effect of exchange rate volatility, for which we obtain detailed information when looking at foreign-currency lending in many different countries.

Overall, therefore, while we build on prior literature on cross-border bank lending, this paper is the first to examine specifically foreign-currency lending and its implications for the cost of credit and pricing of currency risk.

3. Data and empirical model

This main data source is Dealscan, which includes the most comprehensive loan-deal information available on global syndicated loan markets. Our data set covers the period 1984-2016 but loan coverage for most countries starts in 1993-1994. We drop all loans for which there is no conventional pricing (i.e., there is no spread) and this eliminates all types of Islamic finance and very specialized credit lines. Dealscan includes loan facilities for multiple participant banks, and we use the information at the loan facility level (the unit of our analysis). The number of loan facilities for our baseline specifications ranges from 107,100 to 110,574, depending on the controls used. These loans are drawn from firms operating in 87 countries.

We match the loans with bank-specific information from Bankscope; however, in most of the analysis we use bank × year fixed effects that render bank-year characteristics redundant. Similarly, by using firm × year fixed effects, we do not require any firm × year control variables. In a third round of data collection, we match the resulting dataset with macroeconomic (country-year) variables from several freely available sources. We provide variable definitions and sources in Table A1 of the Internet Appendix and basic summary statistics in Table 1. We provide additional summary statistics in Tables A2 and A3 (country-year averages and country-specific averages, respectively).

[Insert Table 1 about here]

In Table A4 of the Internet Appendix, we report the number of foreign-currency loans (loans denominated in a currency different from the lender's currency). Banks giving these loans are exposed to exchange rate risk (*Forex risk*). The total number of these loans is 16,024

and constitute approximately 14.6% of the full sample (equal to 107,751 loans in our preferred empirical specification). The relevant number of countries is 44. Essentially, our identification method aims at comparing the different (high) *Forex risk* of foreign-currency lending (i.e., the treatment group) with the (low) *Forex risk* of the rest of the loans, where the lender's currency is the same as the loan currency (i.e., the control group). The control group of loans faces *Forex risk* only to the extent that this risk affects the macroeconomic environment.

Empirical specification. Specifically, we use the following empirical model:

$$Cost\ of\ credit_{lt} = a_0 + a_1 Forex\ risk_{lt} + a_2 Different\ currency_{lt} + a_3 Forex\ risk_{lt} \times Different\ currency_{lt} + a_4 Controls_{kt} + u_{lt} \quad (1)$$

The outcome variable *Cost of credit* measures the cost of loan facility *l* originated at time *t*. The most widely used measure is the all-in-drawn spread (*AISD*), denoting the spread over LIBOR, although some recent literature (e.g., Berg, Saunders, Steffen, and Streitz, 2017) also highlights the importance of fees and the all-in-spread undrawn (*AISU*). We define precisely these variables in Table A1.

Forex risk for each loan facility is the realized volatility of the bilateral exchange rate between the borrower's and the lender's countries over an *N*-day period, or:

$$Forex\ risk_{lt} = \sqrt{\frac{1}{N}\sum_{i \in N}(Exchange\ rate_{abi} - \mu)^2} \quad (2)$$

Essentially, equation (2) is the daily (percentage) change in the bilateral exchange rate between the lender country *a* and borrower country *b, i* days before the loan facility start date, with μ being the average exchange rate over the *N*-day period. We compute realized volatility for one-

month, three-month, and six-month periods preceding the origination date of the loan. For most of our analysis, we use three-month *Forex risk*, assuming that banks look at the volatility of exchange rates over three months prior to the loan origination date.

In turn, *Different currency* equals 1 if the loan facility is originated in a currency different from the lender's currency, and zero otherwise. The vector a_0 denotes different types of fixed effects, described later. *Controls* is a vector of control variables of different dimension *k*. Finally, *u* is a stochastic disturbance. For detailed definitions, see Table A1.

The main coefficient of interest is a_3, which shows the differential effect of *Forex risk* on the cost of credit between loans granted in the same and different currencies than the currency of the lender. Differently phrased, we obtain identification from the fact that foreign exchange risk affects the cost of loans made in a currency different from the lender's currency (the treatment group) compared to loans made in the lender's currency (the control group). We expect that a_3 is positive if foreign exchange risk matters in foreign-currency lending and thus increases the cost of credit for borrowing firms.

Moreover, the coefficient a_1 shows how a one-point increase in *Forex risk* affects the cost of credit for all loans in the sample. If the model is well-identified, the interaction term and the control variables should explain (most of) the effect of *Forex risk* on the cost of credit (i.e., a_1 should be statistically insignificant). This is because the effect of foreign exchange risk on the cost of loans made in the lender's currency should be minimal or zero, especially when controlling for macroeconomic risk.

Controls and fixed effects. We include several control variables and, perhaps most important, fixed effects. Following the relevant literature (e.g., Ivashina, 2009; Delis, Hasan, and Ongena, 2017), we control for loan characteristics such as the log of the loan amount, loan maturity (in months), the number of lenders in the syndicate, dummies for performance-pricing

provisions and/or collateral, and the total number of covenants.[3] For exact definitions of these variables, see Table A1; for summary statistics, see Table 1.

Importantly, we use firm × year and bank × year fixed effects. The former allow us to control for any time-varying demand (firm)-side explanations of our findings. These alternative explanations include the firms' (demand-side) exposure to exchange rate risk (as opposed to the loan's exposure that we examine in this study). The regression still yields results on the main coefficients of interest because there are multiple loan facilities to the same firm within years and *Forex risk* is identified within years.

In most of our specifications, we include the controls and fixed effects. We should note, however, that if our DiD method approximates a randomized experiment, then the different mix of fixed effects and control variables should not have a large effect on a_3. We show that this holds in numerous sensitivity tests. We also conduct sensitivity tests without sets of control variables (especially the loan controls) to show that a "bad controls" problem does not affect the results.

Key summary statistics. In Panels A and B of Table 2 we report summary statistics for key loan features and foreign exchange risk measures for the control and treatment groups, respectively; Panel C reports their differences. We find that, on average, *AISD* is 27 basis points higher for firms receiving loans in their own currency compared to firms receiving loans in the lead bank's currency. This difference is statistically significant at the 1% level, and a similar picture extends to *AISU*. In addition, loans in the borrower's currency are more likely to be secured and have a higher number of lenders. In contrast, lenders attach fewer provisions and covenants on these loans.

[Insert Table 2 about here]

[3] Distinguishing between types of covenants (e.g., general and financial covenants) does not affect our results.

4. The effect of exchange rate risk on the cost of credit

4.1. Baseline results

Table 3 reports our baseline results. The different specifications include different types of fixed effects, with the more stringent one being that in column (5), which includes loan type, loan purpose, country-pair × year, firm × year, and bank × year fixed effects. [4]

[Insert Table 3 about here]

The coefficient on *Forex risk* is statistically insignificant, which is intuitive as foreign exchange risk should not affect *AISD* unless the loan is in another currency and bears some exchange rate risk. Also, the coefficient on *Different currency* is negative and statistically significant at conventional levels (equal to approximately 11.5 basis points, according to specification 5). This is an interesting finding in itself, suggesting that when there is no foreign exchange risk, foreign loans go to firms with a lower average *AISD* (i.e., less risky firms compared to domestic ones).

The main coefficient of interest a_3 shows that a one-standard-deviation increase in *Forex risk* increases *AISD* by an average of 20 basis points for loans made in a currency different from the lender's, compared to those made in the lender's domestic currency. Economically, this is a large effect, equal to a 7% increase for the average loan in our sample. Given that the average loan size is $259 million, firms facing exchange rate risk in their loans thus pay, on average, approximately USD 0.52 million (=$259,000,000 ×20 basis points) per year in excess interest in foreign currency lending operations. Considering that the average time to maturity is 4.9 years, this represents approximately USD 2.55 million in extra interest

[4] The use of different fixed effects does not qualitatively affect the coefficient on the interaction term between *Forex risk* and *Different currency*, which is our main coefficient of interest. This suggests that the key results are invariant to the use of additional control variables, which is a requirement for the internal validity of a DiD approach.

expenses over the loan's duration.[5] Therefore, we can infer that foreign exchange risk substantially raises the cost of loans for firms borrowing in their domestic currencies compared to firms borrowing in the lead banks' currency.

Let us illustrate the implication of this estimate for a country. Take, for example, Australia. The average *Forex risk* for loans denominated in Australian dollars is 0.62 (i.e., approximately three times the average *Forex risk* for all loans to Australian firms regardless of their currency denomination; see Tables A3 and A4 of the Internet Appendix). When *Forex risk* is above its mean value, the average *AISD* on Australian dollar-denominated loans is 169.10 basis points. This is 18% higher compared to an average *AISD* of 143.33 basis points when *Forex risk* is below its mean.[6] Looking at specific subperiods, the average *Forex risk* for loans where an Australian firm is the borrower was 0.50 in 2014, and the average *AISD* on loans to Australian firms denominated in Australian dollars was 199.06 basis points. However, during 2015-2016, a period marked by a rise in the volatility of the Australian dollar, the corresponding mean value for *Forex risk* was 0.68, while the average *AISD* surged to 267.19 basis points. Similar examples exist for other countries, among them countries with historically high currency volatility, such as emerging market countries.

To illustrate the relative importance of exchange rate risk vis-à-vis the rest of the explanatory variables, we also report standardized coefficients in Table A5 of the Internet Appendix. The coefficient on the DiD is higher than any of the other loan and bank characteristics, second only to the fixed effects. The effect of the control variables is generally in line with our expectations and the recent literature on the determinants of loan spreads (e.g., Ferreira and Matos, 2012; Delis, Hasan, and Mylonidis 2017). Specifically, a higher loan

[5] Assuming five annual payments and LIBOR as the discount rate, the increase in interest expense equals USD 2.3 million for an average 12-month LIBOR rate of 4.2% during our sample period (for similar calculations, see Ivashina and Sun, 2011).

[6] The price differential increases to 24% when we divide loans according to the median of *Forex risk*. In that case, the average *AISD* above and below the median of 0.56 was 170.13 and 137.56 basis points respectively.

amount and more syndicate members go hand-in-hand with the formation of the syndicate (Ivashina, 2009), together implying lower spreads. Loans with longer maturities impose a lengthier commitment for the syndicate members and thus carry a higher spread. Performance-pricing provisions tie the spread to the firm's financial condition, and thus their strong negative effect on *AISD* is intuitive. The role of covenants is different and their effect is positive, as using such instruments implies riskier loans (Demiroglu and James, 2010).

Given that results from all specifications are consistent, we select specification in column (3) of Table 3 as our baseline, so as to draw inferences from specifications including both firm × year and bank × year fixed effects. However, for comparison, we also report in most of the following tables the results from a specification without bank × year fixed effects, as in column (2).

In Tables 4 and 5, we consider alternative foreign exchange risk measures. In columns (1) and (2) of Table 4 we use the one-month version of our foreign exchange risk measure, and in columns (3) and (4) we use the six-month version. Both measures provide similar results to the baseline. Based on the similarity of the results, we conduct the rest of the analysis by employing the three-month *Forex* measure, but all results carry through (and are sometimes slightly stronger) when using the other measures of foreign exchange risk.

Thus far, our findings are based on the assumption that volatility in spot exchange rates provides accurate information about exchange rate risk as viewed by lenders. By nature, the pricing of loan contracts is forward looking. Therefore, following the same methodology as for the calculation of our baseline exchange rate risk measure, we construct forward-looking exchange rate risk measures based on 3- and 6-month forward rates. We report results for these measures in Table 5.[7] In all specifications and regardless of the foreign exchange risk measure

[7] To ease interpretation, Table 5 presents results only for specifications with both firm × year and bank × year fixed effects.

employed, the DiD term has a positive and sizable effect on *AISD*, which increases with the maturity of the forward contract.

[Insert Tables 4 & 5 about here]

Subsequently, we sequentially exclude loan-level control variables from our specifications. These tests address whether (i) these variables yield a "bad controls" problem and (ii) any subgroup of variables exerts a disproportionate impact on our results.[8] In the first two specifications of Table 6, we omit all loan-level variables; and in (3) and (4), we only include variables of a quantitative nature, namely *Loan amount* and *Maturity*. In the subsequent specifications, we exclude variables with qualitative information on the loan. This information pertains to the existence of collateral and the number of lenders (columns 5 and 6), or the existence of performance-pricing provisions and the number of general covenants attached to the loan (columns 7 and 8).[9]

The coefficient on *Forex risk* × *Different currency* assumes values within the 25-31 basis points range, confirming the higher cost of credit for international loans when these loans are denominated in the firm's rather than the bank's currency, *ceteris paribus*. Further, the coefficient on *Different currency* is consistently negative, although not always significant at conventional significance levels, revealing that in the absence of foreign exchange risk, loans carry a lower spread when made in the borrower's currency.[10]

[Insert Table 6 about here]

Tables 3-6 reveal that the effect of control variables is generally in line with expectations and with previous work by Ivashina (2009), Bae and Goyal (2009), Delis, Hasan, and Ongena (2017), and Cai, Saunders, and Steffen (2018). In particular, loan spreads decrease

[8] The "bad controls" problem might arise due to differences in the composition of loans to a particular firm.
[9] The replacement (or addition) of *General covenants* with *Financial covenants* or *Net covenants* leaves our results unchanged.
[10] Moreover, in Table A6 of the Appendix, we show that the term *Forex risk* × *Different currency* does not significantly explain the loan amount or maturity (i.e., we find no evidence for three-way causality with the loan amount or maturity), especially when controlling for bank × year fixed effects.

when loan amounts are lower and maturities increase. In addition, loans are more competitively priced when more members participate in the syndicate or when there are more performance provisions. Adding covenants, however, increases loan spreads. The behavior of the bank-level variables (in the models without bank × year fixed effects), defined in Table A1, is also intuitive: a higher return on bank assets is associated with a lower *AISD*, and higher nonperforming loans and risk-based capital ratios are associated with higher loan spreads. Last, bank size does not appear to matter for syndicated loan pricing.

4.2. Weighted least squares

So far, we assume that all loans enter the model with equal weights. However, the majority of loans denominated in foreign currency in the sample are to borrowers headquartered in developing countries. U.S. borrowers are approximately 46% of total observations (see Table A4 in the Internet Appendix). Normally, including country fixed effects in our baseline specification (or the country × year and country-pair × year in alternative specifications) provides a safeguard against cross-country variation. We nevertheless acknowledge that the empirical specification might leave the analysis open to the critique that countries receiving fewer loans might affect our results disproportionately. To this end, we re-estimate our preferred model specification using weighted least squares.

We report the results in Table 7, from specifications that include weights by lender's country (columns 1 and 2) and by country-pair (columns 3 and 4).[11] We find qualitatively identical results to the baseline results, and indeed stronger results for the importance of foreign exchange risk in loan pricing. The effect of *Forex risk* × *Different currency* on *AISD* is increased by 0.9-1.3 percentage points compared to the baseline results in Table 3, with spreads

[11] We calculate weights by lender country as the number of loans from a given country in a given year to the total number of loans in that year. Weights by country-pair are the number of loans between a given country-pair (the pair of the borrower's and the lender's countries) in a given year to the total number of loans in that year.

of 7.9% and 8.3% (columns 2 and 4). Concerning the coefficients on *Forex risk*, *Different currency*, and the set of loan- and bank-level variables, their sign and level of statistical significance are generally the same as those found in the OLS specifications. We thus conclude that, if anything, the baseline results are conservative.

[Insert Table 7 about here]

4.3. Results using AISU

Another extension of our analysis relates to the role of loan fees. Berg, Saunders, and Steffen (2016) show that commitment plus facility fees, defined as the all-in-spread-undrawn (*AISU*), are larger for high-volatility firms. Thus, we might expect that higher volatility in bilateral exchange rates raises the cost of foreign currency-denominated loans through higher fees. Unfortunately, data on fees is generally not available or very limited in the global DealScan data.

Nonetheless, in Table 8 we examine the baseline specification with *AISU* as the dependent variable. We do not detect a statistically significant effect of either *Forex risk* × *Different currency* or *Different currency* on *AISU*. Thus, it seems that the interaction of foreign exchange risk with the choice of currency denomination is only priced in spreads.

[Insert Table 8 about here]

4.4. Selection issues in foreign-currency lending

An endogeneity problem different from the ones discussed so far arises due to possible selection in the firms' decision to apply for foreign-currency lending. We do not expect this problem to be severe in our context, as presumably if firms had a better financing alternative they would use it. Nonetheless, to remedy a similar selection problem when using syndicated loans, Dass and Massa (2011) use Heckman's (1979) method to determine the probability of

using the syndicated loan market in the first stage of their model. Our approach here follows this method. In the first stage, we use a probit model for the entire sample of loan facilities to estimate the determinants of the firm's decision to use foreign-currency lending. Subsequently, in the second stage, we run the regression on the subsample of foreign-currency loan facilities.

Following Dass and Massa (2011), we assume that the firm's decision to borrow from foreign banks in domestic currency is a function of the main determinants of the decision to borrow in general. These determinants include a set of loan-level characteristics; a set of weights for the number, origin, and direction of loans made in a given year; and loan type, loan purpose, year, bank, firm, and country dummies. We also include a number of firm-level characteristics, namely return on assets (*Firm return on assets*), size (*Firm size*), the ratio of the market value of assets to the book value of assets (*Tobin's Q*), the ratio of tangible assets to total assets (*Tangibility*), and the ratio of total debt to total assets (*Leverage*). Finally, we include the number of loans a given bank makes in a given year (*Lender loans*), the number of loans for a given pair of lender and borrower countries in a given year (*Country-pair loans*), and the total number of loans granted in a given year (*Total loans*).

We report first- and second-stage results in Table A7 of the Internet Appendix (Panels A and B, respectively). Focusing on probit estimates (Panel A), we observe that the higher the return on assets and the size of the firm, the less likely foreign-currency lending is. Unsurprisingly, firms decide to use this market if they require large loans; however, these loans increasingly require collateral and performance-pricing provisions. The second-stage estimates show that the effect of *Forex risk* on *AISD* is even more potent compared to our baseline estimates: spreads now rise by 10.9% to 14% in response to a one-standard-deviation increase across all specifications.

4.5. Differences between U.S. and European lenders

In this section, we examine potential differences in the effect of *Forex risk* on loans granted by U.S. and European Union (EU) lenders. Average spreads for syndicated loans are approximately 30 basis points smaller in Europe (see Carey and Nini, 2007). However, this difference in pricing is not confirmed when considering *AISU* (Berg, Saunders, Steffen, and Streitz, 2017). In Table A8, we interact our DiD term with *USA* (columns 1 and 2) and *EU* (columns 3 and 4). These are two binary variables representing loans granted by U.S. lenders and EU lenders, respectively. Our double interaction term is statistically significant at conventional levels across all four specifications, and its magnitude lies within the range suggested by the baseline estimates. In contrast, triple interactions, albeit positive, are not statistically significant, suggesting no differential effect for U.S. versus EU lenders. Hence, when adding the coefficient on the triple interaction term to that on *Forex risk* × *Different currency*, the overall effect of exchange rate risk on loan spreads becomes even more pronounced.

4.6. Control for monetary policy

So far, our analysis uses bank × year and firm × year fixed effects to control for time-varying country determinants of the cost of credit. An important determinant of exchange rates within-year is the stance of monetary policy (e.g., Eichenbaum and Evans, 1995) and in this section we consider controlling for monetary policy in equation (1). We do so for two interrelated reasons. First, exchange rate volatility might capture changes in monetary policy, i.e. reflecting omitted variable bias. Second, the risk-taking channel of monetary policy predicts a positive relation between expansionary monetary policy and bank risk-taking.[12] If low interest rates

[12] Evidence on the risk-taking channel of monetary policy is provided by, among others, Jiménez, Ongena, Peydró, and Saurina (2014), Altunbas, Gambacorta, and Marquéz-Ibáñez (2014), and Delis, Hasan, and Mylonidis (2017).

entice banks to take more risk and there are systematic risk differences in international vs. domestic lending unrelated to exchange rate risk, the interaction term *Forex risk* × *Different currency* might simply capture such risk differences induced by monetary shocks.

We examine the role of monetary policy using a subsample consisting of the U.S., the Eurozone, Japan, and the UK. In these countries, we can better identify the stance of monetary policy, especially using measures encompassing non-standard monetary policy post crisis.[13] We use the shadow short rate (one- and three-month averages), which provides a more accurate description of monetary policy stance when interest rates are near the zero lower bound, compared to the actual short rate (Krippner, 2016; Von Borstel, Eickmeier, and Krippner, 2016). Following the risk-taking channel literature, we lag all measures of monetary policy by one period.

The results in Table A9 show that our DiD term does not lose in explanatory power: the magnitude is in fact stronger than in Table 3. The coefficients on each of the monetary policy measures are negative and statistically significant, supporting the positive relation between expansionary monetary policy and bank loan rates (i.e., a risk-taking channel). These results are in line with Delis, Hasan, and Mylonidis (2017) and Paligorova and Santos (2017), who use syndicated loans to identify the risk-taking channel in the United States. [14]

4.7. Additional sensitivity tests

In columns (1) and (2) of Table A10, we control for the introduction of the euro by attaching the same country number to each Eurozone country following the replacement of its national

[13] The adoption of a single monetary policy in the Eurozone occurred concurrently with the initiation of the third stage of the Economic and Monetary Union (EMU) on January 1, 1999. Therefore, we conduct this exercise for 1999-2017. However, the results hold even when extending the subsample to the pre-1999 period (available on request).

[14] We also experiment with specifications including monetary policy variables, where we cluster the standard errors by bank, firm, and year. This is because the more limited number of countries might yield the need for more micro-clustering of standard errors. The results are qualitatively identical.

currency. This change concerns our list of borrower countries, and thus the relevant fixed effects or the clustering of standard errors should capture any related impact on our estimates. Indeed, we document minimal changes in the results vis-à-vis the baseline.

Subsequently, we refine the loan facilities included in the sample according to their type and purpose. In columns (3) and (4) we exclude all loans other than term and revolver loans, which are the most conventional corporate loan deals. In columns (5) and (6) we exclude loans for leveraged buyouts (LBOs) or mergers and acquisitions (M&As) because these can lower the cost of credit by reducing the asymmetric information between the bank and the borrowing firm (Ivashina and Kovner, 2011).[15] In principle, the loan-type and loan-purpose fixed effects used in the previous analysis should capture such discrepancies in loan pricing. Again, the results from these exercises are similar to the baseline.

The remaining sensitivity tests represent alternative specifications for the ones reported earlier. First, we control for differences in the macroeconomic, financial, and institutional environment between the lenders' and borrowers' countries. These variables (defined in Table A1) should correlate strongly with the country-pair × year fixed effects in column (5) of Table 3. However, using too many fixed effects might cloud inferences so that we should at least verify that our results hold when using country-pair controls (differences in country-year variables between the lenders' and borrowers' countries) instead. We do not use all indicators at once, because they tend to have high pairwise correlations. For definitions of these variables, see Table A1.

In Table A11, we use macroeconomic and financial market country-pair controls. We initially consider GDP per capita and GDP growth and sequentially add different controls. The results (columns 1 to 4) confirm the sign and size of the coefficient on *Forex risk* × *Different*

[15] The cost of credit might be lower because the bank has private information about the borrowing firm from prior transactions, which might, for example, enhance its confidence in the firm's due-diligence process.

currency. When we consider a reduced sample due to data availability (columns 5 to 8), the interaction effect is even stronger. The estimates of these controls are intuitive. For example, the larger the difference in GDP per capita between the country of the lender and the country of the borrower, the larger the loan spread.

Next, we control for differences in institutional quality characteristics. These characteristics matter for the functioning of financial markets in general (e.g., Acemoglu and Johnson, 2005) and the pricing of loans in particular (Delis, Hasan, and Ongena, 2017). We consequently expect borrower countries that lag behind lender countries in institutional development to experience higher loan spreads for their firms.

Again, due to collinearity of our indicators of institutional democracy with the rest of institutional variables, we adopt *Imputed polity* as the benchmark institutional control and consider additional controls henceforth. Being a dichotomous indicator, *Imputed polity* is ideal for identification purposes, as a change from 0 to 1 sends a strong signal to banks and thus alters the information content used to price risk. The results in columns (1) to (8) of Table A12 confirm our expectations, because a one-point difference in *Imputed polity* between the country of the lender and the country of the borrower raises spreads by approximately 40 basis points. For all specifications, the coefficient on *Forex risk* × *Different currency* is statistically significant at conventional levels and takes values within the 33-38 basis points range.

Further, to make sure that our inferences are not sensitive to the type of clustering (also given the multilevel nature of our data), we also cluster standard errors by loan facility, bank, firm, and by bank and firm and year (see Table A13). We note that the results are also robust to the clustering of standard error by lender country or by lender country and borrower country (results available on request).

Last, acknowledging the arguments on the link between exchange rates and macroeconomic fundamentals arising in a present value model of exchange rates (e.g., Sarno

and Schmeling, 2014), we test whether various macro fundamentals drive our results. To this end, we estimate specifications without bank × year fixed effects and include combinations of specific macro variables that matter most for exchange rates, such as GDP growth, money growth, the inflation rate (level and change), and the real interest rate. Columns (1) to (4) of Table A14 show that although including these variables reduces the number of observations, the coefficient on *Forex risk* × *Different currency* is still significant at the 1% level and within the range suggested by the previous estimations.

5. Understanding our results

The results in Section 4 provide evidence of differential loan pricing between firms borrowing in their bank's currency and firms borrowing in their own domestic currency. This differential pricing should in theory be eliminated in the presence of uncovered interest rate parity, i.e., if agents are risk neutral and form rational expectations, implying that they are indifferent with respect to the currency of denomination, in which case interest rate differentials across countries are exactly offset by expected future changes in exchange rates. If agents are risk averse and thus uncovered interest rate parity does not hold, however, banks should be able to hedge foreign exchange risk. In this case, the extra margin imposed in foreign currency lending should, in a competitive market for lending, be equal to the cost of hedging. Our results show that currency denomination constitutes an important determinant of foreign-currency loan pricing. Having established that, in this section we perform a number of tests to better understand the reasons behind our findings and, more generally, the heterogeneity of loan pricing differentials across countries and currencies.[16]

[16] For expositional purposes, all tables in Section 5 present results only from specifications with both firm × year and bank × year fixed effects.

5.1. Currency hedging

To examine this possibility, we consider that the cost of hedging should be related to the cost of trading in a suitable currency derivative contract. Therefore, differentials in loan prices should be higher for currencies that have higher trading costs, i.e. lower liquidity. We consider the bid-ask spread on forward contracts as a proxy of the trading cost of such hedging of currency risk.[17] Specifically, we control in equation (1) for the bid-ask spread, using either the bilateral 3- or 6-month forward exchange rate, and also interact it with *Different currency*. In essence, we assume that the cost of hedging a currency is proportional to its liquidity, as measured by the bid-ask spread.

Results for the 3-month measure (column 1 of Table 9) show that the coefficient on the bid-ask spread is positive and statistically significant, implying a higher cost of credit for all loans when foreign exchange markets are less liquid. However, the estimate on the interaction term *Bid-ask spread* × *Different currency* is statistically insignificant, failing to reveal an heterogeneous effect when the loan facility is granted in the currency of the borrower's country. Using the triple interaction *Forex risk* × *Bid-ask spread* × *Different currency* (along with all the relevant main and double interactions) or measures based on the quoted spread (as in e.g., Goyenko and Ukhov, 2009) and the volatility of the bid-ask spread, again yields insignificant coefficient estimates. We conclude that differences in liquidity across currencies in the foreign exchange market, which usually translates into higher hedging costs, is associated with higher cost of credit but this is irrespective of the loan currency denomination or the effect of exchange rate risk on the cost of credit.

[Insert Table 9 about here]

[17] An alternative which we do not pursue would be to use relevant option prices but we are severely limited by their availability and low liquidity outside the large developed economies.

5.2. Level of economic development

Our next step is to identify the set of countries in which our results prevail. We do so by examining the heterogeneity of our main finding due to specific country characteristics that potentially play an important role in determining the effect of exchange rate risk on the cost of credit. In column (2) of Table 9, we introduce the triple interaction term *Forex risk* × *Different currency* × *Developed* (along with all the relevant main and double interactions). The variable *Developed* is binary, taking the value one if GDP per capita is above our sample's mean and the value zero below the mean.[18]

The coefficients on the triple interaction and the double interaction are statistically insignificant, but adding them in the regression produces a statistically significant estimate (marginal effect) that is approximately equal to our baseline estimate. Importantly, the coefficient on the triple interaction shows that most of the effect comes from developed countries. Thus, these results imply that our finding is not related to country risk (already captured by other macroeconomic indicators) but should be related to other structural characteristics of the borrowers' financial sector.

5.3. Credit constraints and market competition

Third, we consider the possibility that the firms' decision to resort to international financing is related to credit constraints in the domestic loan market and related deviations from competition in the international lending market. If this is the case, we expect that the effect of exchange rate risk is higher when borrowers face higher domestic credit constraints. To test this hypothesis we introduce the triple interaction term between measures of credit constraints and *Forex risk* × *Different currency* (again along with all the relevant main and double

[18] We use a binary variable for ease of interpretation of the estimates, but the results are qualitatively similar when using *GDP* per capita.

interactions). Following a vast literature, we measure credit constraints using the ratio of credit provided by banks over GDP (e.g., Beck, Demirgüç-Kunt, and Levine, 2010; Manova, 2012). Similar to the analysis of developed vs. developing countries, we generate a dummy equal to one if credit by banks over GDP is above our sample mean and the value zero if it is below that mean (we name this variable *Credit by banks*). The results in column (3) of Table 9 suggest that the effect of exchange rate risk is less strong when *Credit by banks* equals one (lower credit constraints).

Naturally, this finding points to low banking market competition in lending as a candidate to affect the relation between exchange rate risk and the cost of credit. To examine the role of competition in more depth, we generate a bank-year measure of market power using the approach of Delis, Kokas, and Ongena (2017). The merit of this approach (thoroughly discussed in the Internet Appendix) is that it provides a Lerner index for each bank-year via the estimation of a non-parametric (fully flexible) functional form of the cost function. Then, similar to the rest of the specifications in Table 9, we use a triple interaction term including the Lerner index. The results (column 4) show that a one standard deviation increase in the Lerner index (equal to 0.2) implies an 8.6 basis points further increase in the cost of credit. Thus, the effect of exchange rate risk on the cost of credit is indeed stronger when lenders possess higher market power. [19]

[19] In a similar fashion to the analysis of Table 9, we consider the role of other country and firm characteristics on the relation between exchange rate risk and the cost of credit. For example, we consider the borrower country's reliance on foreign-currency lending measured as the number of foreign loans in domestic currency to the total number of loans in that country. Further, we consider fixed vs. floating exchange rate regimes and countries with high vs. low interest rates (or high vs. low interest rate differentials between the lenders' and borrowers' countries). Even though these characteristics affect the cost of credit directly, they do not cause significant heterogeneity in the impact of exchange rate risk.

5.4. Relationship lending and loan structure

Our results thus far highlight an important competitive disadvantage of firms borrowing in a currency different than their lender's currency, which persists in a number of sensitivity tests and is stronger for firms in developed countries but with relatively low levels of credit provided by banks, as well as when lenders have higher market power. Naturally, these findings raise the question of whether the affected borrowers can do something to lower the extra cost of credit (that is besides being sound firms with profitable projects). In what follows, we focus on two potential strategies: the first considers forming ties between firms and banks via repeated lending (relationship lending); and the second considers the conditions of the particular loan contract and the loan syndicate's structure.

Previous lending between the lead bank and the firm implies that the bank gains important information about the specific borrowing firm (e.g., its ability to repay and its business model) as well as about the impact the exchange rate had on the value of the loan repayments in the lender's currency. This, *ceteris paribus*, lowers the respective informational asymmetry, and one may expect that the bank is more willing to share some of the exchange rate risk with a borrowing firm that is a "repeat borrower" rather than transfer all of the exchange rate risk. To test this hypothesis, we introduce a triple interaction between *Relationship lending* (i.e., a dummy equal to one if the lead bank and the firm have at least one other loan in the last two years, see e.g., Bharath, Dahiya, Saunders, and Srinivasan, 2009) and *Forex risk* × *Different currency*.

We report the results in the first column of Table 10. The coefficient on *Forex risk* × *Different currency* × *Relationship lending* shows that the borrower recovers approximately 60% of the higher cost due to exchange rate risk. In economic terms this is translated into annual savings of USD 0.38 million (=$259,000,000 ×14.6 basis points) or a total of USD 1.85

million over the loan's duration. Thus, the presence of a prior lending relationship results in the sharing of exchange rate risk between the lender and the borrower.

[Insert Table 10 about here]

The second strategy aiming to mitigate the effect of exchange rate risk on the cost of credit concerns the structure of the loan. Two ways to achieve this objective are the inclusion of tighter covenants to lower exchange rate risk and the addition of more syndicate members to spread the risk across more banks.

Dealscan does not include information on covenants specific to exchange rate risk because, most probably, such covenants do not exist (for a full review of covenant categories, see Demiroglu and James, 2010; and Hasan, Hoi, Wu, and Zhang, 2014). However, it seems plausible that lending in a different currency might imply higher covenant intensity. Following Hasan, Hoi, Wu, and Zhang (2014), we measure total covenant intensity using the total number of covenants (financial and general covenants) and introduce a triple interaction term between this measure, *Forex risk*, and *Different currency* (as we did for *Relationship lending* in equation 3). The results in column (3) of Table 10 show that the triple interaction is statistically insignificant. Repeating this analysis using specific loan covenants (e.g., the minimum current ratio covenant and the maximum debt to earnings covenant as in Demiroglu and James, 2010) does not affect the results.

We conduct a similar analysis with the *Number of lenders* in a triple interaction term and report the results in column (4) of Table 10. As in the previous column, we document a statistically insignificant triple interaction. We additionally experiment with other variables on the setup of the loan contract and the structure of the syndicate (e.g., using performance pricing provisions and collateral, different loan size and maturity, different loan shares by the lead bank vis-à-vis participant banks), but we fail to find results indicative of a reduced impact of exchange rate risk on loan pricing.

5.5. Summing up

Overall, the results in this section suggest that the international lending market is not a perfectly competitive market. It is rather characterized by heterogeneous loan spreads depending on the loan currency denomination and borrower credit constraints, even after controlling for loan contract terms and the operation of the loan supply and loan demand channels. Aggravated by price segmentation documented in the foreign exchange market (see Hau, Hoffmann, Langfield, and Timmer, 2017), imperfect competition in international lending markets results in divergent syndicated loan spreads when lenders are exposed to exchange rate risk.

6. Conclusions

The market for international lending in the borrower's currency is large and growing. These cross-border loans imply considerable exchange rate risk for banks lending in a currency that is not their own. This study is the first to measure how this bank-side risk affects lending terms, and particularly the cost of credit, in a broad cross-section of firms.

Using global loan-level data from the syndicated loan market, we show that lenders place a significant cost on borrowers in foreign-currency lending. Our baseline specification suggests that a one-standard-deviation increase in exchange rate risk increases loan spreads by approximately 20 basis points for loans made in a currency different from the lenders' compared to those made in the lenders' currency. These results are robust to several changes in the baseline specification and alternative estimation methods.

The data also show that firms borrowing from foreign banks in their domestic currency are, on average, less risky than those borrowing in the banks' domestic currency. Apart from implying that our baseline results are rather conservative, this reflects a cost of first-order importance for healthy firms facing credit constraints in their domestic banking markets. We calculate this additional cost of foreign-currency lending for the average loan size to be USD

0.52 million per year or USD 2.55 million when considering the average loan maturity. Thus, firms with no better financing alternatives have a significant competitive disadvantage compared to firms borrowing in their banks' currency due to foreign exchange risk.

With the aim to identify the factors affecting the relation between exchange rate risk and the cost of credit, we show the key role played by credit constraints and bank market power. Specifically, in countries with a high ratio of domestic credit provided by banks over GDP, the effect of exchange rate risk on the cost of credit is significantly weaker. In contrast, the same effect is significantly stronger as the market power of the bank lending in foreign currency increases. Is there a remedy against this excessive cost of credit and the associated competitive disadvantage of the affected firms? Among the remedies considered here, repeated lending with the same bank (formation of relationship lending) is the only one yielding significantly lower cost of credit and some degree of risk sharing between lending banks and borrowing firms.

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Table 1. Summary statistics

Variable definitions are in Table A1.

	Obs.	Mean	Std. dev.	Min.	Max.
AISD	107,751	261.15	174.10	-295.00	2,000.00
AISU	31,118	37.42	28.49	0.25	750.00
Forex risk	107,751	0.12	0.36	0.00	56.68
Forex risk 1M	107,751	0.12	0.26	0.00	6.42
Forex risk 6M	107,732	0.13	0.41	0.00	40.11
3-month forward rate 3M	87,027	0.11	0.24	0.00	9.49
3-month forward rate 6M	87,027	0.11	0.24	0.00	9.72
6-month forward rate 3M	86,882	0.11	0.24	0.00	6.75
6-month forward rate 6M	86,882	0.11	0.24	0.00	6.93
Bid-ask spread 3M	86,568	33.72	625.57	0.00	27805.80
Bid-ask spread 6M	86,568	33.83	627.57	0.00	27899.62
Loan amount	107,751	18.07	1.67	9.12	24.62
Maturity	107,751	58.49	35.73	0.00	1,140.00
Collateral	107,751	0.56	0.50	0.00	1.00
Number of lenders	107,751	7.21	8.02	1.00	290.00
Performance provisions	107,751	0.17	0.38	0.00	1.00
General covenants	107,751	0.69	1.34	0.00	8.00
Financial covenants	107,751	0.62	1.20	0.00	8.00
Net covenants	107,751	0.08	0.27	0.00	1.00
Relationship lending	107,751	0.18	0.38	0.00	1.00
Return on assets	107,751	0.01	0.02	-0.02	0.35
NPLs	107,751	0.02	0.02	0.00	0.30
RBC ratio	107,751	0.12	0.06	0.00	0.64
Bank size	107,751	12.02	1.53	5.21	19.55
Lerner index	92,360	0.27	0.20	-0.11	1.00
GDP per capita	103,058	-2,084.06	10,269.21	-102,432.70	100,538.20
GDP growth	103,055	0.08	1.55	-24.08	25.43
Trade openness	103,010	2.25	49.98	-385.89	425.19
Inflation	102,664	-0.41	11.67	-2,073.28	11.48
Inflation change	86,557	-0.33	3.12	-152.43	10.02
Trade balance	87,969	-283.12	11,579.23	-337,386.80	92,596.49
Money growth	83,180	-0.67	9.63	-1,101.98	125.31
Debt	58,482	0.92	19.28	-189.85	201.12
Interest rate	100,435	-0.11	2.54	-70.43	41.64
Stock market capitalization	98,914	-3.09	69.48	-1,193.27	271.30
VIX	104,111	18.98	6.98	11.26	44.14
Polity	102,443	0.14	0.97	-9.33	10.00
Imputed polity	102,529	0.14	0.97	-9.33	10.00
Business freedom	96,829	1.00	7.20	-61.90	61.70
Economic freedom	96,829	0.90	5.57	-36.40	39.10
Financial freedom	96,829	1.12	11.55	-60.00	60.00
Fiscal freedom	96,829	-0.20	7.98	-61.30	50.60
Monetary freedom	96,829	0.67	4.16	-21.90	86.80
Trade freedom	96,829	0.62	4.43	-57.40	78.40
Shadow rate	72,054	1.25	3.23	-7.38	6.55
Shadow rate 3M	72,054	1.25	3.22	-7.03	6.54
Developed (borrower)	103,363	0.75	0.43	0.00	1.00
Credit by banks	101,313	0.25	0.43	0.00	1.00

Table 2. Differences between loans in the treatment and control groups

The table reports summary statistics for key price and non-price loan terms and measures of exchange rate risk. All variables are defined in Table A1. Panel A includes observations where *Different currency* is equal to 0. Panel B includes observations where *Different currency* is equal to 1. *Different currency* equals 1 if the loan facility is granted in the currency of the borrower's country, which is different than the lender's country, 0 otherwise. Panel C reports results from the mean-comparison test for differences in the mean and standard deviation between observations in Panel A and Panel B. The*** mark denotes statistical significance at 1% level.

	Obs.	Mean	Std. dev.	Min.	Max.
Panel A: Domestic currency loans and foreign currency loans granted in the lender's currency					
AISD	91,727	257.08	169.33	-295.00	2,000.00
AISU	27,917	36.73	27.86	0.25	750.00
Forex risk	91,727	0.06	0.21	0.00	6.99
Forex risk 1M	91,727	0.06	0.21	0.00	6.42
Forex risk 6M	91,710	0.06	0.31	0.00	40.11
Loan amount	91,727	18.00	1.68	9.12	24.62
Maturity	91,727	56.80	34.50	0.00	1,140.00
Collateral	91,727	0.54	0.50	0.00	1.00
Number of lenders	91,727	7.17	8.00	1.00	290.00
Performance provisions	91,727	0.18	0.38	0.00	1.00
General covenants	91,727	0.75	1.38	0.00	8.00
Panel B: Foreign currency loans granted in the borrower's currency					
AISD	16,024	284.39	197.62	-150.00	1,750.00
AISU	3,201	43.49	32.88	0.35	425.00
Forex risk	16,024	0.50	0.66	0.00	56.68
Forex risk 1M	16,024	0.48	0.25	0.00	3.45
Forex risk 6M	16,022	0.51	0.66	0.00	40.08
Loan amount	16,024	18.48	1.51	10.88	24.20
Maturity	16,024	68.17	40.73	1.00	515.00
Collateral	16,024	0.64	0.48	0.00	1.00
Number of lenders	16,024	7.44	8.12	1.00	161.00
Performance provisions	16,024	0.11	0.32	0.00	1.00
General covenants	16,024	0.38	1.01	0.00	7.00
Panel C: Mean-comparison test for the mean and standard deviation					
AISD		-27.31***	1.66***		
AISU		-6.76***	0.60***		
Forex risk		-0.44***	0.01***		
Forex risk 1M		-0.43***	0.00***		
Forex risk 6M		-0.44***	0.01***		
Loan amount		-0.48***	0.01***		
Maturity		-11.37***	0.34***		
Collateral		-0.09***	0.00***		
Number of lenders		-0.27***	0.07***		
Performance provisions		0.07***	0.00***		
General covenants		0.37***	0.01***		

Table 3. Baseline results with different fixed effects

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. Each specification includes a different set of fixed effects, as given in the lower part of the table. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)
Forex risk	9.082	1.116	7.271	7.271	0.307
	[1.146]	[0.237]	[1.048]	[1.048]	[0.032]
Different currency	-12.467**	-13.848**	-10.300**	-10.300**	-11.473**
	[-2.405]	[-2.289]	[-2.194]	[-2.194]	[-2.296]
Forex risk × Different currency	30.094***	31.687***	30.418***	30.418***	29.846**
	[2.859]	[4.433]	[3.244]	[3.244]	[2.251]
Loan amount	-5.613***	-5.823***	-6.014***	-6.014***	-6.115***
	[-3.815]	[-3.902]	[-4.294]	[-4.294]	[-4.450]
Maturity	0.651***	0.670***	0.703***	0.703***	0.697***
	[6.227]	[6.339]	[6.548]	[6.548]	[6.413]
Collateral	-7.355	-7.436	-9.456	-9.456	-9.744
	[-1.085]	[-1.180]	[-1.356]	[-1.356]	[-1.285]
Number of lenders	-0.834***	-0.402***	-0.368**	-0.368**	-0.437**
	[-4.129]	[-3.315]	[-2.426]	[-2.426]	[-2.201]
Performance provisions	-25.146***	-23.815***	-23.327***	-23.327***	-23.286***
	[-19.030]	[-23.963]	[-19.576]	[-19.576]	[-21.706]
General covenants	3.670***	2.983***	2.563**	2.563**	2.109***
	[4.322]	[4.273]	[2.434]	[2.434]	[2.800]
Return on assets	-166.408***	-159.554***			
	[-12.942]	[-13.496]			
NPLs	140.742***	133.832***			
	[11.609]	[11.640]			
RBC ratio	17.263***	15.528***			
	[5.157]	[4.243]			
Bank size	-0.383*	-0.262			
	[-1.972]	[-1.245]			
Observations	110,574	109,667	107,751	107,751	107,100
Adj. R-squared	0.757	0.770	0.766	0.762	0.754
Loan type	Y	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y	Y
Country effects	Y	Y	Y	N	Y
Bank effects	N	Y	N	N	N
Firm × year effects	Y	Y	Y	Y	Y
Bank × year effects	N	N	Y	Y	Y
Country × year effects	N	N	N	Y	N
Country-pair × year effects	N	N	N	N	Y
Clustering	Country	Country	Country	Country	Country

Table 4. Alternative exchange rate risk measures

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. Specifications (1) and (2) include the 1-month exchange rate risk measure and specifications (3) and (4) the 6-month equivalent. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Forex risk 1M	0.287	3.004		
	[0.061]	[0.529]		
Forex risk 6M			3.288	5.350
			[1.120]	[1.204]
Different currency	-12.588**	-5.444	-14.974**	-12.422*
	[-2.242]	[-1.270]	[-2.170]	[-1.768]
Forex risk 1M × Different currency	30.169***	22.890***		
	[3.304]	[2.690]		
Forex risk 6M × Different currency			32.178***	34.659***
			[4.356]	[2.649]
Loan amount	-5.819***	-6.013***	-5.823***	-6.016***
	[-3.897]	[-4.295]	[-3.892]	[-4.280]
Maturity	0.670***	0.702***	0.670***	0.702***
	[6.341]	[6.546]	[6.334]	[6.541]
Collateral	-7.438	-9.453	-7.459	-9.459
	[-1.177]	[-1.356]	[-1.183]	[-1.358]
Number of lenders	-0.403***	-0.373**	-0.404***	-0.372**
	[-3.316]	[-2.440]	[-3.305]	[-2.440]
Performance provisions	-23.826***	-23.327***	-23.780***	-23.258***
	[-23.551]	[-19.335]	[-23.331]	[-19.251]
General covenants	2.997***	2.569**	2.985***	2.561**
	[4.343]	[2.452]	[4.290]	[2.428]
Return on assets	-159.460***		-159.461***	
	[-13.477]		[-13.485]	
NPLs	133.614***		133.819***	
	[11.642]		[11.624]	
RBC ratio	15.456***		15.503***	
	[4.227]		[4.233]	
Bank size	-0.264		-0.261	
	[-1.257]		[-1.239]	
Observations	109,675	107,757	109,639	107,729
Adj. R-squared	0.770	0.766	0.770	0.766
Loan type	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y
Country effects	Y	Y	Y	Y
Bank effects	Y	N	Y	N
Firm × year effects	Y	Y	Y	Y
Bank × year effects	N	Y	N	Y
Clustering	Country	Country	Country	Country

Table 5. Forward-looking exchange rate risk

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used in each specification. Specifications (1) and (2) include the 3- and 6-month volatility respectively in the 3-month bilateral forward exchange rate between the lender's country and the borrower's country, and specifications (3) and (4) include the 3- and 6-month volatility respectively in the 6-month bilateral forward exchange rate between the lender's country and the borrower's country. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
3-month forward risk 3M	11.464*			
	[1.676]			
6-month forward risk 3M		10.067		
		[1.567]		
3-month forward risk 6M			9.682	
			[1.305]	
6-month forward rate 6M				8.779
				[1.204]
Different currency	-6.338	-6.323	-11.248	-11.141
	[-1.084]	[-1.083]	[-1.377]	[-1.363]
3-month forward rate 3M × Different currency	28.100**			
	[2.224]			
3-month forward rate 6M × Different currency		28.710**		
		[2.252]		
6-month forward rate 3M × Different currency			37.820**	
			[2.284]	
6-month forward rate 6M × Different currency				38.070**
				[2.289]
Loan amount	-6.669***	-6.670***	-6.642***	-6.643***
	[-3.944]	[-3.945]	[-3.849]	[-3.850]
Maturity	0.855***	0.855***	0.855***	0.855***
	[5.206]	[5.206]	[5.188]	[5.188]
Collateral	-11.684	-11.682	-11.592	-11.594
	[-1.426]	[-1.426]	[-1.419]	[-1.419]
Number of lenders	-0.539**	-0.539**	-0.568**	-0.568**
	[-2.211]	[-2.211]	[-2.217]	[-2.217]
Performance provisions	-23.408***	-23.409***	-23.482***	-23.483***
	[-19.590]	[-19.593]	[-19.810]	[-19.816]
General covenants	3.193***	3.195***	3.260***	3.261***
	[2.802]	[2.802]	[2.789]	[2.789]
Observations	87,166	87,166	87,015	87,015
Adj. R-squared	0.760	0.760	0.760	0.760
Loan type	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y
Country effects	Y	Y	Y	Y
Firm × year effects	Y	Y	Y	Y
Bank × year effects	Y	Y	Y	Y
Clustering	Country	Country	Country	Country

Table 6. Different loan controls

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. Different specifications include different loan controls to show that the estimates on the term *Forex risk* × *Different currency* are not overly sensitive to the loan controls used. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Forex risk	7.196	15.867**	1.126	7.351	7.271	15.834**	7.087	15.811**
	[1.262]	[2.012]	[0.231]	[1.050]	[1.329]	[2.056]	[1.267]	[2.035]
Different currency	-14.716**	-8.257	-13.615**	-9.666**	-14.596**	-8.172	-15.162**	-9.127*
	[-2.266]	[-1.617]	[-2.335]	[-2.105]	[-2.204]	[-1.553]	[-2.267]	[-1.744]
Forex risk × Different currency	30.825***	24.746***	31.081***	29.445***	31.205***	24.688***	31.600***	26.296***
	[4.323]	[3.314]	[4.295]	[3.143]	[4.423]	[3.364]	[4.366]	[3.516]
Loan amount			-6.340***	-6.450***				
			[-4.218]	[-4.591]				
Maturity			0.667***	0.700***				
			[6.295]	[6.489]				
Collateral					-7.087	-9.609		
					[-1.179]	[-1.410]		
Number of lenders					-0.605***	-0.555***		
					[-5.707]	[-4.182]		
Performance provisions							-24.576***	-24.055***
							[-20.472]	[-18.995]
General covenants							2.228***	1.523***
							[6.305]	[3.268]
Return on assets	-171.523***		-161.315***		-171.341***		-169.481***	
	[-13.035]		[-13.682]		[-12.934]		[-12.915]	
NPLs	140.786***		134.173***		140.790***		140.211***	
	[12.756]		[11.854]		[12.708]		[12.756]	
RBC ratio	20.872***		15.711***		20.743***		20.699***	
	[6.125]		[4.290]		[6.152]		[5.997]	
Bank size	-0.281		-0.273		-0.268		-0.274	
	[-1.326]		[-1.310]		[-1.267]		[-1.278]	
Observations	115,078	113,126	109,667	107,751	115,078	113,126	115,078	113,126
Adj. R-squared	0.758	0.753	0.770	0.766	0.758	0.754	0.758	0.754
Loan type	Y	Y	Y	Y	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y	Y	Y	Y	Y
Country effects	Y	Y	Y	Y	Y	Y	Y	Y
Bank effects	Y	N	Y	N	Y	N	Y	N
Firm × year effects	Y	Y	Y	Y	Y	Y	Y	Y
Bank × year effects	N	Y	N	Y	N	Y	N	Y
Clustering	Country	Country	Country	Country	Country	Country	Country	Country

Table 7. Weighted least squares

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is weighted least squares with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used in each specification. In specifications (1) and (2), weighting is by the number of loans from a given country in a given year to the total number of loans in that year. In specifications (3) and (4), weighting is by the number of loans between a given country-pair (the pair of the borrower and the lender countries) in a given year to the total number of loans in that year. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Forex risk	-0.712	5.430	-0.595	5.884
	[-0.147]	[0.787]	[-0.123]	[0.854]
Different currency	-11.948	-10.494***	-12.506	-11.138***
	[-1.558]	[-2.673]	[-1.637]	[-2.805]
Forex risk × Different currency	26.342***	34.060***	27.265***	35.690***
	[3.493]	[3.504]	[3.631]	[3.555]
Loan amount	-6.121***	-6.263***	-6.176***	-6.322***
	[-4.480]	[-4.725]	[-4.572]	[-4.849]
Maturity	0.731***	0.774***	0.725***	0.768***
	[6.217]	[6.672]	[6.125]	[6.577]
Collateral	-7.177	-8.996	-6.909	-8.723
	[-1.272]	[-1.385]	[-1.267]	[-1.389]
Number of lenders	-0.411***	-0.353**	-0.408***	-0.347**
	[-3.757]	[-2.550]	[-3.865]	[-2.588]
Performance provisions	-23.508***	-22.837***	-23.384***	-22.688***
	[-38.002]	[-38.186]	[-38.446]	[-38.887]
General covenants	2.821***	2.440**	2.782***	2.363**
	[3.920]	[2.381]	[4.003]	[2.352]
Return on assets	-163.678***		-163.457***	
	[-14.777]		[-15.182]	
NPLs	132.525***		132.274***	
	[12.576]		[12.882]	
RBC ratio	15.091***		15.007***	
	[3.972]		[3.949]	
Bank size	-0.180		-0.177	
	[-1.036]		[-1.034]	
Observations	109,667	107,751	109,667	107,751
Adj. R-squared	0.770	0.766	0.770	0.766
Loan type	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y
Country effects	Y	Y	Y	Y
Bank effects	Y	N	Y	N
Firm × year effects	Y	Y	Y	Y
Bank × year effects	N	Y	N	Y
Clustering	Country	Country	Country	Country

Table 8. Results for AISU

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISU*. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)
	AISU	AISU
Forex risk	0.168	0.949
	[0.047]	[0.235]
Different currency	-0.987	0.099
	[-0.567]	[0.053]
Forex risk × Different currency	-1.944	-3.759
	[-0.566]	[-1.039]
Loan amount	-0.840***	-0.672***
	[-12.628]	[-7.982]
Maturity	0.034***	0.039**
	[3.156]	[2.447]
Collateral	2.829***	1.863***
	[10.352]	[6.445]
Number of lenders	0.015	0.040*
	[1.088]	[1.781]
Performance provisions	-2.845***	-3.056***
	[-7.513]	[-8.622]
General covenants	0.565***	0.715***
	[3.072]	[4.252]
Return on assets	-5.578	
	[-1.519]	
NPLs	2.813	
	[0.990]	
RBC ratio	0.556	
	[0.532]	
Bank size	0.053*	
	[1.707]	
Observations	17,593	17,103
Adj. R-squared	0.807	0.821
Loan type	Y	Y
Loan purpose	Y	Y
Country effects	Y	Y
Bank effects	Y	N
Firm × year effects	Y	Y
Bank × year effects	N	Y
Clustering	Country	Country

Table 9. Results heterogeneity due to country characteristics and bank market power

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects and control variables used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Forex risk	16.164**	-5.855	-2.474	4.052
	[2.122]	[-0.978]	[-0.366]	[0.692]
Different currency	-8.522	-5.575	-0.998	-13.390***
	[-1.366]	[-0.690]	[-0.208]	[-3.077]
Forex risk × Different currency	25.527**	3.515	45.800***	31.770***
	[2.078]	[0.298]	[4.150]	[3.343]
Bid-ask spread	0.036***			
	[4.188]			
Bid-ask spread × Different currency	-0.000			
	[-0.335]			
Forex risk × Different currency × Developed country		26.413		
		[1.575]		
Forex risk × Different currency × Credit by banks			-30.644*	
			[-1.862]	
Forex risk × Different currency × Lerner index				43.056***
				[2.874]
Observations	86,167	107,751	107,751	92,360
Adj. R-squared	0.762	0.766	0.766	0.770
Loan type	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y
Country effects	Y	Y	Y	Y
Firm × year effects	Y	Y	Y	Y
Bank × year effects	Y	Y	Y	Y
Loan controls	Y	Y	Y	Y
Main terms and double interactions	Y	Y	Y	Y
Clustering	Country	Country	Country	Country

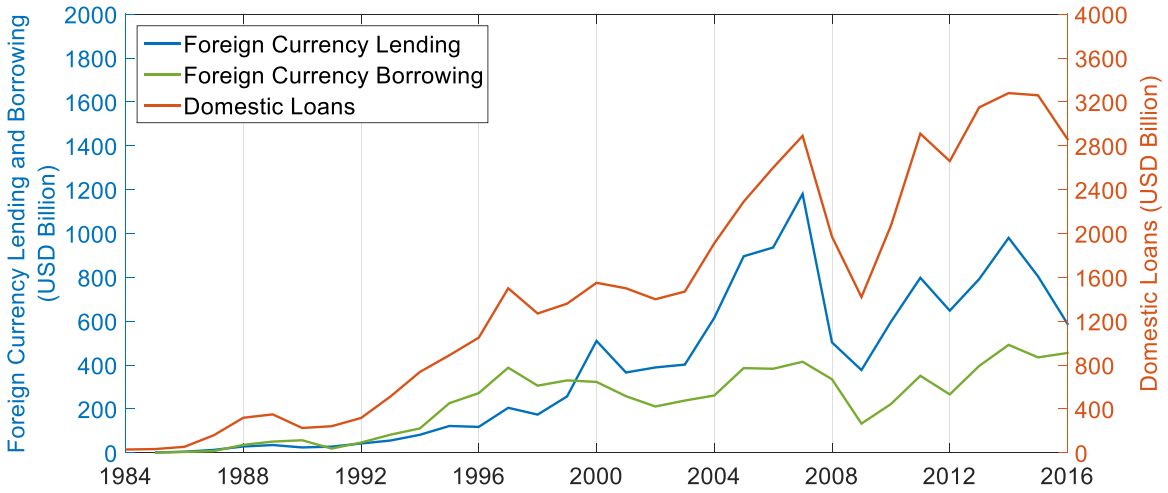
Table 10. Results heterogeneity due to lending relationships and loan characteristics

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects and control variables used in each specification. In specification (1), we interact *Forex risk* × *Different currency* with *Relationship lending*, i.e., a dummy variable equal to 1 for a prior lending relationship between lender and borrower during the previous 2-year period, otherwise zero. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)
Forex risk	7.366	10.500*	5.619
	[0.974]	[1.685]	[0.907]
Different currency	-13.069**	-5.280	-7.822
	[-2.220]	[-1.360]	[-1.579]
Forex risk × Different currency	36.560***	28.513***	24.591***
	[3.393]	[2.772]	[2.676]
Forex risk × Different currency × Relationship lending	-22.063**		
	[-2.095]		
Forex risk × Different currency × General covenants		-2.475	
		[-0.207]	
Forex risk × Different currency × Number of lenders			-1.373
			[-0.753]
Relationship	-0.399	-1.699	-1.705
	[-0.407]	[-0.781]	[-0.764]
Forex risk × Relationship	-0.561		
	[-0.130]		
Different currency × Relationship	9.464		
	[0.801]		
FC relationship			
Forex risk × FC Relationship			
Different currency × FC Relationship			
Forex risk × General covenants		9.982*	
		[1.736]	
Different currency × General covenants		-4.380	
		[-0.700]	
Forex risk × Number of lenders			0.048
			[0.154]
Different currency × Number of lenders			-0.738
			[-1.001]
Observations	107,751	107,751	107,751
Adj. R-squared	0.766	0.766	0.766
Loan type	Y	Y	Y
Loan purpose	Y	Y	Y
Country effects	Y	Y	Y
Firm × year effects	Y	Y	Y
Bank × year effects	Y	Y	Y
Loan controls	Y	Y	Y
Clustering	Country	Country	Country

Figure 1. Aggregate syndicated loan volume

The figure reports the annual aggregate volumes for foreign currency-denominated loans in the currency of the borrower (foreign currency lending), foreign currency-denominated loans in the currency of the lender (foreign currency borrowing) and domestic loans. Values for foreign currency lending and foreign currency borrowing are depicted on the left Y-axis and values for domestic loans are depicted on the right Y-axis. All values are in billion USD.



Internet Appendix
Foreign currency lending

Abstract

The first section includes information on the construction of the sample and additional summary statistics. The second section reports (i) standardized coefficients of our baseline results, (ii) estimates from the Heckman regressions, and (iii) several additional sensitivity tests. The appendix concludes with the description of the methodology for the calculation of the Lerner index.

Table A1. Variable definitions and sources

Variable	Description	Source
A. Dependent variables in main specifications		
AISD	All-in-spread-drawn, defined as the sum of the spread over LIBOR plus any facility fee.	DealScan
AISU	All-in-spread-undrawn, defined as the sum of the facility fee and the commitment fee.	DealScan
B. Main explanatory variables: Exchange rate risk		
Forex risk	The standard deviation of the daily (percentage) change in the bilateral exchange rate between the country of the lender and the country of the borrower. The standard deviation is computed for the 3 months preceding the loan facility's origination date.	Datastream
Forex risk 1M	The standard deviation of the daily (percentage) change in the bilateral exchange rate between the country of the lender and the country of the borrower. The standard deviation is computed for the 1 month preceding the loan facility's origination date.	Datastream
Forex risk 6M	The standard deviation of the daily (percentage) change in the bilateral exchange rate between the country of the lender and the country of the borrower. The standard deviation is computed for the 6 months preceding the loan facility's origination date.	Datastream
3-month forward rate 3M	The standard deviation of the daily (percentage) change in the bilateral 3-month forward exchange rate between the country of the lender and the country of the borrower. The standard deviation is computed for the 3 months preceding the loan facility's origination date. The 6M rate is the equivalent measure computed for the 6 months preceding the loan facility's origination date.	Datastream
6-month forward rate 3M	The standard deviation of the daily (percentage) change in the bilateral 6-month forward exchange rate between the country of the lender and the country of the borrower. The standard deviation is computed for the 3 months preceding the loan facility's origination date. The 6M rate is the equivalent measure computed for the 6 months preceding the loan facility's origination date.	Datastream
Bid-ask spread 3M	The bid-ask spread for the bilateral 6-month forward exchange rate between the country of the lender and the country of the borrower. The bid-ask spread is computed as $ask - bid$, where ask is the offered rate and bid is the bid rate in the 6-month forward contract. The 6M rate is the equivalent measure computed for the 6 months preceding the loan facility's origination date.	Datastream
C. Explanatory variables: Loan characteristics		
Different currency	A dummy variable equal to one if the loan facility is granted in the currency of the borrower's country, which is different than the lender's country (zero otherwise).	DealScan
Loan amount	Log of the loan facility amount in USD.	DealScan
Maturity	Loan duration in months.	DealScan
Collateral	Dummy equal to one if the loan is secured with collateral, zero otherwise.	DealScan
Number of lenders	The number of banks involved in the syndicated loan.	DealScan
Performance provisions	Dummy equal to one if the loan has performance pricing provisions, zero otherwise.	DealScan
General covenants	The total number of covenants in the loan contract.	DealScan
Financial covenants	The number of financial covenants in the loan contract.	DealScan
Net covenants	The number of net covenants in the loan contract.	DealScan
Loan type	A series of dummy variables indicating loan type (e.g., term loans, revolvers, etc.).	DealScan
Loan purpose	A series of dummy variables indicating loan purpose (e.g., corporate purpose, debt repay, etc.).	DealScan
Relationship lending	Dummy equal to one for a prior loan facility between the lender and the borrower in the 2-year period before the loan facility's origination year, zero otherwise.	DealScan
D. Explanatory variables: Lender characteristics		
Return on assets	The return on total bank assets.	Compustat
NPLs	The ratio of non-performing loans to total loans.	Compustat
RBC ratio	The ratio of capital to risk-weighted assets.	Compustat

Bank size	The log of total bank assets.	Compustat
Lerner index	The Lerner index of the bank, which equals (p-mc/p), where p is the average lending rate given by each bank in each year and mc is the marginal cost of producing bank output (also at the bank-year). We proxy the lending rate from the ratio of interest income to total commercial loans and we estimate the marginal cost from the non-parametric estimation of a cost function. We provide more details at the end of this Appendix.	Compustat and own estimations

E. Explanatory variables: Differences between the lender and borrower countries

GDP per capita	The difference in annual GDP per capita in constant prices between the lender's and the borrower's countries.	WDI
GDP growth	The difference in annual GDP growth rate (%) between the lender's and the borrower's countries.	WDI
Trade openness	The difference in annual trade openness between the lender's and the borrower's countries. Trade openness is the sum of exports and imports of goods and services over GDP.	WDI
Trade balance	Annual trade balance between the lender's and the borrower's countries (in millions USD). Trade balance is calculated as (exports of lender's country/exports of borrower's country)-(imports of lender's country/imports of borrower's country).	OECD
Inflation	The difference in annual inflation (%), as measured by the consumer prices index, between the lender's and the borrower's countries.	WDI
Inflation change	The difference in changes in annual inflation (%), as measured by the consumer price index, between the lender's and the borrower's countries.	WDI
Interest rate	The difference in the annual real interest rate (%) between the lender's and the borrower's countries.	WDI
Money growth	The difference in annual broad (M3) money growth (%) in constant prices between the lender's and the borrower's countries.	OECD
Debt	The difference in annual government gross debt (as % of GDP) between the lender's and the borrower's countries.	WDI
Stock market capitalization	The difference in the ratio of annual stock market capitalization to GDP (%) between the lender's and the borrower's countries.	WDI
VIX	The Chicago Board of Exchange (CBOE) Volatility Index (VIX Index). The VIX index measures the implied volatility of options on the S&P 500.	Bloomberg; CBOE
Polity	Difference in polity score between the lender's and the borrower's countries. The polity score is the average of freedom house and the combined polity score. The freedom house is the average of the political rights index and the civil liberties index. The combined polity score is computed by subtracting the autocracy score (an eleven point autocracy scale) from the democracy score (an eleven point democracy score). The resulting unified polity scale for Polity ranges from 10 (most democratic) to 0 (least democratic).	Polity IV Project (2016) The Quality of Government Institute
Imputed polity	Difference in imputed polity score between the country of the lender and the country of the borrower. The imputed version of Polity has imputed values for countries where data on Polity is missing by regressing Polity on freedom house measure, i.e., the average of the political rights index and the civil liberties index (Hadenius and Teorell, 2007; Teorell et al., 2017). The imputed polity scale for Imputed polity ranges from 10 (most democratic) to 0 (least democratic).	Polity IV Project (2016); The Quality of Government Institute
Business freedom	The annual difference in the business freedom index between the country of the lender and the country of the borrower. The business freedom score is composed of 10 freedom indices converted to a scale ranging from 100 (maximum degree of business freedom) to 0 (minimum degree of business freedom).	WDI; The Quality of Government Institute
Economic freedom	The annual difference in the economic freedom index between the country of the lender and the country of the borrower. The economic freedom index is composed of ten equally weighted components converted to a scale ranging from 100 (maximum degree of economic freedom) to 0 (minimum degree of economic freedom).	WDI; The Quality of Government Institute

Financial freedom	The annual difference in the financial freedom index between the country of the lender and the country of the borrower. The financial freedom index measures the relative openness of each country's banking and financial system on a scale ranging from 100 (maximum degree of financial freedom) to 0 (minimum degree of financial freedom).	WDI; The Quality of Government Institute
Fiscal freedom	The annual difference in the fiscal freedom index between the country of the lender and the country of the borrower. The fiscal freedom index is composed of 3 equally weighted components converted to a scale ranging from 100 (maximum degree of fiscal freedom) to 0 (minimum degree of fiscal freedom).	WDI; The Quality of Government Institute
Monetary freedom	The annual difference in the monetary freedom index between the country of the lender and the country of the borrower. The monetary freedom index is composed of two equally weighted components converted to a scale ranging from 100 (maximum degree of monetary freedom) to 0 (minimum degree of monetary freedom).	WDI; The Quality of Government Institute
Trade freedom	The annual difference in the trade freedom index between the country of the lender and the country of the borrower. The trade freedom score is composed of two equally weighted components converted to a scale ranging from 100 (maximum degree of trade freedom) to 0 (minimum degree of trade freedom).	WDI; The Quality of Government Institute
F. *Explanatory variables: Lender's monetary policy stance*		
Shadow rate	The monthly shadow short rate in the Eurozone, Japan, the UK, and the U.S. (Krippner, 2016). The 3M rate is the equivalent quarterly rate.	Krippner (2016)
G. Explanatory variables: Borrower's credit constraints		
Developed	Dummy equal to one if *GDP per capita* in the country of the borrower is above the mean in our sample, zero otherwise.	WDI
Credit by banks	Dummy equal to one if domestic credit to private sector provided by banks (as % of GDP) in the country of the borrower is above the mean in our sample, zero otherwise.	WDI

Table A2. Summary statistics by country-year

The table reports the number of observations, mean, standard deviation, minimum, and maximum values obtained from collapsing the loan-level sample by country and year. All variables are defined in Table A1.

	Obs.	Mean	Std. Dev.	Min.	Max.
AISD	1,160	170.37	104.08	10.33	642.11
AISU	851	40.52	34.05	3.75	312.50
Forex risk	1,160	0.36	0.36	0.01	5.28
Forex risk 1M	1,160	0.35	0.35	0.01	6.22
Forex risk 6M	1,160	0.38	0.43	0.01	8.66
3-month forward rate 3M	960	0.26	1.06	0.00	32.35
3-month forward rate 6M	960	0.27	1.07	0.00	32.59
6-month forward rate 3M	960	0.27	0.96	0.00	24.44
6-month forward rate 6M	960	0.28	0.97	0.00	24.78
Bid-ask spread 3M	967	217.94	1545.27	0.00	26700.23
Bid-ask spread 6M	967	218.82	1550.79	0.00	26779.29
Loan amount	1,160	18.87	0.74	15.93	21.48
Maturity	1,160	62.50	26.56	9.05	264.00
Collateral	1,160	0.28	0.23	0.00	1.00
Number of lenders	1,160	12.97	6.34	1.00	49.23
Performance provisions	1,160	0.07	0.12	0.00	0.83
General covenants	1,160	0.13	0.30	0.00	2.45
Financial covenants	1,160	0.11	0.26	0.00	1.95
Net covenants	1,160	0.02	0.06	0.00	0.56
Relationship lending	1,160	0.12	0.12	0.00	1.00
Return on assets	1,160	0.01	0.00	0.00	0.03
NPLs	1,160	0.02	0.00	0.01	0.05
RBC ratio	1,160	0.12	0.01	0.03	0.16
Bank size	1,160	12.03	0.17	10.33	12.85
GDP per capita	1,130	-9,501.04	18,411.70	-52,435.67	64,190.49
GDP growth	1,129	0.92	2.79	-12.67	22.21
Trade openness	1,119	14.71	55.01	-89.95	340.39
Inflation	1,095	-4.21	52.60	-1,716.01	64.74
Inflation change	916	-2.99	9.63	-153.01	4.69
Trade balance	1,056	-2,005.29	9,422.07	-76,357.68	24,923.11
Money growth	825	-6.51	32.13	-827.34	135.23
Debt	826	13.64	24.13	-100.39	75.74
Interest rate	970	-1.01	6.72	-67.63	39.77
Stock market capitalization	908	8.31	75.12	-738.63	278.68
VIX	1,138	19.92	6.00	11.56	43.97
Polity	1,067	0.94	1.85	-2.28	8.18
Imputed polity	1,050	0.96	1.86	-2.28	8.18
Business freedom	1,015	5.68	10.62	-23.84	51.50
Economic freedom	1,015	3.64	7.18	-15.18	27.82
Financial freedom	1,015	4.87	13.42	-29.36	50.32
Fiscal freedom	1,015	-6.78	11.06	-42.79	23.55
Monetary freedom	1,015	4.44	10.00	-9.05	82.05
Trade freedom	1,015	4.12	9.15	-7.45	72.71

Table A3. Number of loans and mean and standard deviation of Forex risk by country

The table reports the number of observations (loan facilities), and the mean and standard deviation of *Forex risk* by country.

Country	Obs.	Mean of Forex risk	Std. Dev. of Forex risk
Argentina	158	0.38	0.83
Australia	2,060	0.21	0.33
Austria	72	0.17	0.25
Bahamas	14	0.56	0.26
Bahrain	17	0.36	0.30
Belarus	10	0.42	0.06
Belgium	327	0.26	0.29
Bermuda	88	0.52	0.13
Brazil	176	0.77	0.43
Bulgaria	22	0.09	0.13
Cambodia	2	0.11	0.00
Canada	1,850	0.31	0.28
Cayman Islands	20	0.31	0.22
Chile	103	0.48	0.31
China	293	0.37	0.78
Colombia	36	0.67	0.31
Croatia	16	0.27	0.17
Cyprus	18	0.31	0.22
Czech Republic	72	0.38	0.23
Denmark	172	0.21	0.23
Egypt	43	0.61	0.20
Estonia	6	0.39	0.31
Finland	159	0.36	0.29
France	3,241	0.16	0.24
Germany	2,352	0.20	0.28
Ghana	2	0.24	0.00
Greece	154	0.26	0.31
Hong Kong	1,081	0.42	0.28
Hungary	88	0.50	0.25
Iceland	52	0.69	0.83
India	503	0.31	0.28
Indonesia	381	0.37	0.41
Ireland	346	0.27	0.28
Israel	32	0.36	0.23
Italy	1,111	0.15	0.25
Jamaica	8	0.10	0.03
Japan	1,007	0.06	0.20
Kazakhstan	69	0.37	0.26
Kenya	7	0.60	0.22
Korea (South)	1,335	0.27	0.44
Kuwait	18	0.13	0.18
Laos	2	3.60	0.00
Latvia	10	0.09	0.06
Lithuania	8	0.13	0.24

Luxembourg	329	0.36	0.29
Macau	25	0.39	0.26
Malaysia	131	0.40	0.32
Mali	3	0.47	0.00
Malta	9	0.17	0.25
Mauritius	8	0.58	0.15
Mexico	410	0.60	0.41
Mongolia	5	0.88	0.00
Netherlands	1,484	0.35	2.09
New Zealand	107	0.45	0.23
Nigeria	10	0.31	0.18
Norway	250	0.47	0.33
Oman	16	0.40	0.22
Pakistan	10	0.25	0.20
Panama	6	0.51	0.18
Peru	23	0.47	0.23
Philippines	118	0.46	0.47
Poland	118	0.52	0.25
Portugal	147	0.32	0.37
Qatar	32	0.31	0.30
Romania	34	0.45	0.33
Russia	434	0.44	0.32
Saudi Arabia	74	0.22	0.28
Singapore	595	0.35	0.23
Slovak Republic	20	0.58	0.46
Slovenia	24	0.19	0.21
South Africa	147	0.67	0.38
Spain	1,866	0.15	0.25
Sri Lanka	7	0.46	0.31
Sweden	483	0.44	0.21
Switzerland	514	0.52	0.34
Taiwan	4,356	0.02	0.11
Thailand	131	0.39	0.41
Trinidad and Tobago	2	0.67	0.00
Tunisia	4	0.27	0.04
Turkey	636	0.82	0.64
USA	71,754	0.05	0.17
Ukraine	58	0.52	0.29
United Arab Emirates	162	0.33	0.33
United Kingdom	5,620	0.33	0.27
Venezuela	24	0.19	0.18
Vietnam	22	0.51	0.20
Zambia	2	0.40	0.00

Table A4. Number of loans and mean and standard deviation of Forex risk by country of foreign-currency lending

The table reports the number of observations (loan facilities), and the mean and standard deviation of *Forex risk* by country. We consider only countries to which there is foreign currency lending (banks lend in foreign currency to firms in these countries).

Country	Obs.	Mean of Forex risk	Std. Dev. of Forex risk
Australia	400	0.62	0.22
Austria	21	0.53	0.10
Belgium	132	0.52	0.19
Brazil	2	0.62	0.00
Canada	276	0.50	0.21
China	12	0.31	0.18
Colombia	1	0.37	
Czech Republic	26	0.47	0.19
Denmark	39	0.30	0.19
Egypt	1	0.53	
Finland	109	0.42	0.28
France	946	0.45	0.17
Germany	841	0.46	0.24
Greece	26	0.49	0.16
Hong Kong	713	0.44	0.28
India	24	0.52	0.07
Indonesia	21	0.47	0.55
Ireland	55	0.50	0.17
Italy	302	0.49	0.21
Japan	36	0.67	0.26
Korea (South)	12	0.54	0.08
Luxembourg	109	0.43	0.18
Malaysia	10	0.57	0.26
Mexico	22	0.56	0.24
Netherlands	524	0.69	3.47
New Zealand	67	0.52	0.18
Norway	75	0.54	0.29
Philippines	12	0.40	0.17
Poland	53	0.55	0.24
Portugal	49	0.68	0.28
Russia	11	0.51	0.09
Saudi Arabia	6	0.12	0.17
Singapore	190	0.42	0.22
Slovenia	5	0.36	0.21
South Africa	10	0.87	0.11
Spain	530	0.46	0.21
Sweden	186	0.46	0.18
Switzerland	99	0.62	0.30
Taiwan	147	0.48	0.24
Thailand	15	0.47	0.22
USA	7,385	0.50	0.21
United Arab Emirates	10	0.27	0.47
United Kingdom	2,514	0.48	0.17

Table A5. Standardized coefficients of baseline results

The table reports standardized coefficients and t-statistics (in brackets) for the baseline results reported in Table 3. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. Each specification includes a different set of fixed effects, as given in the lower part of the table. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)
Forex risk	0.062	0.008	0.049	0.049	0.002
	[1.146]	[0.237]	[1.048]	[1.048]	[0.032]
Different currency	-0.085**	-0.094**	-0.070**	-0.070**	-0.078**
	[-2.405]	[-2.289]	[-2.194]	[-2.194]	[-2.296]
Forex risk × Different currency	0.205***	0.216***	0.207***	0.207***	0.203**
	[2.859]	[4.433]	[3.244]	[3.244]	[2.251]
Loan amount	-0.061***	-0.063***	-0.065***	-0.065***	-0.067***
	[-3.815]	[-3.902]	[-4.294]	[-4.294]	[-4.450]
Maturity	0.182***	0.187***	0.196***	0.196***	0.195***
	[6.227]	[6.339]	[6.548]	[6.548]	[6.413]
Collateral	-0.024	-0.024	-0.030	-0.030	-0.031
	[-1.085]	[-1.180]	[-1.356]	[-1.356]	[-1.285]
Number of lenders	-0.075***	-0.036***	-0.033**	-0.033**	-0.039**
	[-4.129]	[-3.315]	[-2.426]	[-2.426]	[-2.201]
Performance provisions	-0.065***	-0.061***	-0.060***	-0.060***	-0.060***
	[-19.030]	[-23.963]	[-19.576]	[-19.576]	[-21.706]
General covenants	0.029***	0.023***	0.020**	0.020**	0.017***
	[4.322]	[4.273]	[2.434]	[2.434]	[2.800]
Return on assets	-0.025***	-0.024***			
	[-12.942]	[-13.496]			
NPLs	0.022***	0.021***			
	[11.609]	[11.640]			
RBC ratio	0.007***	0.006***			
	[5.157]	[4.243]			
Bank size	-0.004*	-0.003			
	[-1.972]	[-1.245]			
Observations	110,574	109,667	107,751	107,751	107,100
Adj. R-squared	0.757	0.770	0.766	0.762	0.754
Loan type	Y	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y	Y
Country effects	Y	Y	Y	N	Y
Bank effects	N	Y	N	N	N
Firm × year effects	Y	Y	Y	Y	Y
Bank × year effects	N	N	Y	Y	Y
Country × year effects	N	N	N	Y	N
Country-pair × year effects	N	N	N	N	Y
Clustering	Country	Country	Country	Country	Country

Table A6. Effect of foreign exchange risk on other loan characteristics

The table reports coefficients and t-statistics (in brackets). The dependent variable is denoted in the second line of the table and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1) Loan amount	(2) Loan amount	(3) Maturity	(4) Maturity
Forex risk	-0.109*	-0.158*	-0.092	-2.097**
	[-1.789]	[-1.929]	[-0.099]	[-2.159]
Different currency	-0.045	-0.029	1.093	1.55
	[-0.749]	[-0.338]	[1.394]	[1.626]
Forex risk × Different currency	0.188*	0.185	-2.341	-1.349
	[1.899]	[1.450]	[-1.423]	[-0.822]
AISD	-0.001***	-0.001***	0.028***	0.029***
	[-3.431]	[-3.640]	[3.512]	[3.647]
Loan amount			2.055***	1.993***
			[4.008]	[3.653]
Maturity	0.005***	0.005***		
	[12.499]	[12.347]		
Collateral	0.007	0.013	1.948***	1.585***
	[0.319]	[0.720]	[5.300]	[4.165]
Number of lenders	0.026***	0.026***	0.045	0.043
	[8.391]	[6.176]	[1.374]	[1.159]
Performance provisions	0.259***	0.260***	1.042	1.218
	[15.660]	[15.637]	[1.523]	[1.654]
General covenants	-0.017***	-0.014***	-0.407**	-0.521***
	[-3.537]	[-3.103]	[-2.570]	[-2.651]
Return on assets	0.020		0.652	
	[0.256]		[0.317]	
NPLs	-0.060		3.597*	
	[-0.631]		[1.903]	
RBC ratio	-0.092**		2.191**	
	[-2.064]		[2.184]	
Bank size	0.004**		-0.014	
	[2.248]		[-0.324]	
Observations	109,667	107,751	109,667	107,751
Adj. R-squared	0.746	0.736	0.773	0.769
Loan type	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y
Country effects	Y	Y	Y	Y
Bank effects	Y	N	Y	N
Firm × year effects	Y	Y	Y	Y
Bank × year effects	N	Y	N	Y
Clustering	Country	Country	Country	Country

Table A7. Heckman sample-selection model

The table reports coefficients and t-statistics (in brackets) from Heckman's (1979) sample-selection model. The dependent variable is in the second line of each panel and all variables are defined in Table A1. Estimation method is maximum likelihood. The lower part of each panel denotes the dummy variables used in each specification. In the first stage (panel A), we use a probit model on the entire sample of loan facilities to estimate the determinants of the firm's decision to use foreign-currency lending. In the second stage (panel B), we run the regression on the subsample of foreign-currency loan facilities (i.e., when *Different currency* is equal to 1). In Panel B, standard errors are clustered by country. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: The foreign currency loan-taking decision by the firm

	(1)	(2)	(3)
	Different currency	Different currency	Different currency
Firm return on assets	-0.073***	-0.104***	-0.052
	[-4.514]	[-2.906]	[-1.390]
Firm size	-0.136**	-0.132***	-0.129***
	[-2.250]	[-2.739]	[-2.577]
Tobins' Q	-0.106**		
	[-2.167]		
Tangibility		0.000	
		[0.240]	
Leverage			0.029
			[1.234]
Loan amount	0.120**	0.141**	0.150**
	[2.338]	[2.333]	[2.568]
Maturity	-0.003	-0.001	-0.000
	[-1.582]	[-0.845]	[-0.280]
Collateral	0.450***	0.321***	0.342***
	[7.373]	[6.035]	[5.912]
Number of lenders	0.007	-0.008	-0.010
	[1.210]	[-1.212]	[-1.525]
Performance provisions	0.324***	0.253***	0.243***
	[4.050]	[3.217]	[3.141]
General covenants	0.045	-0.041*	-0.032
	[1.199]	[-1.927]	[-1.611]
Return on assets		0.224	0.157
		[0.312]	[0.224]
NPLs		-0.154	0.261
		[-0.286]	[0.533]
RBC ratio		0.177	0.123
		[1.028]	[0.703]
Bank size		-0.014	-0.011
		[-1.283]	[-1.130]
Country-pair loans	-0.002***	-0.003***	-0.003***
	[-3.890]	[-3.207]	[-3.046]
Bank loans	-0.000	-0.000	-0.000
	[-0.077]	[-0.056]	[-0.397]
Total loans			0.000
			[1.578]
Constant	-22.148	-49.536**	-19.720
	[-1.352]	[-2.550]	[-0.815]
Observations	62,111	57,161	61,059
Loan type dummies	N	N	Y
Loan purpose dummies	N	N	Y
Year dummies	Y	Y	Y
Firm dummies	Y	Y	Y
Bank dummies	N	Y	Y
Country dummies	Y	Y	Y

Panel B: The effect of Forex risk on loan spreads

	(1) AISD	(2) AISD	(3) AISD
Forex risk	60.413***	47.079***	57.522***
	[8.727]	[2.973]	[3.014]
Loan amount	-14.924***	-13.976***	-13.101***
	[-12.862]	[-5.777]	[-4.968]
Maturity	-0.113	-0.091	-0.131
	[-0.922]	[-0.904]	[-1.325]
Collateral	109.717***	119.488***	121.635***
	[23.307]	[25.427]	[27.533]
Number of lenders	-2.021***	-1.701***	-1.697***
	[-5.598]	[-3.990]	[-4.281]
Performance provisions	-53.015***	-49.481***	-49.406***
	[-7.547]	[-5.176]	[-5.374]
General covenants	-0.818	-1.117	-1.335
	[-0.402]	[-0.580]	[-0.772]
Return on assets	-330.761***	-350.386***	-378.359***
	[-6.877]	[-6.145]	[-6.474]
NPLs	388.700***	370.566***	339.226***
	[7.400]	[6.810]	[6.353]
RBC ratio	67.157***	65.861***	90.927***
	[4.500]	[5.151]	[8.440]
Bank size	-0.239	0.103	0.070
	[-0.556]	[0.103]	[0.129]
Constant	-12,173.363***	-11,444.107***	-11,666.043***
	[-25.219]	[-12.518]	[-16.840]
Observations	4,095	4,780	5,103
Loan type dummies	Y	Y	Y
Loan purpose dummies	Y	Y	Y
Year dummies	Y	Y	Y
Firm dummies	Y	Y	Y
Bank dummies	Y	Y	Y
Country dummies	Y	Y	Y
Clustering	Country	Country	Country

Table A8. Focusing on European and U.S lenders

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used. In specifications (1) and (2), we interact *Forex risk* × *Different currency* with *USA*, i.e., a dummy variable equal to 1 for all U.S. lenders, otherwise zero. In specifications (3) and (4), we interact *Forex risk* × *Different currency* with *EU*, i.e., a dummy variable equal to 1 for all European lenders, otherwise zero. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Forex risk	-2.644	5.061	4.405	11.081
	[-0.347]	[0.483]	[1.047]	[1.621]
Different currency	-15.013*	-11.496	-9.637**	-3.974
	[-1.758]	[-1.572]	[-2.065]	[-0.906]
Forex risk × Different currency	32.317***	28.923**	25.161***	17.321**
	[3.420]	[2.119]	[3.325]	[2.136]
Forex risk × Different currency × USA	6.492	6.001		
	[0.289]	[0.235]		
Forex risk × Different currency × EU			31.478	68.795
			[0.998]	[1.456]
Loan amount	-5.825***	-6.015***	-5.820***	-6.008***
	[-3.907]	[-4.306]	[-3.900]	[-4.282]
Maturity	0.670***	0.703***	0.670***	0.702***
	[6.340]	[6.550]	[6.346]	[6.551]
Collateral	-7.417	-9.453	-7.417	-9.469
	[-1.179]	[-1.357]	[-1.179]	[-1.359]
Number of lenders	-0.402***	-0.367**	-0.405***	-0.369**
	[-3.406]	[-2.454]	[-3.345]	[-2.432]
Performance provisions	-23.816***	-23.337***	-23.813***	-23.336***
	[-24.214]	[-19.949]	[-23.765]	[-19.469]
General covenants	2.984***	2.560**	2.970***	2.558**
	[4.286]	[2.435]	[4.251]	[2.450]
Return on assets	-159.539***		-159.524***	
	[-13.492]		[-13.503]	
NPLs	133.759***		133.734***	
	[11.644]		[11.675]	
RBC ratio	15.547***		15.545***	
	[4.236]		[4.243]	
Bank size	-0.264		-0.263	
	[-1.248]		[-1.240]	
Forex risk × USA	9.345	5.247		
	[0.860]	[0.382]		
Different currency × USA	-2.102	1.649		
	[-0.155]	[0.118]		
EU			0.649	
			[0.010]	
Forex risk × EU			-15.800	-16.815
			[-1.178]	[-1.197]
Different currency × EU			-17.115	-32.625
			[-0.978]	[-1.249]
Observations	109,667	107,751	109,667	107,751
Adj. R-squared	0.770	0.766	0.770	0.766
Loan type	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y
Country effects	Y	Y	Y	Y
Bank effects	Y	N	Y	N
Firm × year effects	Y	Y	Y	Y
Bank × year effects	N	Y	N	Y
Clustering	Country	Country	Country	Country

Table A9. Control for monetary conditions

The table reports coefficients and t-statistics (in brackets). The distinguishing feature is the control for the monetary conditions within-year. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Forex risk	-5.091	2.516	-5.148	2.300
	[-0.708]	[0.311]	[-0.719]	[0.284]
Different currency	-26.033**	-22.016	-26.043**	-22.129
	[-2.511]	[-1.519]	[-2.520]	[-1.520]
Forex risk × Different currency	57.657***	60.241**	57.618***	60.341**
	[2.934]	[2.097]	[2.944]	[2.089]
Loan amount	-7.285***	-7.420***	-7.287***	-7.418***
	[-3.292]	[-3.573]	[-3.293]	[-3.575]
Maturity	1.016***	1.030***	1.017***	1.030***
	[6.959]	[6.853]	[6.956]	[6.849]
Collateral	-5.966	-9.855	-5.965	-9.849
	[-1.146]	[-1.571]	[-1.145]	[-1.566]
Number of lenders	-0.517***	-0.329*	-0.517***	-0.329*
	[-3.333]	[-1.774]	[-3.328]	[-1.763]
Performance provisions	-21.557***	-21.160***	-21.574***	-21.226***
	[-24.601]	[-26.830]	[-24.729]	[-26.928]
General covenants	3.756***	3.789**	3.765***	3.796**
	[3.628]	[2.411]	[3.636]	[2.415]
Return on assets	-180.325***		-180.270***	
	[-16.848]		[-16.845]	
NPLs	166.967***		167.034***	
	[14.574]		[14.557]	
RBC ratio	14.118**		14.115**	
	[2.297]		[2.295]	
Bank size	-0.405*		-0.405*	
	[-1.706]		[-1.701]	
Shadow rate	-2.489**	-7.485***		
	[-2.633]	[-6.103]		
Shadow rate 3M			-2.283*	-8.273***
			[-1.871]	[-10.496]
Observations	72,229	71,463	72,229	71,463
Adj. R-squared	0.750	0.747	0.750	0.747
Loan type	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y
Country effects	Y	Y	Y	Y
Bank effects	Y	N	Y	N
Firm × year effects	Y	Y	Y	Y
Bank × year effects	N	Y	N	Y
Clustering	Country	Country	Country	Country

Table A10. Introduction of the euro and exclusion of specific loan types

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used in each specification. In specifications (1) and (2), we use a common country-id for all EMU Member States following each Member's accession into the EMU. In specifications (3) and (4), we strictly include term and revolver loans and exclude other specialized loan facilities. In specifications (5) and (6), we exclude loans for LBOs and M&As. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Forex risk	1.116	7.271	2.884	7.411	1.756	5.408
	[0.246]	[1.115]	[0.527]	[1.038]	[0.366]	[0.690]
Different currency	-13.848**	-10.300**	-14.013**	-10.272**	-11.220*	-9.147*
	[-2.535]	[-2.583]	[-2.237]	[-2.074]	[-1.905]	[-1.663]
Forex risk × Different currency	31.687***	30.418***	31.191***	31.281***	26.923***	30.173**
	[4.380]	[3.206]	[4.095]	[3.411]	[3.596]	[2.356]
Loan amount	-5.823***	-6.014***	-5.792***	-5.990***	-5.523***	-5.695***
	[-3.521]	[-3.862]	[-3.736]	[-4.149]	[-3.753]	[-4.187]
Maturity	0.670***	0.703***	0.736***	0.770***	0.666***	0.698***
	[6.384]	[6.782]	[7.171]	[7.608]	[6.089]	[6.242]
Collateral	-7.436	-9.456	-7.947	-9.875	-9.068	-10.740
	[-1.141]	[-1.289]	[-1.172]	[-1.339]	[-1.263]	[-1.352]
Number of lenders	-0.402***	-0.368**	-0.422***	-0.394**	-0.386***	-0.356**
	[-3.120]	[-2.251]	[-3.293]	[-2.440]	[-3.383]	[-2.317]
Performance provisions	-23.815***	-23.327***	-23.865***	-23.455***	-23.986***	-24.171***
	[-21.476]	[-17.639]	[-24.232]	[-20.842]	[-20.924]	[-17.852]
General covenants	2.983***	2.563**	3.053***	2.650**	3.199***	3.050**
	[4.337]	[2.326]	[4.177]	[2.330]	[4.687]	[2.468]
Return on assets	-159.554***		-160.992***		-167.548***	
	[-13.054]		[-14.155]		[-13.384]	
NPLs	133.832***		137.795***		133.717***	
	[12.731]		[11.981]		[10.240]	
RBC ratio	15.528***		16.679***		16.855***	
	[4.429]		[3.895]		[4.353]	
Bank size	-0.262		-0.273		-0.214	
	[-1.298]		[-1.247]		[-0.924]	
Observations	109,667	107,751	105,652	103,806	100,844	98,981
Adj. R-squared	0.770	0.766	0.767	0.763	0.770	0.766
Loan type	Y	Y	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y	Y	Y
Country effects	Y	Y	Y	Y	Y	Y
Bank effects	Y	N	Y	N	Y	N
Firm × year effects	Y	Y	Y	Y	Y	Y
Bank × year effects	N	Y	N	Y	N	Y
Clustering	Country	Country	Country	Country	Country	Country

Table A11. Control for differences in the macroeconomic environments of borrowers and lenders

The table reports coefficients and t-statistics (in brackets). The distinguishing feature is the inclusion of several control variables for the differences in the macroeconomic environments of borrowers and lenders. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Forex risk	2.117	2.288	2.564	2.209	0.184	-7.056	0.542	-3.267
	[0.449]	[0.480]	[0.536]	[0.453]	[0.038]	[-0.917]	[0.106]	[-0.624]
Different currency	-15.098**	-15.146**	-15.370***	-16.448***	-21.982**	-27.567**	-15.022**	-30.133**
	[-2.581]	[-2.602]	[-2.711]	[-2.655]	[-2.535]	[-2.300]	[-2.045]	[-2.444]
Forex risk × Different currency	33.651***	33.687***	34.127***	36.583***	45.648***	47.885**	34.139***	66.014***
	[4.652]	[4.678]	[4.617]	[4.784]	[4.498]	[2.460]	[4.246]	[2.834]
Loan amount	-5.890***	-5.893***	-5.880***	-5.895***	-5.878***	-6.302***	-5.909***	-7.452***
	[-4.056]	[-4.049]	[-4.009]	[-4.027]	[-3.840]	[-4.954]	[-4.677]	[-3.059]
Maturity	0.701***	0.701***	0.701***	0.703***	0.621***	0.936***	0.752***	0.799***
	[6.424]	[6.420]	[6.417]	[6.402]	[4.637]	[7.551]	[6.115]	[5.806]
Collateral	-5.413	-5.416	-5.471	-5.234	-7.060	-4.794	-5.660	-10.620
	[-0.981]	[-0.984]	[-0.979]	[-0.964]	[-1.128]	[-0.997]	[-1.128]	[-1.264]
Number of lenders	-0.409***	-0.410***	-0.414***	-0.427***	-0.390**	-0.639***	-0.503***	-0.762***
	[-3.336]	[-3.361]	[-3.382]	[-3.262]	[-2.495]	[-3.430]	[-3.539]	[-2.917]
Performance provisions	-23.421***	-23.418***	-23.360***	-23.377***	-21.515***	-21.219***	-22.998***	-21.887***
	[-22.355]	[-22.409]	[-21.962]	[-22.194]	[-19.396]	[-24.943]	[-23.713]	[-14.442]
General covenants	2.847***	2.846***	2.848***	2.851***	2.411***	2.973***	2.759***	2.802
	[4.215]	[4.185]	[4.096]	[4.065]	[2.659]	[3.320]	[3.771]	[1.613]
Return on assets	-164.411***	-164.462***	-164.064***	-163.736***	-175.329***	-155.711***	-156.540***	-204.879***
	[-14.804]	[-14.831]	[-14.809]	[-14.824]	[-13.795]	[-13.658]	[-15.617]	[-13.855]
NPLs	138.618***	138.535***	138.802***	138.565***	123.388***	139.117***	143.606***	154.648***
	[13.358]	[13.312]	[13.318]	[14.372]	[8.714]	[11.812]	[14.606]	[11.667]
RBC ratio	15.476***	15.458***	15.474***	15.331***	20.645***	8.226**	14.759***	22.440***
	[4.021]	[4.006]	[3.987]	[3.984]	[4.212]	[2.419]	[3.922]	[3.509]
Bank size	-0.292	-0.291	-0.285	-0.292	-0.363	-0.275	-0.259	-0.607*
	[-1.272]	[-1.269]	[-1.251]	[-1.262]	[-1.177]	[-1.432]	[-1.224]	[-1.854]
GDP per capita	0.003***	0.003***	0.003***	0.003***	0.003***	-0.002	0.002**	0.003
	[3.374]	[3.641]	[3.639]	[3.197]	[2.736]	[-0.672]	[2.153]	[1.429]
GDP growth		-1.422	-0.795	-2.120	-1.946	-2.212	-2.616*	-0.544
		[-0.805]	[-0.497]	[-1.321]	[-0.954]	[-1.482]	[-1.746]	[-0.231]
Trade openness			-0.446					
			[-1.488]					
Inflation				1.292				
				[0.848]				

Inflation change					-0.570			
					[-0.232]			
Trade balance						0.000		
						[1.268]		
Stock market capitalization							0.113**	
							[2.060]	
VIX							1.222***	
							[3.909]	
Debt								-0.214
								[-0.589]
Observations	104,886	104,883	104,834	104,434	84,714	83,652	96,572	55,995
Adj. R-squared	0.764	0.764	0.764	0.764	0.753	0.766	0.766	0.737
Loan type	Y	Y	Y	Y	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y	Y	Y	Y	Y
Country effects	Y	Y	Y	Y	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y	Y	Y	Y	Y
Firm × year effects	Y	Y	Y	Y	Y	Y	Y	Y
Clustering	Country	Country	Country	Country	Country	Country	Country	Country

Table A12. Control for differences in institutions between the borrower and lender countries

The table reports coefficients and t-statistics (in brackets). The distinguishing feature is the inclusion of several control variables for the differences in the institutional environments of borrowers and lenders. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Forex risk	2.203	2.320	3.244	2.980	3.020	3.236	3.111	3.158
	[0.473]	[0.493]	[0.587]	[0.546]	[0.549]	[0.587]	[0.560]	[0.571]
Different currency	-15.871**	-15.913**	-17.037**	-16.923**	-17.110**	-17.285**	-17.102**	-17.125**
	[-2.487]	[-2.506]	[-2.513]	[-2.519]	[-2.571]	[-2.581]	[-2.534]	[-2.548]
Forex risk × Different currency	33.557***	33.496***	37.327***	37.046***	37.231***	37.643***	37.393***	37.498***
	[4.472]	[4.503]	[4.096]	[4.069]	[4.112]	[4.010]	[4.075]	[4.155]
Loan amount	-5.799***	-5.802***	-6.102***	-6.106***	-6.104***	-6.102***	-6.103***	-6.101***
	[-4.109]	[-4.089]	[-3.951]	[-3.951]	[-3.949]	[-3.956]	[-3.949]	[-3.943]
Maturity	0.685***	0.687***	0.802***	0.802***	0.802***	0.802***	0.802***	0.802***
	[6.140]	[6.114]	[5.879]	[5.879]	[5.877]	[5.881]	[5.879]	[5.883]
Collateral	-5.272	-5.244	-5.523	-5.509	-5.489	-5.470	-5.485	-5.452
	[-0.904]	[-0.904]	[-0.890]	[-0.883]	[-0.882]	[-0.878]	[-0.882]	[-0.882]
Number of lenders	-0.395***	-0.396***	-0.461***	-0.462***	-0.460***	-0.462***	-0.462***	-0.461***
	[-3.011]	[-3.038]	[-3.179]	[-3.186]	[-3.182]	[-3.171]	[-3.171]	[-3.180]
Performance provisions	-23.865***	-23.885***	-23.344***	-23.328***	-23.320***	-23.318***	-23.323***	-23.325***
	[-22.697]	[-22.859]	[-24.854]	[-25.209]	[-25.174]	[-25.091]	[-25.114]	[-25.188]
General covenants	2.893***	2.890***	3.133***	3.158***	3.150***	3.119***	3.144***	3.134***
	[4.214]	[4.167]	[3.715]	[3.703]	[3.755]	[3.636]	[3.741]	[3.747]
Return on assets	-171.359***	-170.953***	-174.675***	-174.578***	-174.618***	-174.719***	-174.694***	-174.684***
	[-15.662]	[-16.037]	[-15.301]	[-15.294]	[-15.277]	[-15.347]	[-15.281]	[-15.297]
NPLs	133.225***	133.309***	142.797***	142.803***	142.934***	142.875***	142.817***	142.834***
	[11.972]	[11.966]	[13.561]	[13.526]	[13.562]	[13.529]	[13.584]	[13.545]
RBC ratio	15.767***	15.592***	14.924***	14.965***	14.998***	14.918***	14.938***	14.979***
	[3.827]	[3.837]	[3.306]	[3.319]	[3.336]	[3.303]	[3.303]	[3.317]
Bank size	-0.248	-0.252	-0.346	-0.346	-0.345	-0.345	-0.345	-0.345
	[-0.993]	[-1.000]	[-1.383]	[-1.382]	[-1.386]	[-1.376]	[-1.381]	[-1.377]
GDP per capita	0.003**	0.003**	0.002	0.003	0.002*	0.002	0.002	0.002
	[2.210]	[2.419]	[1.301]	[1.508]	[1.771]	[1.230]	[1.503]	[1.341]
GDP growth		-1.831	-3.402	-3.135	-3.083	-3.202	-3.188	-3.180
		[-0.916]	[-1.155]	[-1.108]	[-1.094]	[-1.124]	[-1.124]	[-1.145]
Imputed polity		23.272*	41.398**	39.411**	41.490**	41.646**	39.042**	38.540**
		[1.789]	[2.266]	[2.272]	[2.443]	[2.241]	[2.314]	[2.010]
Polity	25.372*							
	[1.685]							

Business freedom			-0.373					
			[-0.795]					
Economic freedom				0.878				
				[1.046]				
Financial freedom					0.242			
					[1.281]			
Fiscal freedom						-0.243		
						[-0.677]		
Monetary freedom							0.254	
							[0.345]	
Trade freedom								-0.947
								[-0.914]
Observations	99,908	99,995	89,776	89,776	89,776	89,776	89,776	89,776
Adj. R-squared	0.760	0.760	0.760	0.760	0.760	0.760	0.760	0.760
Loan type	Y	Y	Y	Y	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y	Y	Y	Y	Y
Country effects	Y	Y	Y	Y	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y	Y	Y	Y	Y
Firm × year effects	Y	Y	Y	Y	Y	Y	Y	Y
Clustering	Country	Country	Country	Country	Country	Country	Country	Country

Table A13. Different clustering of standard errors

The table reports coefficients and t-statistics (in brackets). Dependent variable is *AISD* and all variables are defined in Table 1. Estimation method is OLS. The lower part of the table denotes the type of fixed effects used in each specification and the last line of the table denotes the type of standard error clustering (B&F&Y refers to Bank *and* Firm *and* Year). The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Forex risk	1.116	7.271	1.116	7.271	1.116	7.271	1.116	7.271
	[0.234]	[1.208]	[0.212]	[1.028]	[0.231]	[1.222]	[0.223]	[0.920]
Different currency	-13.848**	-10.300	-13.848**	-10.300	-13.848**	-10.300	-13.848*	-10.300*
	[-2.051]	[-1.303]	[-2.205]	[-1.441]	[-2.018]	[-1.324]	[-1.925]	[-1.865]
Forex risk × Different currency	31.687***	30.418**	31.687***	30.418**	31.687***	30.418**	31.687**	30.418**
	[2.913]	[2.336]	[3.021]	[2.142]	[2.875]	[2.379]	[2.650]	[2.497]
Loan amount	-5.823***	-6.014***	-5.823***	-6.014***	-5.823***	-6.014***	-5.823***	-6.014***
	[-14.604]	[-14.936]	[-6.285]	[-6.360]	[-13.425]	[-13.650]	[-7.351]	[-7.222]
Maturity	0.670***	0.703***	0.670***	0.703***	0.670***	0.703***	0.670***	0.703***
	[19.222]	[19.555]	[6.508]	[6.392]	[16.278]	[16.400]	[5.990]	[6.097]
Collateral	-7.436***	-9.456***	-7.436**	-9.456**	-7.436***	-9.456***	-7.436**	-9.456**
	[-2.933]	[-3.487]	[-1.994]	[-2.457]	[-2.735]	[-3.276]	[-2.103]	[-2.399]
Number of lenders	-0.402***	-0.368***	-0.402**	-0.368**	-0.402***	-0.368***	-0.402**	-0.368**
	[-3.614]	[-3.107]	[-2.425]	[-2.287]	[-3.119]	[-2.958]	[-2.415]	[-2.360]
Performance provisions	-23.815***	-23.327***	-23.815***	-23.327***	-23.815***	-23.327***	-23.815***	-23.327***
	[-12.557]	[-11.971]	[-8.443]	[-8.222]	[-12.145]	[-11.530]	[-8.887]	[-8.881]
General covenants	2.983***	2.563**	2.983*	2.563	2.983**	2.563**	2.983*	2.563
	[2.615]	[2.051]	[1.767]	[1.374]	[2.529]	[2.009]	[2.037]	[1.520]
Return on assets	-159.554***		-159.554***		-159.554***		-159.554***	
	[-9.987]		[-7.826]		[-10.192]		[-8.072]	
NPLs	133.832***		133.832***		133.832***		133.832***	
	[8.786]		[6.936]		[9.212]		[6.499]	
RBC ratio	15.528***		15.528**		15.528***		15.528**	
	[2.784]		[2.462]		[2.992]		[2.310]	
Bank size	-0.262		-0.262		-0.262		-0.262	
	[-1.185]		[-0.999]		[-1.229]		[-1.055]	
Observations	109,667	107,751	109,667	107,751	109,667	107,751	109,667	107,751
Adj. R-squared	0.773	0.779	0.771	0.767	0.770	0.766	0.770	0.766
Loan type	Y	Y	Y	Y	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y	Y	Y	Y	Y
Country effects	Y	Y	Y	Y	Y	Y	Y	Y
Bank effects	Y	N	Y	N	Y	N	Y	N
Firm × year effects	Y	Y	Y	Y	Y	Y	Y	Y
Bank × year effects	N	Y	N	Y	N	Y	N	Y
Clustering	Loan	Loan	Bank	Bank	Firm	Firm	B&F&Y	B&F&Y

Table A14. Control for macroeconomic fundamentals in lender countries

The table reports coefficients and t-statistics (in brackets). The distinguishing feature is the inclusion of macroeconomic control variables for the lenders' country, instead of bank × year fixed effects. Dependent variable is *AISD* and all variables are defined in Table A1. Estimation method is OLS with standard errors clustered by country. The lower part of the table denotes the type of fixed effects used in each specification. The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Forex risk	0.467	2.055	0.847	-0.847
	[0.071]	[0.372]	[0.149]	[-0.148]
Different currency	-18.917**	-24.106**	-15.713**	-23.216**
	[-2.362]	[-2.360]	[-2.205]	[-2.386]
Forex risk × Different currency	28.743***	35.442***	35.564***	47.217***
	[3.622]	[2.939]	[4.447]	[4.210]
Loan amount	-6.962***	-7.157***	-6.005***	-5.933***
	[-7.084]	[-7.809]	[-4.256]	[-3.936]
Maturity	0.591***	0.486***	0.696***	0.611***
	[4.287]	[3.351]	[6.238]	[4.609]
Collateral	-3.313	-4.133	-4.666	-6.327
	[-1.097]	[-1.304]	[-0.941]	[-1.067]
Number of lenders	-0.418***	-0.340***	-0.466***	-0.399**
	[-5.964]	[-5.649]	[-3.083]	[-2.443]
Performance provisions	-23.306***	-22.440***	-23.345***	-21.641***
	[-41.214]	[-29.277]	[-21.878]	[-20.413]
General covenants	2.655***	2.131***	2.797***	2.379***
	[4.958]	[3.146]	[4.696]	[2.806]
Return on assets	-152.978***	-164.806***	-163.953***	-174.488***
	[-13.547]	[-12.193]	[-15.087]	[-13.941]
NPLs	131.863***	114.022***	136.624***	120.903***
	[13.058]	[8.847]	[13.517]	[8.673]
RBC ratio	13.685***	18.297***	16.233***	21.695***
	[4.510]	[4.489]	[3.766]	[4.083]
Bank size	-0.314*	-0.379	-0.277	-0.364
	[-1.690]	[-1.465]	[-1.145]	[-1.143]
GDP growth	-2.550**	-2.451*	-2.220	-2.498
	[-2.058]	[-1.725]	[-1.213]	[-1.158]
Money growth	-0.024	-0.136		
	[-0.128]	[-1.197]		
Inflation	-3.345**		1.595	
	[-2.611]		[0.912]	
Inflation change		-7.069**		-1.984
		[-2.599]		[-0.681]
Interest rate			2.375**	1.783
			[2.034]	[1.270]
Observations	83,687	68,493	101,916	83,177
Adjusted R-squared	0.770	0.762	0.763	0.753
Loan type	Y	Y	Y	Y
Loan purpose	Y	Y	Y	Y
Country effects	Y	Y	Y	Y
Bank effects	Y	Y	Y	Y
Firm × year effects	Y	Y	Y	Y
Clustering	Country	Country	Country	Country

Estimation of the Lerner index

In this section, we estimate the Lerner index at the bank-year level, by heavily relying on Delis, Kokas and Ongena (2017). The Lerner index of market power is defined as $p - \frac{mc}{p}$, where p is the average lending rate given by each bank in each year and mc is the marginal cost of producing bank output (also at the bank-year). We proxy the lending rate from the ratio of interest income to total commercial loans (information from Compustat). Subsequently, we estimate marginal cost from a simple cost function of the form:

$$lnC_{it} = a_1 + a_2 lnQ_{it} + a_3 lnw_{it}^{l} + a_4 lnw_{it}^{k} + a_5 lnw_{it}^{d} + e_{it}, \quad \text{(A.1)}$$

where C is the total cost of the bank i at time t, measured by the deflated total interest expenses and total noninterest expenses; Q is the total output of each bank, measured by the deflated total earning assets (or simply total assets in robustness tests); w^l is the price of labor, measured by the ratio of personnel expenses to total assets; w^k is the price of physical capital, measured by the ratio of overheads minus personnel expenses to fixed assets; and w^d is the price of intermediation funds, measured by the ratio of total interest expenses to total customer deposits. We collect data from Bloomberg.

We estimate equation (A.1) using a local linear regression with a uniform kernel and derive the marginal cost from the derivative of the equation with respect to Q. The advantage of the non-parametric approach is its flexibility compared to parametric functional forms (e.g., the translog) and this can lead to substantial improvement in the precision of the estimates. However, we also use a translog specification and a parametric regression with the same outputs and input prices and our end results remain very similar.