Foreign Banks and International Transmission of Monetary Policy: Evidence from the Syndicated Loan Market[1]

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Abstract: This paper examines how the sensitivity of cross-border syndicated loan supply varies with the internationalization of borrower country banking sectors, banks and loan syndicates. A higher foreign bank presence in borrower countries mitigates the transmission of monetary policy. Prior lending experience of international banks in borrower countries also attenuates monetary transmission. In contrast, to the extent they become more international, the credit supply of banks and loan syndicates become more sensitive to lender-country monetary policy.

Keywords: Cross-border lending; Monetary transmission; Foreign ownership of banks

JEL classification: E44; E52; F34; F38; F42; G15; G20

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1. Introduction

International banks operate in foreign countries through local affiliates and cross-border lending. They offer opportunities to promote economic development as they bring in capital, liquidity, expertise, and new technologies, which can promote greater competition and improved resource allocation. International banks also have a risk sharing role which implies that they help host countries stabilize their credit supply during a local downturn and shift resources back to their home country when conditions there worsen. This risk sharing role can also expose host countries to greater volatility from time to time, and in the aftermath of the financial crisis, academics and policy makers have voiced concerns that monetary policies pursued by lending countries can have negative spillovers on emerging markets' financial stability (Rey, 2013; Rajan, 2014; Fischer, 2014).

Consistent with these arguments, recent studies find significant evidence of international transmission of monetary policy through its effect on the supply of cross-border loans. For example, using a VAR framework, Bruno and Shin (2015a) estimate that a contractionary shock to US monetary policy leads to a decrease in cross-border bank lending, as international banks reduce their leverage. Micro studies provide additional evidence on how international monetary policy shocks affect bank lending to cross-border borrowers. Specifically, Morais, Peydró and Ruiz (2018) investigate the impact of monetary policy in three financial centers (the US, the UK, and the Eurozone) on the provision of credit by subsidiaries of banks from these centers to corporations in Mexico, finding a positive supply effect of a lower monetary policy interest rate, especially towards riskier borrowers. Furthermore, Brauning and Ivashina (2019) find a relatively large effect of US monetary

policy on cross-border syndicated lending to borrowers in emerging market economies, especially for riskier countries and borrowers.[2]

Hence, foreign banks located in borrower countries have a potentially important role in international lending, and in the international transmission of monetary policy (c.f. De Haas and Van Lelyveld, 2006; Claessens and Van Horen, 2012; Ongena et al., 2015.) In this paper we provide evidence on how monetary transmission is affected by foreign bank presence in borrowing countries using data on cross-border syndicated loans from 124 countries during 1995-2015. We find that foreign bank presence measured as the share of foreign bank ownership in borrowing countries attenuates the transmission of monetary policy changes in lender countries. Consistent with this, the credit supply of international banks that have a subsidiary in the borrowing country is less sensitive to lender country monetary policy changes. In addition, greater prior lending experience of international banks in borrower countries makes credit supply less responsive to lender country monetary policy. The attenuating influences of foreign bank presence and prior lending experience on monetary policy transmission could reflect that these factors enable international banks to forge more valuable credit relationships with their cross-border borrowers that they wish to protect in the face of varying lender country monetary policies.

We also consider how the degree of internationalization of banks and loan syndicates affects the transmission of monetary policy. We find that the credit supply of international banks with subsidiaries in a larger number of foreign countries is more sensitive to lender country monetary policy. Similarly, credit provision of loan syndicates with a larger share of international banks is more responsive to lender country monetary policy, consistent with a

[2] Some studies find evidence of significant portfolio rebalancing, suggesting increased cross-border outflows following a monetary policy tightening at least for some lender countries (e.g. Correa, Paligorova, Sapriza, and Zlate, 2015; Buch, Bussiere, Goldberg and Hills, 2018).

spillover effect of foreign banks in the loan syndicate on the credit supply of the entire loan syndicate. These results could reflect that the extent to which banks and loan syndicates are more international, they can more easily redirect their international credit flows in response to monetary policy changes in banks' home countries.

The participation of banks from generally multiple lender countries in a syndicated loan enables us to include borrower*year-month fixed effects that allow us to control for time-varying loan demand at the individual borrower level, analogously to Khwaja and Mian (2008). Identification of an effect of monetary policy on loan supply is achieved by considering variation in monetary policies relevant for banks in different countries that lend to the same firm in the same period. This identification approach sets the present paper apart from Brauning and Ivashina (2019) who cannot include time-varying borrower fixed effects in their analysis, as their focus is mainly on the international transmission of US monetary policy.

The inclusion of lenders as well as borrowers from multiple countries in the analysis enables us to control for a range of lender-country and borrower-country variables reflecting economic development and institutions, for instance related to bank supervision and regulation. Previously, Cerutti, Claessens and Ratnovski (2014) have considered how a range of borrowing country policies, such as exchange rate flexibility, capital controls and bank regulation, affect the transmission of cross-border bank flows using aggregate, bilateral credit flows published by the BIS. Unlike Cerutti et al. (2014), however, we use granular data on syndicated loans, which enables us to control for credit demand at the borrower firm level so that our findings are more likely to reflect supply side conditions.

Our paper is related to the literature showing that cross-border lending is responsive to domestic non-policy shocks to bank funding.[3] Peek and Rosengren (1997) examine the impact of the Japanese stock market crash in the 1990s on lending in the US, while other papers look at the effect of the global financial crisis on cross-border lending (Aiyar, 2012; Cetorelli and Goldberg 2011; Cetorelli and Goldberg, 2012b; Gambacorta and Marques-Ibanez, 2011; Giannetti and Laeven, 2012a,b; de Haas and van Horen, 2011; de Haas and van Horen, 2013; Ivashina et al., 2015).

Several studies show a potentially destabilizing role for international banks on borrowing economies, as monetary policy changes in banks' home countries are transmitted as international credit supply shocks abroad. Miranda-Agrippino and Rey (2015), for instance, find evidence of a "global financial cycle", showing that cross-border credit flows are to a large extent driven by US monetary policy. Several additional papers (Kim, 2001; Bruno and Shin, 2015a; Temesvary et al., 2018) also find that cross-border lending increases when US monetary policy eases. Furthermore, Cetorelli and Goldberg (2012a) show that US global banks actively reallocate capital from their foreign affiliates to their headquarters when US monetary policy tightens.

Consistent with a destabilizing role for international banks, Bertay, Demirguc-Kunt and Huizinga (2015) find that lending by foreign-owned banks in a country tends to be relatively procyclical compared to domestic banks. Our analysis importantly qualifies the picture that emerges of international banks as sources of credit instability, since we find that foreign banking presence in borrowing countries reduces the sensitivity of cross-border loan

[3] The literature on the effect of monetary policy on cross-border lending builds on several papers investigating the bank lending channel domestically. Bank balance sheet strength (Jiménez et al., 2012a; Jiménez et al., 2014b; Gambacorta, 2005) and bank risk (Altunbas et al., 2010) have been shown to affect the impact of monetary policy on bank credit supply. Further, low monetary policy rates induce risk taking (e.g. Jiménez et al., 2014a; Ioannidou et al. 2015).

supply to lender-country monetary policy. Cross-border credit is an important source of funding for many countries, and for these countries additional foreign bank presence may well serve to stabilize the overall supply of credit.

In the remainder, section 2 discusses the data and the methodology. Section 3 presents the empirical evidence. Section 4 concludes.

2. Data and methodology

2.1 Data

Our cross-border lending data come from the Loan Pricing Corporation's (LPC) Dealscan database, which contains detailed data on syndicated loans originated all around the world. Our data set comprises lenders in 50 countries, and borrowing non-financial firms in 124 countries over the 1995-2015 period. Table A1 in the appendix shows the number of lenders and loans by lender country, while the number of borrowers and loans by borrower country is shown in Table A2. Syndicated loans are organized in the form of packages and facilities. A package is a loan agreement signed by a borrower and one or more lenders, and each of them may contain one or more facilities. In this study, the basic level of observation is a loan facility in which multiple lenders generally participate. In a syndicated loan facility, the various lenders may assume different roles. Most importantly, lead arrangers are responsible for negotiating the terms with borrowers, and they are also responsible for monitoring borrowers. Several papers provide extensive information about the syndicated loan market as well as LPC's Dealscan, see e.g. Chava and Roberts (2008).

The main variable of interest is Volume, which is the natural logarithm of the dollar amount of a bank's share in syndicated lending aggregated at the borrower-lender-time level (see Table A3 in the appendix for variable descriptions and data sources). The sample includes only non-financial borrowing companies, and the data are monthly from January

1995 to March 2015.[4] If the information about a bank's share in a loan is missing, the loan is discarded in constructing the volume variable. Since we focus on cross-border lending, we also exclude observations if the borrower's and lender's country of location coincide. Following the literature, e.g. de Haas and van Horen (2012), we define the nationality of a bank based on the location of the ultimate parent. Table 1 shows that the average borrower-lender loan volume is US$55.6 million and ranges between US$1 million and US$410 million. As seen in Figure 1, the total volume of cross-border syndicated loans rose rapidly before the crisis, fell back substantially during 2008-2009, and subsequently recovered to pre-crisis levels towards the end of the sample period.

We matched Dealscan with monetary policy rates from the International Financial Statistics (IFS) database of the IMF. Our main dependent variable, IR, is the lender-country central bank policy rate (replaced by the discount rate at which commercial banks can borrow from the central bank against eligible securities in case of a few countries where the central bank policy rate data was missing). Similarly, IR (Borrower) is the borrower-country central bank policy rate or the discount rate. IR 3-months change is the change in IR in the preceding three months with a mean value of minus 14 basis points. We consider this change in the monetary policy rate to see whether syndicated loan provision reflects recent changes in lender-country monetary policy.

In some specifications, we split IR into its expected value as based on a Taylor rule, and into deviations from this. To be specific, we calculate Expected IR (Residual IR) by regressing the monetary policy rate, IR, on real GDP growth and the inflation rate separately for each country, and then take the predicted values (residuals) from these regressions. According to Table 1, the average monetary policy rate, IR, over the whole sample period

[4] We exclude the years before 1995, because Dealscan contains significantly fewer observations in these years.

was 2.48%, while Expected IR was slightly higher at 2.91%, and Residual IR averaged -0.005.

Our sample includes several years of unconventional monetary policy, when short term rates hit the zero lower bound. We tackle this issue in two ways. First, we directly control for lender country – time observations when QE was implemented. In particular, the dummy variable, QE, indicates that a quantitative easing program was in place in a lender country in a given month, reflecting that the Fed, the European Central Bank, the Bank of England, and the Bank of Japan implemented various quantitative easing programs at different points in time (see the appendix for the exact dates[5]). Second, we include a shadow short term rate, replacing the official monetary policy rate during periods of unconventional monetary policy. We use the shadow short term rate from Krippner (2013), which is estimated using a term structure model, and represents the short rate in a hypothetical world without a lower bound on interest rates for the same four economic areas as above. As expected, the Shadow rate has a lower mean at 1.4% than the conventional policy rate, IR. US shadow is Krippner's shadow short term rate in the US.

We matched Dealscan with Worldscope to obtain data on a borrower's equity-to-assets ratio, denoted E/A (Borrower).[6] This variable is calculated as the lagged book value of common equity over total assets. To exclude the impact of outliers, we winsorized E/A (Borrower) (and also Volume) at the 1st and 99th percentiles. After this adjustment, the average borrower equity-to-assets ratio is 0.387.

[5] In the reported regressions we do not distinguish between the different rounds of QE in the United States. The results are robust, however, to specifying the QE to reflect the three periods corresponding to QE1, QE2 and QE3, as follows: December 2008 to March 2010, November 2010 to June 2011, and September 2012 to December 2013.

[6] We thank Ferreira and Matos (2012) for sharing their link between Dealscan and Worldscope identifiers.

Several variables capture the relationships that international banks have developed with borrower countries through the ownership of local banks or through the prior provision of syndicated loans. FOB represents the assets of foreign-owned banks located in the borrower country as a share of total banking system assets (this variable is taken from Barth et al., 2013). On average, foreign-owned banks hold 16.5% of banking system assets in borrower countries. The foreign-owned banks in a borrower country may include a subsidiary bank of the foreign lender. To capture this, subsidiaries is a dummy variable that equals one if the lender bank has at least one subsidiary in the borrower country during the sample period with a mean of 0.68. Furthermore, share of other subsidiaries is the share of other international banks in the loan syndicate with at least one subsidiary in the borrower country excluding the lending bank itself with a mean of 0.44.

A foreign lender may have subsidiaries in several borrower countries. To measure the degree of internationalization at the bank level, the variable Number of countries is the number of countries in which the lender has a subsidiary that participated in at least one syndicated loan. Lenders in our sample have such subsidiaries in 14.7 countries on average.

Bank syndicates for particular loans generally also differ in the extent to which international banks participate in them. Share of foreign lenders is the average share of foreign lenders in the loan facilities of a particular borrower in a given month excluding the lending bank itself, with a mean of 0.71. In addition, Number of lenders and Number of foreign lenders are the average overall number of lenders in the loan facilities for a particular borrower in a given month excluding the lending bank itself, and the average number of foreign lenders in these loan facilities, respectively, with means of 15.9 and 11.4.

Several variables capture the prior experience of the lender bank and the borrower with international syndicated loans. Experience is the natural logarithm of 1 + the number of loans extended by the lender in the country of the borrower in the three years prior to the loan

with a mean value of 4.24. Relationship with lender is a dummy variable indicating that the borrower had a prior lending relationship with the lender with a mean of 0.43. Relationship with any lender is a dummy variable indicating that the borrower had a prior lending relationship with any foreign lender. This variable has a mean of 0.64.

To control for the intensity of trade links, we calculate Trade as the total bilateral trade flow (imports + exports) between the borrower country and lender country relative to borrower country GDP, based on data from the IFS.

In addition, we consider several bank regulatory variables for the borrower and lender countries (from Barth et al., 2013) as potential determinants of syndicated loan volume. Official supervisory power, Borrower (Lender), measures the extent to which the supervisory authorities in the borrower's (lender's) country have the authority to take specific actions to prevent and correct banking problems. This variable ranges between 0 and 16, with higher values indicating greater power, and has a mean of 11.7 in borrowers' countries and 10.2 in lenders' countries. Overall capital stringency, Borrower (Lender), is a variable that measures whether the capital requirement in the borrower's (lender's) country reflects certain risk elements and deducts certain market value losses from capital before minimum capital adequacy is determined. This variable is an index ranging between 0 and 7, with higher values indicating greater stringency. Overall capital stringency, Borrower (Lender) has a sample mean of 4.4 (4.3). As a final regulatory variable, Overall restrictions on banking activities, Borrower (Lender) measures the extent to which banks in the borrower's (lender's) country can engage in securities, insurance and real estate activities. This variable ranges between 3 and 12, with higher values indicating more restrictions; the average Overall restrictions on banking activities index is 7.2 for borrower countries, and 6.1 for lender countries.

Additionally, we consider ER flexibility, which is a dummy variable indicating that a borrower's country has a flexible exchange rate regime. In particular, it takes the value of one if a country's exchange rate regime falls in one of the following categories in the database compiled by Ilzetzky, Reinhart and Rogoff (2011): pre-announced crawling band that is wider than or equal to +/-2%; de facto crawling band that is narrower than or equal to +/-5%; moving band that is narrower than or equal to +/-2% (i.e., allows for both appreciation and depreciation over time); managed floating; and freely floating. Table 1 shows that 78.5% of borrowers are located in countries with flexible exchange rates. Further, Credit constraints (in), is a dummy variable indicating the presence of restrictions on the inflow of commercial credit in the country of the borrower based on the data from Fernández, Klein, Rebucci, Schindler and Uribe (2015). A share of 14.6% of borrowers face credit constraints on credit inflows into their countries.

In some specifications, we control for proxies of economic and financial development. Among these, GDP per capita is GDP per capita calculated at constant 2005 US dollar prices with a sample mean of USD 31,363; Credit is domestic credit to the private sector by banks as a percentage of GDP with a mean of 81.8%; Domestic credit is domestic credit provided by the financial sector relative to GDP with a mean of 153.1%; Market cap is the market capitalization of listed companies relative to GDP with a mean of 115.9%; and Turnover ratio is the total value of shares traded during the period as a percentage of the average market capitalization for the period with a mean of 119.3%. These variables are from the WDI database.

In addition, we consider several control variables that measure the degree of competition in the banking market of the borrower's country. Concentration is the sum of the assets of the five largest banks as a share of total commercial banking assets with a mean of 61.23%. The Boone indicator is the estimated elasticity of the median bank's profits to

marginal costs in the borrower's country. Higher values of the Boone indicator reflect lower competition. The sample mean of the Boone indicator is -0.0535. The H-statistic is the median elasticity of a bank's revenues with respect to input prices in the borrower's country. Under perfect competition H-statistic equals 1; under a monopoly H-statistic is less than or equal to 0, and under monopolistic competition it is between 0 and 1. The sample mean of H-statistic is 0.526. Finally, Lerner index is the median markup of a bank in the borrower's country with a higher value indicating lower competition. Lerner index has a sample mean of 0.221. These measures of banking market competition are all taken from the Word Bank's Global Financial Development Report (GFDR). As macroeconomic controls, we include CPI and GDP growth which stand for lender-country consumer price inflation and real GDP growth, respectively.

2.2 Methodology

We estimate the following panel model for an international sample of non-financial borrowers:

$$Volume_{ijt} = \beta_0 IR_{jt} + \beta_1 IR_{jt} \times FOB_{it} + \beta_2 IR_{jt} \times Z_{ijt} + \beta_3 X_{jt} + \gamma_{it} + \delta_j + \varepsilon_{ijt}$$

$Volume_{ijt}$ is the logarithm of the amount of cross-border lending to borrower i by bank j in month t, and IR_{jt} is the monetary policy interest rate in the home country of bank j at time t. We expect to find $\beta_0 < 0$, indicating a negative transmission of lender-country monetary policy interest rates to cross-border loan supply.

FOB_{it} is the share of foreign ownership of banks in borrower i's country of location. International banks that have a presence in the borrower country are able to build better and more valuable relationships with the borrowing clients than banks that participate in syndicated loan deals without having a local bank presence. Thus, banks that have a local

presence may be more interested in shielding their borrowing clients from credit supply shocks than other banks. Correspondingly, our hypothesis is that the foreign ownership of banks mitigates the transmission of monetary policy, i.e. $\beta_1 > 0$. In practice, we measure foreign bank presence in the borrower country by the aggregate share of foreign bank ownership, FOB_{it}, as well as by local subsidiary ownership by individual lender banks.

We explore additional heterogeneity in the transmission of monetary policy by adding interactions between IR and various loan, borrower, lender, borrower-country and creditor-country variables (Z_{ijt}).[7] Specifically, we explore heterogeneity in the degree of internationalization of the loan syndicate, the borrower's lending experience, and the lender's banking activity as well as a range of borrower-country and lender-country regulatory and institutional variables.

X_{jt} is a set of two lender-country macroeconomic control variables: inflation and GDP growth. The specification includes borrower*time fixed effects, γ_{it}, and lender-bank fixed effects, $\delta_{j.}$ The borrower*time fixed effects control for possibly time-varying firm-level loan demand, enabling us to identify the impact of the lender-country monetary policy interest rate on the supply of credit of banks in different lender countries. Specifically, identification relies on variation in policy interest rates among creditor countries in a particular month. Our identification approach contrasts with Brauning and Ivashina (2019) who instead include constant borrower fixed effects in specifications that estimate the impact of US monetary policy changes on cross-border syndicated loan supply, thereby not fully controlling for potential time variation in credit demand at the borrower level. In specification (1), the lender fixed effects control for invariant lender characteristics, for instance a lender's general proclivity to provide cross-border syndicated lending. Errors are clustered at the lender

[7] Elements of Z_{ijt} will not appear in the regression if they are subsumed by the fixed effects.

company and borrower country levels to allow for commonality in shocks to a bank's lending to firms in a particular borrowing country.

3. Empirical evidence

This section presents evidence on how foreign ownership of banks affects the transmission of monetary policy through the syndicated loan market. A key feature of our estimation is the inclusion of borrower firm * year-month fixed effects to control for variation in credit demand at the individual borrower level. To start, Table 2 presents the results of estimating (1) for different monetary policy measures to see how this specification performs, while not yet including foreign bank ownership and other measures of the internationalization of the borrower-creditor lending relationship in the analysis.

In regression 1, the policy interest rate IR obtains a negative coefficient suggesting that a lower policy interest rate increases credit supply, but the coefficient is statistically insignificant. In recent years, central banks have actively conducted nonconventional monetary policies, most importantly in the form of asset purchases that expanded the money supply and also central banks' balance sheets. The Federal Reserve, for instance, started a program of quantitative easing in January 2009. Next, we control for such policies by including a dummy variable (QE) that distinguishes periods of quantitative easing by major lender-country central banks. Specifically, we additionally include the QE variable in regressions 1 of Table 2, and report the results as regressions 2.

In regression 2, the IR and QE variables obtain coefficients of -0.818 and -0.0713 that are significant at 5% and 1%, respectively. The estimated coefficient of -0.818 for the IR variable suggests that a reduction in the monetary policy rate by 1 percentage point increases cross-border lending supply by 0.818%, which is a sizeable effect and well within the range of 0.3-3.7% that Morais et al. (2018) find for banks located in the US, Euro area, or the UK.

All the same, changes in monetary policy interest rates can explain only a small part of the overall variation in cross-border lending, as a one-standard-deviation increase in the monetary policy rate of 0.0214 (from Table 1) reduces cross-border lending by 1.5% (=0.0214*-0.818/1.162) of its standard deviation. The negative estimated coefficient for the QE variable is likely to reflect that central banks undertook quantitative easing at times of economic weakness and bank fragility. Hence, the QE variable de facto is a dummy variable that signals economic and financial crisis and hence is associated with lower lending volumes.

In regression 3 we provide further evidence on the transmission of monetary policy during times when unconventional monetary policy measures are enacted. In particular, we replace the IR variable by two variables that represent monetary policy during periods of standard and nonstandard policy. These variables are an interaction of IR with Non-QE, which is a dummy variable indicating countries and months when QE was not implemented, and an interaction of the QE dummy with the Krippner (2013) shadow rate, which is an estimate of the short term interest rate if a zero lower bound were not binding. The estimated coefficients for these two monetary policy variables are both -0.9, which suggests that the transmission of conventional and unconventional monetary policies is about equally strong, although only the impact of conventional monetary policy is estimated with statistical significance.

In regression 4, we include the 3-months change of IR in regression 2 to see whether recent monetary policy changes have an impact on cross-border loan supply. We continue to find a negative and significant coefficient for IR, while the 3-months change of IR enters with a negative coefficient that is statistically insignificant.

Policy interest rates in lender countries can reasonably be assumed to be exogenous to economic developments in foreign borrower countries. All the same, policy interest rates that

reflect economic developments in lender countries may be correlated with economic developments in borrower countries to the extent that business cycles are correlated across countries. Such a potential correlation, however, does not pose a problem for our identification strategy, as we control for borrower-country economic conditions by including borrower*time fixed effects.

Somewhat less straightforwardly, the business cycle in lender countries could simultaneously affect lender-country policy interest rates and the demand for syndicated loans from a particular lender country in case there are perceived to be synergies between the provision of syndicated loans by banks from that lender country and the provision of trade credit by the same banks in order to finance business-cycle dependent trade between the pertinent borrower and lender countries.

To counter this potential challenge to our identification strategy, in regression 5 we replace the actual lender-country policy interest rate in regression 2 by the component of the policy interest rate that is exogenous to the lender-country business cycle, estimated as the Taylor-rule residual of regressions of the policy interest rates on lender-country GDP growth and inflation rates. In regression 5, the Taylor residual obtains a negative coefficient that is significant at 1%. This estimated coefficient is larger in absolute value than the corresponding coefficient in regression 2. This suggests that the part of monetary policy that is exogenous to the creditor-country business cycle has a relatively strong effect on cross-border syndicated loan supply. In regression 6 we test this formally by adding Expected IR, which is the part of IR that is predicted based on the GDP growth and inflation in the lender country, to the regression. In this regression, Residual IR is estimated to have an even larger coefficient in absolute value that is significant, while Expected IR receives a coefficient closer to zero that is insignificant.

Overall, the results of Table 2 of estimating (1) suggest a significant effect of monetary policy on cross-border syndicated loan supply while controlling for variation in credit demand through borrowing firm * year-month fixed effects. The transmission of monetary policy is stronger to the extent that monetary policy interest rates are not predicted by a Taylor rule.

Next, we consider how foreign bank ownership in borrower countries affects the transmission of lender-country monetary policy. Specifically, regression 1 of Table 3 includes an interaction of IR with FOB in regression 2 of Table 2. The IR variable and its interaction with FOB are estimated with negative and positive coefficients, respectively, that are both significant at 1%. This is evidence that foreign bank presence mitigates the negative impact of creditor-country monetary policy rates on cross-border credit supply. This effect is economically significant, as the sensitivity of cross-border loan supply to lender-country interest rates is reduced by about half if borrower country foreign bank presence is increased from zero to its mean value (16.51% as seen in Table 1). Specifically, a one percentage point increase in the lender country policy rate is associated with a 1.8% decline in cross-border loan supply to a borrower country without foreign bank presence (based on the coefficient of IR in regression 1 of Table 3), while this figure is only about 0.9% = (-1.781 + 0.0527*16.51) when FOB equals its sample mean.[8]

To allow for varying transmission of monetary policy by borrower creditworthiness, in regression 2 and 3 we consider two subsamples of observations with values of E/A (Borrower) below and above the mean, respectively. In regression 2 for high-leverage firms, the IR variable and its interaction with FOB ratio receive significant negative and positive coefficients that are larger in absolute value than in regression 1. In regression 3 for the low-

[8] A one standard deviation increase in FOB reduces the sensitivity of loan volume slightly more, as the standard deviation of FOB (of 19.67%) is about 19% higher than its sample mean.

leverage firms, the corresponding coefficients are estimated to be insignificant. This is evidence that the attenuating effect of foreign bank presence on the cross-border transmission of monetary policy is relatively strong for high-leverage borrowers.

In regression 4, we replace the FOB variable in regression 1 by the FOB variable at the beginning of the period to minimize the effect on the estimation of any potential endogeneity of foreign bank presence in a country to the cross-border credit supply to this country. In this regression, the estimated coefficients for the IR variable and its interaction with FOB are very similar to those in regression 1, which suggests that any estimation bias due to the potential endogeneity of FOB is only moderate.

Conceivably, lenders could shield borrowers more from monetary policy shocks if they are located in countries that are geographically or culturally relatively close, reflecting potentially higher valuations of the pertinent lending relationships. In regression 5, we include additional borrower country-lender country fixed effects in regression 1 to control for any time-invariant determinants of cross-border lending that are specific to a borrower country-lender country pair such as, for instance, geographical distance, and cultural and linguistic differences. In this regression, IR and IR*FOB have negative and positive coefficients that are both significant. These results suggest that the mitigating role of foreign bank presence is not merely driven by bilateral, country-specific factors.

In regression 6, we control for bilateral trade flows to further mitigate the endogeneity concern related to foreign bank presence, and in particular the possibility that the provisioning of syndicated loans is related to trade flows. Indeed, we find a positive and highly significant coefficient for Trade. In this regression, however, we continue to obtain a negative coefficient for IR, and a positive coefficient for its interaction with FOB. This suggests that trade cannot explain the mitigating effect of foreign bank presence.

So far, we have considered loan volume as aggregated at the level of the parent bank even if this parent bank has foreign subsidiaries. For these foreign subsidiaries, however, the relevant monetary policy rate may be the policy rate of the respective host countries rather than the policy rate of the country where the parent bank resides. To allow for this, we next disaggregate a multinational bank's cross-border loans into lending stemming from the parent country, and lending coming from any of the foreign countries where the multinational bank has at least one foreign subsidiary. Lending coming from the various countries where a multinational bank operates are then treated as separate observations and related to the monetary policy rate of a lending unit's country of location. Regression 7 reports results analogous to regression 1. In this regression, the IR variable obtains a negative and significant coefficient, while the interaction IR * FOB obtains a positive and significant coefficient. Thus, our finding of a mitigating impact of foreign bank presence on monetary policy transmission is robust to disaggregating a multinational bank's lending to the respective host countries where the constituent lending units reside.

Lending provided through an international bank's borrower-country subsidiaries strictly speaking is not cross-border lending. As a robustness check, we consider how an international bank's loan supply net of the loan supply through local subsidiaries is affected by lender-country policy interest rates. Specifically, regression 8 relates loan volume net of lending by borrower-country subsidiaries to the lender country policy rate and its interaction with the foreign-owned banks variable. The interaction variable is estimated with a positive and significant coefficient analogously to regression 1, implying an attenuating influence of foreign bank presence on the sensitivity of truly cross-border loans to the lender-country monetary policy rate. Overall, Table 3 provides strong evidence of a mitigating impact of foreign bank presence on the transmission of monetary policy interest rates to cross-border credit supply.

Next, we examine whether our finding of a mitigating effect of foreign bank presence on the transmission of monetary policy is robust to controlling for a range of variables at the borrower-country or lender-country level that could possibly affect monetary policy transmission. In particular, the regressions in Panel A of Table 4 include an additional policy or institutional variable (if not subsumed by the fixed effects) and its interaction with IR, while the regressions in Panel B include an additional variable that proxies for economic and financial development, or banking competition.

To start, regressions 1-3 of Panel A additionally contain interest rate interactions of borrower-country bank supervisory and regulatory indices (supervisory power, capital stringency, and restrictions). In these regressions, the interactions of the included borrower-country policy variable with IR are insignificant. Regressions 4-6 include analogous interest rate interactions with lender-country supervisory and regulatory indices, yielding a negative and significant coefficient for the interaction of IR with the Overall capital stringency (Lender) variable in regression 5. Stringent capitalization policies in the lender country thus are estimated to amplify the impact of policy interest rates on credit supply, potentially because such policies make banks stronger so that they have the capacity to increase their loan supply more in case policy interest rates decline. Regressions 7 and 8 include interactions of the IR variable with the ER flexibility and Credit constraint (in) variables, respectively, that receive insignificant coefficients.

Next, we recognize that foreign bank presence could possibly be related to the borrower country's overall economic and financial development (Claessens and van Horen, 2014). In the first five regressions of Panel B of Table 4, we investigate whether the mitigating role of foreign bank presence in the transmission of monetary policy is robust to controlling for various proxies of economic and financial development. In regressions 1, 3, 4 and 5 the interactions between IR and alternatively GDP per capita, Domestic credit, Market

cap and Turnover ratio obtain positive and significant coefficients, providing some evidence that borrower-country economic and financial development mitigates the transmission of monetary policy via the syndicated loan market.

Finally, we control for the degree of banking market competition in the borrower's country in recognition of the fact that international banks may be relatively more attracted to uncompetitive banking markets. Specifically, the final four regressions of Panel B each include an interaction of IR with a different measure of banking market competition. In regression 7, the interaction of IR with the Boone indicator receives a positive and significant coefficient, which suggests that less competition (as measured by the Boone index) reduces the sensitivity of cross-border loan supply to the lender-country policy interest rate. At the same time, the interaction of IR with the H-Statistic receives a positive and significant coefficient in regression 8, indicating that less competition (as measured by the H-Statistic) increases the sensitivity of cross-border loan supply to the policy interest rate. Thus, we find mixed evidence on the role of bank competition in the transmission of monetary policy.

In Table 4 the IR variable is estimated with negative and significant coefficients in regressions 2 and 6-8 in Panel A and in all regressions but 7 and 8 in Panel B, while the interactions of IR with FOB obtain positive and significant coefficients in all regressions. Our finding that foreign bank presence attenuates the transmission of monetary policy interest rates to cross-border loan supply thus is robust to controlling for a range of borrower-country and lender-country characteristics that potentially affect this transmission including bank supervision and regulation in borrower and lender countries and the degree of bank competition in the borrower country.

The finding that foreign bank presence matters for monetary policy transmission could reflect a variety of underlying channels related to the internationalization of lending banks and loan syndicates. To investigate this, we consider several alternative indices of

lender-bank and loan syndicate internationalization that we include as additional control variables in the benchmark regression 1 of Table 3. To start, we examine the role of subsidiaries of international banks in borrower countries. Specifically, regression 1 of Table 5 includes the subsidiaries variable as a proxy for an individual bank's foreign presence, and its interaction with IR. In this regression, the subsidiaries variable and its interaction with IR receive positive significant and positive insignificant coefficients, respectively, while the IR * FOB variable is estimated with a positive and significant coefficient. The significance of the IR*FOB suggests that foreign bank presence matters for monetary policy transmission beyond a lender bank's own presence in the borrowing country, as the presence of some foreign banks in a borrowing country may create external effects on the credit provision of international lenders that do not have a local bank presence.

To test for this, we estimate regression 1 of Table 3 separately for the samples of lenders that do and do not have a local bank subsidiary, with the results presented in columns 2 and 3. For the sample of banks with a local subsidiary, we see that IR*FOB has a positive but insignificant coefficient, which suggests that the foreign bank presence of other banks does not have a material impact on credit supply for banks that have a local subsidiary. For the banks without a local subsidiary, the coefficient on IR*FOB is positive and significant in regression 3, consistent with an external effect of the foreign bank presence of other international banks in the borrower country. These other international banks could or could not be banks that participate in the pertinent loan syndicate. To distinguish between foreign ownership of banks generally and other foreign participants in the loan syndicate, regression 4 includes the share of other international banks with local subsidiaries and its interaction with IR in regression 3. The interactions IR *FOB and IR * Share of other subsidiaries are both estimated to be positive and significant, which suggest that foreign ownership generally

and other foreign bank participation in the loan syndicate both mitigate the transmission of lender country monetary policy.

The estimated mitigating effect of foreign bank presence on the transmission of monetary policy could reflect that international banks that lend to borrowers in countries with a high foreign bank presence may themselves be more international in the sense that they have subsidiaries in relatively many countries. The literature on global banks suggests that we should expect that especially multinational banks are likely to transmit monetary policy shocks as they are inclined to reallocate capital from foreign subsidiaries to headquarters when parent-country monetary conditions tighten, and vice versa (Cetorelli and Goldberg, 2012). To test this, in regression 1 of Table 6 we include an interaction between IR and a variable reflecting the number of countries where the multinational bank operates at least one subsidiary. The interaction IR * Number of countries is estimated to be negative and significant, consistent with a greater sensitivity of the credit supply of highly international banks to lender-country monetary policy changes. In this regression, IR * FOB continues to be estimated positively and significantly, indicating that foreign bank presence in the borrower country does not simply stand for the involvement of more internationalized banks.

Along similar lines, the estimated role for foreign bank presence could reflect the composition of the loan syndicate, and in particular the number of foreign banks participating in the loan syndicate relative to the number of purely domestic banks. To check this, regression 2 includes the share of foreign lenders in the loan syndicate and its interaction with IR. The interaction variable receives a negative and significant coefficient, consistent with a greater sensitivity of credit supply to the monetary policy rate in case of more international loan syndicates. In this regression, IR * FOB receives a positive and significant coefficient.

Alternatively, regressions 3 and 4 include interactions of the total number of banks participating in the loan syndicate and the number of foreign participating banks with IR, respectively. These additional interactions are estimated with negative and significant coefficients, suggesting that the credit supply of larger syndicates is more responsive the monetary policy rate, while IR*FOB is estimated to be positive and significant. Regression 5 includes interactions of both the total number of participating banks and the number of foreign participating banks with IR, yielding coefficients that are positive and insignificant, and negative and significant, respectively. This suggests the transmission of monetary policy is mitigated by a larger number of foreign banks in the loan syndicate, but not by a larger total number of banks. In this regression, IR * FOB is positive and significant.

Overall, the evidence of Tables 5 and 6 suggests that the foreign ownership of bank mitigates the transmission of monetary policy for banks that do not have a subsidiary themselves in the borrower country, and that mitigating effect of the foreign ownership of banks on monetary transmission is robust to controlling for the extent of internationalization of lending banks and loan syndicates.

Borrowers in countries with a greater foreign ownership of banks could have lending relationships with banks that generally have more experience in providing credit to borrowers in their countries, and they themselves could be more likely to have prior lending relationships with the pertinent lending bank or with other foreign lenders generally. Next, we examine whether our finding of a mitigating role of foreign bank presence in the transmission of monetary policy is robust to including indices of prior lending experiences in the analysis. Regression 1 of Table 7 includes the experience variable and its interaction with IR, yielding positive and significant coefficients for these two additional variables. This suggests that a bank's prior experience in the borrower country mitigates the monetary transmission process. In this regression, the IR * FOB variable has a coefficient of 0.0272

that is significant at 10% and smaller than the corresponding coefficient of 0.0527 in regression 1 of Table 3. This suggests that the FOB variable to some extent captures a bank's past operations in a borrower country as proxied by the experience variable.

Regression 2 includes the interaction IR * Relationship with any lender to investigate the role of the borrowing having a prior lending relationship with any foreign lender. This variable is positive and insignificant. Regression 3 additionally includes the interaction IR * Relationship with lender to take into account the existence of a prior lending relationship with the pertinent lender. In this regression, the interactions involving both Relationship with any lender and Relationship with lender are positive and insignificant. Regression 4 additionally includes the interaction IR * Experience, which obtains a positive and significant coefficient. In regression 2-4, IR*FOB is significant and positive. Regressions 2-4 together provide evidence that a bank's general credit experience in a borrower country mitigates the transmission of monetary policy, reducing the previously estimated mitigating effect of foreign bank ownership, while no mitigating effect on the transmission of monetary policy is found for a borrower's prior lending relationship with the pertinent or with other foreign banks generally.

As a final robustness check, we jointly consider monetary policy rates in the borrower and lender countries. Following a higher lender-country policy interest rate, an international bank that has a subsidiary in the borrowing country has the option to substitute local funding for parent-country funding that has become more expensive. This could explain why foreign bank presence reduces the sensitivity of syndicated loan supply to the lender-country policy interest rate. To allow for this, we consider the sensitivity of syndicated loan supply to the lender-country policy interest rate while controlling for the effect of the borrower country policy interest rate. Specifically, regression 5 includes an interaction of the policy interest rates in lender and borrower countries in regression 1 of Table 3. This interaction variable

receives a negative coefficient that is significant at 10%, consistent with a heightened sensitivity of loan volume to the lender-country policy interest rate in borrower countries with high policy rates. In this regression, the interaction of IR with FOB continues to be positive and significant, consistent with a mitigating effect of foreign bank presence on the transmission of lender country monetary policy.

4. Conclusion

This paper finds that foreign bank presence in borrowing countries mitigates the transmission of lender country monetary policy through the cross-border syndicated loan market. Consistent with this, the credit supply of international banks that have a subsidiary in the borrowing country is less sensitive to lender country monetary policy changes. In addition, greater prior lending experience of international banks in borrower countries makes credit supply less responsive to lender country monetary policy. These results could reflect that foreign bank presence and prior lending experience give rise to more highly valued credit relationships with their cross-border borrowers that they wish to protect in the face of fluctuating lender country monetary policy rates.

In addition, the paper shows that the extent to which the lending bank is more international, its credit supply is more responsive to lender country monetary policy. Similarly, to the extent a loan syndicate is more international, its credit supply responds more strongly to lender country monetary policy, consistent with a spillover effect of foreign banks in the loan syndicate on the credit supply of the entire loan syndicate. These results could reflect that greater internationalization of banks and loan syndicates make it easier for them to redirect their international credit flows in response to monetary policy changes in banks' home countries.

Our finding that foreign bank presence in borrower countries could stabilize the international supply of cross-border loans qualifies the picture of international banks as sources of credit instability in borrower countries that transmit international monetary policy changes in the form of international credit supply shocks. Our evidence suggests that countries that currently restrict the foreign ownership of local banks can potentially obtain a more stable supply of cross-border credit in the face of international monetary policy shocks if they allow additional foreign bank entry.

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Appendix

Table A1: List of lender countries

Country	Number of lenders	Number of loans	Country	Number of lenders	Number of loans
Austria	21	815	Korea, Rep.	24	734
Belgium	8	2,143	Luxembourg	3	122
Brazil	3	121	Malaysia	8	392
Canada	16	8,034	Mauritius	2	13
Chile	3	19	Mexico	1	2
China	25	1,774	Morocco	3	21
Colombia	1	6	Netherlands	15	3,165
Cyprus	2	7	Norway	6	1,446
Denmark	8	598	Philippines	13	74
Egypt, Arab Rep.	4	18	Portugal	6	386
Finland	4	25	Qatar	3	38
France	20	9,670	Romania	1	5
Germany	36	9,907	Russian Federation	4	16
Greece	4	47	Saudi Arabia	4	22
Hong Kong, China	22	812	Singapore	16	2,417
Hungary	1	2	Slovenia	1	2
Iceland	2	14	South Africa	6	173
India	20	506	Spain	19	2,864
Indonesia	5	106	Sri Lanka	1	2
Iran, Islamic Rep.	1	2	Sweden	6	559
Ireland	5	564	Switzerland	19	3,754
Israel	3	423	Thailand	9	231
Italy	19	3,712	Turkey	3	26
Japan	81	16,967	United States	103	6,550
Jordan	1	61	United Kingdom	26	13,856
			Total	617	93,223

Table A2: List of borrower countries

Country	Number of borrowers	Number of loans	Country	Number of borrowers	Number of loans
Algeria	3	16	Denmark	23	217
Angola	2	60	Ecuador	2	4
Argentina	22	158	Egypt, Arab Rep.	5	88
Australia	483	4,088	El Salvador	1	3
Austria	16	168	Estonia	5	23
Azerbaijan	3	28	Finland	58	574
Bahamas	9	38	France	178	2,291
Bahrain	5	42	Gabon	2	16
Bangladesh	8	60	Georgia	1	2
Barbados	2	22	Germany	139	1,435
Belarus	1	7	Ghana	5	172
Belgium	53	466	Gibraltar	1	3
Bermuda	59	837	Greece	41	198
Bolivia	1	12	Guinea	1	6
Botswana	1	4	Hong Kong, China	518	5,958
Brazil	71	681	Hungary	14	160
British Virgin Islands	26	349	Iceland	8	105
Brunei	3	23	India	194	2,024
Bulgaria	6	16	Indonesia	291	2,671
Cambodia	2	9	Iran, Islamic Rep.	5	36
Cameroon	2	10	Ireland	37	237
Canada	147	1,105	Israel	12	110
Cayman Islands	39	174	Italy	104	794
Chile	33	328	Côte d’Ivoire	4	11
China	407	2,865	Jamaica	1	2
Colombia	17	85	Japan	79	743
Congo	1	2	Jordan	3	6
Costa Rica	1	7	Kazakhstan	14	91
Croatia	17	108	Kenya	4	13
Cyprus	15	109	Korea, Rep.	226	2,480
Czech Republic	19	179	Kosovo	1	3

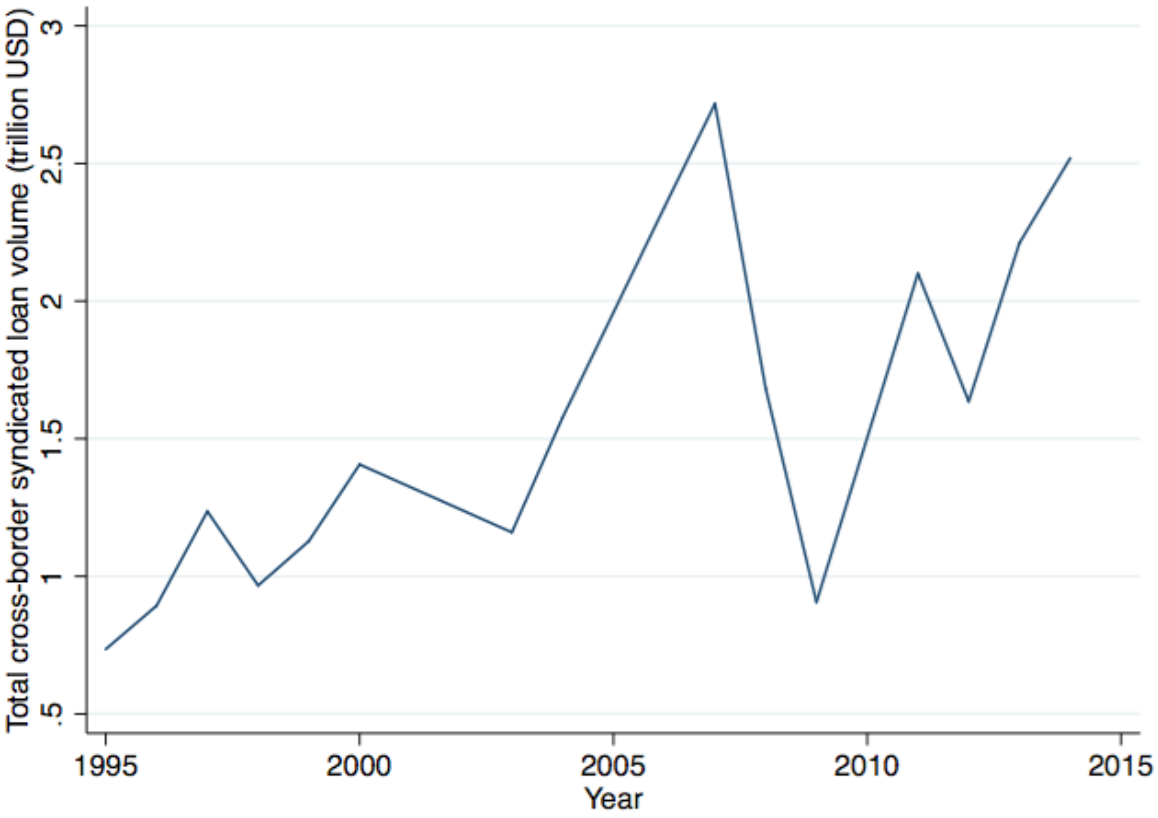
Country	Number of borrowers	Number of loans	Country	Number of borrowers	Number of loans
Kuwait	7	38	Qatar	19	239
Lao PDR	5	32	Romania	31	121
Latvia	3	8	Russian Federation	84	847
Liberia	6	35	Rwanda	1	2
Lithuania	3	8	Saudi Arabia	13	94
Luxembourg	31	398	Serbia	1	6
Macau	14	183	Singapore	251	2,045
Malawi	1	3	Slovak Republic	16	91
Malaysia	141	1,043	Slovenia	3	19
Mali	1	4	South Africa	28	413
Malta	3	21	Spain	297	2,926
Mauritius	9	85	Sri Lanka	2	9
Mexico	84	973	Sweden	82	1,076
Moldova	1	9	Switzerland	60	1,353
Monaco	2	5	Taiwan, China	196	1,274
Mongolia	2	4	Tanzania	3	23
Morocco	5	30	Thailand	167	1,350
Netherlands	191	2,149	Trinidad and Tobago	2	11
Netherlands Antilles	1	5	Tunisia	5	33
New Zealand	49	333	Turkey	37	288
Nicaragua	1	4	Turkmenistan	3	7
Nigeria	6	27	United States	2,996	36,162
Norway	82	632	Ukraine	19	103
Oman	9	76	United Arab Emirates	42	384
Pakistan	25	149	United Kingdom	349	3,365
Panama	33	158	Uruguay	1	2
Papua New Guinea	8	92	Uzbekistan	4	22
Peru	17	119	Venezuela, RB	6	46
Philippines	63	904	Vietnam	42	240
Poland	31	298	Yemen	1	16
Portugal	30	289	Zambia	3	10
			Total	9,079	93,223

Table A3: Variable definitions

Variable	Description	Source
Volume	Natural logarithm of the dollar amount of a bank's share in a syndicated loan, aggregated at the borrower-lender-time level	Dealscan
IR	Central bank policy rate or the discount rate in the lender's country	IFS
IR (Borrower)	Central bank policy rate or the discount rate in the borrower's country	IFS
IR 3-months change	Change of IR in the preceding three months	IFS
Expected IR	Predicted value from a regression of the monetary policy rate (IR) on the real GDP growth rate and the inflation rate (CPI) separately for each lender country	IFS
Residual IR	Error from a regression of the monetary policy rate (IR) on the real GDP growth rate and the inflation rate (CPI) separately for each lender country	IFS
QE	Dummy variable indicating that a quantitative easing program was in place in the following economies and periods: U.S.: 2009M1 to 2015M3; Euro Area: 2015M3; U.K.: 2009M3 to 2015M3; and Japan: 2001M3 to 2006M3 and 2013M4 to 2015M3	
Shadow rate	Krippner's shadow rate	Krippner (2013)
E/A (Borrower)	Book value of common equity to book value of total assets, lagged by one year	Worldscope
FOB	Fraction of the banking system's assets in the borrower's country that is foreign owned, in percentage points	World Bank Regulation and Supervision Survey (Barth et al. (2013))
Subsidiaries	Dummy variable that equals one if the lender company has at least one subsidiary in the borrower country during the sample period and zero otherwise	Dealscan
Share of other subsidiaries	Share of other international banks in the loan syndicate with at least one subsidiary in the borrower country	Dealscan
Number of countries	Number of countries in which the lender has a subsidiary	Dealscan
Share of foreign lenders	Average share of foreign lenders in the loan facilities of a borrower in a given month excluding the pertinent lender weighted by the loan amount of the facility	Dealscan
Number of lenders	Average number of lenders in the loan facilities of a borrower in a given month excluding the pertinent lender weighted by the loan amount of the facility.	Dealscan
Number of foreign lenders	Average number of foreign lenders in the loan facilities of a borrower in a given month excluding the pertinent lender weighted by the loan amount of the facility	Dealscan
Experience	Natural logarithm of 1 + the number of loans extended by the lender in the country of the borrower in the three years prior to the loan	Dealscan
Relationship with lender	Dummy variable indicating that the borrower had a prior lending relationship with the lender	Dealscan
Relationship with any lender	Dummy variable indicating that the borrower had a prior lending relationship with any foreign lender	Dealscan
Trade	Total annual bilateral trade flow between the lender country and the borrower country relative to the GDP of the borrower country	IFS
Official supervisory power (Borrower)	Index of the power of the supervisory authorities in the borrower's country to take specific actions to prevent	World Bank Regulation and Supervision Survey (Barth et al. (2013))

	and correct problems in banks, with higher values indicating greater power	
Overall capital stringency (Borrower)	Index measuring the stringency in determining minimum capital adequacy in the borrower's country, with higher values indicating greater stringency	World Bank Regulation and Supervision Survey (Barth et al. (2013))
Overall restrictions on banking activities (Borrower)	Index of the extent to which banks in the borrower's country can engage in securities, insurance and real estate activities, with higher values indicating more restrictions	World Bank Regulation and Supervision Survey (Barth et al. (2013))
Official supervisory power (Lender)	Index of the power of the supervisory authorities in the lender's country to take specific actions to prevent and correct problems in banks, with higher values indicating greater power	World Bank Regulation and Supervision Survey (Barth et al. (2013))
Overall capital stringency (Lender)	Index measuring the stringency in determining minimum capital adequacy in the lender's country, with higher values indicating greater stringency	World Bank Regulation and Supervision Survey (Barth et al. (2013))
Overall restrictions on banking activities (Lender)	Index of the extent to which banks in the lender's country can engage in securities, insurance and real estate activities, with higher values indicating more restrictions	World Bank Regulation and Supervision Survey (Barth et al. (2013))
ER flexibility	Dummy variable indicating that the borrower's country has a flexible exchange rate regime. It takes the value of one if a country's exchange rate regime falls in one of the following categories: pre-announced crawling band that is wider than or equal to +/-2%; de facto crawling band that is narrower than or equal to +/-5%; moving band that is narrower than or equal to +/-2% (i.e., allows for both appreciation and depreciation over time); managed floating; and freely floating	Ilzetzky, Reinhart and Rogoff (2011)
Credit constraints (in)	Dummy variable indicating the presence of restrictions on the inflow of commercial credit in the borrower's country	Fernández, Klein, Rebucci, Schindler and Uribe (2015)
GDP per capita	GDP per capita in constant 2005 US dollars	WDI
Credit	Domestic credit to the private sector by banks as a percentage of GDP	WDI
Domestic credit	Domestic credit provided by the financial sector as a percentage of GDP	WDI
Market cap	Market capitalization of listed companies as a percentage of GDP	WDI
Turnover ratio	Total value of shares traded during the period as a percentage of the average market capitalization for the period in percentage points	WDI
Concentration	Assets of the five largest banks as a share of total commercial banking assets in the borrower's country.	World Bank GFDR
Boone indicator	Elasticity of the median bank's profits to marginal costs in the borrower's country.	World Bank GFDR
Lerner index	The markup of the median bank in the borrower's country.	World Bank GFDR
CPI	Annual percentage change of the consumer price index in the lender's country	IFS
GDP growth	Annual percentage change of real GDP in the lender's country	IFS

Figure 1: Total cross-border syndicated lending



Note: This graph shows the total amount of cross-border lending to non-financial borrowers over the sample period. The graph excludes 2015 because the sample period does not cover the whole year.

Table 1: Descriptive statistics

Volume is the natural logarithm of the dollar amount of a banks' share in a syndicated loan, aggregated at the borrower-lender-time level. IR is the central bank policy rate or the discount rate in the lender's country. IR (Borrower) is IR is the central bank policy rate or the discount rate in the borrower's country. IR 3-months change is change of IR in the three preceding months. Expected IR (Residual IR) is the predicted value (error) from a regression of the monetary policy rate (IR) on the real GDP growth rate and the inflation rate (CPI) separately for each lender country. QE is a dummy variable indicating that a quantitative easing program was in place in the lender's country. Shadow rate is the Krippner (2013) shadow short rate. E/A (Borrower) is the book value of common equity to the book value of total assets, lagged by one year. FOB is the fraction of the banking system's assets in the borrower's country that is foreign owned, in percentage points. Subsidiaries is a dummy variable that equals one if the lender company has at least one subsidiary in the borrower country during the sample period and zero otherwise. Number of countries active is the number of countries in which the lender has a subsidiary. Share of other subsidiaries is the share of other international banks in the loan syndicate with at least one subsidiary in the borrower country. Share of foreign lenders is the average share of foreign lenders in the loan facilities of a borrower in a given month excluding the pertinent lender weighted by the loan amount of the facility. Number of lenders is the average number of lenders in the loan facilities of a borrower in a given month excluding the pertinent lender weighted by the loan amount of the facility. Number of foreign lenders is the average number of foreign lenders in the loan facilities of a borrower in a given month excluding the pertinent lender weighted by the loan amount of the facility. Experience is the natural logarithm of 1 + the number of loans extended by the lender in the country of the borrower in the three years prior to the loan. Relationship with lender is a dummy variable indicating that the borrower had a prior lending relationship with the lender. Relationship with any lender is a dummy variable indicating that the borrower had a prior lending relationship with any foreign lender. Trade is the total annual bilateral trade flow between the lender country and the borrower country relative to the GDP of the borrower country. Official supervisory power (Borrower) is an index of the power of the supervisory authorities in the borrower's country to take specific actions to prevent and correct problems in banks, with higher values indicating greater power. Overall capital stringency (Borrower) is an index measuring the stringency in determining minimum capital adequacy in the borrower's country, with higher values indicating greater stringency. Overall restrictions on banking activities (Borrower) is an index of the extent to which banks in the borrower's country can engage in securities, insurance and real estate activities, with higher values indicating more restrictions. ER flexibility is a dummy variable indicating that the borrower's country has a flexible exchange rate regime. Credit constraints (in) is a dummy variable indicating the presence of restrictions on the inflow of commercial credit in the borrower's country. GDP per capita is GDP per capita in constant 2005 US dollars. Credit is domestic credit to the private sector by banks as a percentage of GDP. Domestic credit is domestic credit provided by the financial sector as a percentage of GDP. Market cap is the market capitalization of listed companies as a percentage of GDP. Turnover ratio is the total value of shares traded during the period as a percentage of the average market capitalization for the period. Concentration is the assets of the five largest banks as a share of total commercial banking assets in the borrower's country. Boone indicator is the elasticity of the median bank's profits to marginal costs in the borrower's country. H-statistic is the elasticity of the median bank's revenues with respect to input prices in the borrower's country. Lerner index is the markup of the median bank in the borrower's country. CPI is the annual percentage change of the consumer price index in the lender's country. GDP growth is the annual percentage change of real GDP in the lender's country. All summary statistics are for the sample used in regression 1 of Table 2.

	Obs	Mean	SD	Min	Max
Volume (in millions of USD)	93223	55.638	72.394	1	410
Volume	93223	17.21	1.162	13.82	19.83
IR	93223	0.0248	0.0214	-0.00250	0.480
IR (Borrower)	82660	0.0393	0.0472	-0.00250	1.500
IR 3-months change	93101	-0.00135	0.0105	-0.382	0.167
Expected IR	85189	0.0291	0.0195	-0.0505	0.509
Residual IR	85189	-0.00509	0.0171	-0.0879	0.128
QE	93223	0.121	0.326	0	1
Non-QE	93223	0.879	0.326	0	1
Shadow rate	66060	0.0138	0.0287	-0.0697	0.0764
E/A (Borrower)	49073	0.387	0.169	0.0269	0.942
FOB	66345	16.51	19.67	0	100
Subsidiaries	93223	0.686	0.464	0	1
Number of countries	93223	14.683	8.454	1	33

Share of other subsidiaries	15222	0.440	0.242	0.00504	0.996
Share of foreign lenders	93223	0.711	0.250	0	1.000
Number of lenders	93223	15.91	11.15	0	175
Number of foreign lenders	93223	11.36	9.279	0	88
Experience	73540	4.241	2.101	0	7.627
Relationship with lender	93223	0.429	0.495	0	1
Relationship with any lender	93223	0.637	0.481	0	1
Trade	89874	0.00427	0.0118	0	0.307
Official supervisory power (Borrower)	86243	11.69	2.214	4	16
Overall capital stringency (Borrower)	81954	4.405	1.611	0	7
Overall restrictions on banking activities (Borrower)	85760	7.223	2.133	3	12
Official supervisory power (Lender)	83646	10.20	2.333	4	16
Overall capital stringency (Lender)	84477	4.271	1.655	1	7
Overall restrictions on banking activities (Lender)	84609	6.116	2.334	3	12
ER flexibility	70833	0.785	0.411	0	1
Credit constraints (in)	84386	0.146	0.353	0	1
GDP per capita	90472	31363.3	16448.9	162.9	87772.7
Credit	80301	81.81	46.41	2.521	305.0
Domestic credit	80285	153.1	62.85	-27.96	349.0
Market cap	80922	115.9	83.16	0.139	606.0
Turnover ratio	80880	119.3	74.77	0	497.4
Concentration	84199	61.23	24.09	23.18	100
Boone indicator	71703	-0.0535	0.170	-3.200	9.450
H-statistic	24195	0.526	0.210	-0.500	1.610
Lerner index	82956	0.221	0.540	-8.660	1.080
CPI	93223	1.761	1.501	-5.258	46.22
GDP growth	93223	2.382	2.461	-9.274	19.30

Table 2: Monetary policy and cross-border lending volume

The dependent variable in all regressions is Volume, which is the natural logarithm of the dollar amount of a banks' share in a syndicated loan, aggregated at the borrower-lender-time level. IR is the central bank policy rate or the discount rate in the lender's country. QE (Non-QE) is a dummy variable indicating that a quantitative easing program was (not) in place in the lender's country. Shadow rate is the Krippner (2013) shadow short rate. IR 3-months change is change of IR in the preceding three months. Expected IR (Residual IR) is the predicted value (error) from a regression of the monetary policy rate (IR) on the real GDP growth rate and the inflation rate (CPI) separately for each lender country. CPI is the annual percentage change of the consumer price index in the lender's country. GDP growth is the annual percentage change of real GDP in the lender's country. The sample includes non-financial borrowers only. Borrower firm*year-month and lender firm fixed effects are included. Standard errors clustered at the lender company and borrower country levels are reported in parentheses. *, **, and *** denote significance at 10%, 5%, and 1%.

	(1)	(2)	(3)	(4)	(5)	(6)
IR	-0.307	-0.818**		-0.798*		
	(0.264)	(0.406)		(0.439)		
Non-QE * IR			-0.905**			
			(0.381)			
QE * Shadow rate			-0.907			
			(0.639)			
IR 3-months change				-0.172		
				(0.334)		
Residual IR					-1.075***	-1.381***
					(0.377)	(0.379)
Expected IR						-0.779
						(0.550)
QE		-0.0713***	-0.0924***	-0.0710**	-0.0906***	-0.0924***
		(0.0269)	(0.0222)	(0.0271)	(0.0200)	(0.0208)
CPI	0.00460	0.00892**	0.00835**	0.00884**	0.00385	0.00760
	(0.00355)	(0.00372)	(0.00350)	(0.00377)	(0.00335)	(0.00475)
GDP growth	0.00563**	0.00609***	0.00610**	0.00627***	0.00488**	0.00582**
	(0.00232)	(0.00230)	(0.00234)	(0.00225)	(0.00240)	(0.00250)
Observations	93223	93223	93223	93091	84505	84505
Adjusted R-squared	0.813	0.813	0.813	0.813	0.817	0.817
Borrower firm*Year-month FE	Yes	Yes	Yes	Yes	Yes	Yes
Lender firm FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 3: Foreign banking presence, monetary policy and cross-border lending volume

The dependent variable in all regressions is Volume, which is the natural logarithm of the dollar amount of a banks' share in a syndicated loan, aggregated at the borrower-lender-time level. IR is the central bank policy rate or the discount rate in the lender's country. FOB is the fraction of the banking system's assets in the borrower's country that is foreign owned, in percentage points. Number of countries is the number of countries in which the lender has a subsidiary. QE is a dummy variable indicating that a quantitative easing program was in place in the lender's country. CPI is the annual percentage change of the consumer price index in the lender's country. GDP growth is the annual percentage change of real GDP in the lender's country. Trade is the total annual bilateral trade flow between the lender country and the borrower country relative to the GDP of the borrower country. Observations in columns 2 and 3 have E/A (Borrower) below and above the median. In column 4 FOB is the value for the beginning of the period. In column 7 lending by foreign subsidiaries is not assigned to their parent companies and for these lenders IR is taken to be the host country monetary policy interest rate. In column 8 foreign subsidiaries' domestic lending is excluded. The sample includes non-financial borrowers only. All regressions include borrower firm*year-month and lender firm fixed effects. Regression 5 in addition includes borrower country-lender country fixed effects. Standard errors clustered at the lender company and borrower country levels are reported in parentheses. *, **, and *** denote significance at 10%, 5%, and 1%.

	Full sample	Borrower E/A below median	Borrower E/A above median	Beginning of period FOB	Borrower-country-lender country FE	Trade	Subsidiaries and parents separately	Subsidiaries' domestic lending excluded
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IR	-1.781***	-2.403***	-0.347	-1.522**	-1.379***	-1.660***	-1.208***	-1.768***
	(0.607)	(0.597)	(0.491)	(0.592)	(0.378)	(0.568)	(-0.452)	(-0.562)
IR * FOB	0.0527***	0.113**	0.0316	0.0379**	0.0754***	0.0543***	0.0381**	0.0464***
	(0.0145)	(0.0491)	(0.0219)	(0.0180)	(0.0161)	(0.0155)	(0.0146)	(0.0161)
QE	-0.0729***	-0.0852***	-0.0555*	-0.0801***	-0.0556**	-0.0643***	-0.0603***	-0.0816***
	(0.0224)	(0.0300)	(0.0278)	(0.0208)	(0.0226)	(0.0213)	(-0.0182)	(-0.0183)
CPI	0.00671	0.00229	0.00502	0.00794*	0.00436	0.00422	0.00152	0.00861**
	(0.00455)	(0.00559)	(0.00397)	(0.00460)	(0.00410)	(0.00400)	(0.0032)	(0.00413)
GDP growth	0.00286*	0.00277	0.00621**	0.00268	0.00364**	0.00306*	0.00236	0.00453*
	(0.00170)	(0.00342)	(0.00241)	(0.00170)	(0.00139)	(0.00176)	(0.00227)	(0.00234)
Trade						8.615***		
						(1.609)		
Observations	66276	18850	18272	66276	65949	64480	56883	57151
Adjusted R-squared	0.803	0.786	0.800	0.803	0.808	0.802	0.816	0.814
Borrower firm*Year-month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lender firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4: Foreign banking presence, monetary policy and cross-border lending volume: additional controls

The dependent variable in all regressions is Volume, which is the natural logarithm of the dollar amount of a banks' share in a syndicated loan, aggregated at the borrower-lender-time level. IR is the central bank policy rate or the discount rate in the lender's country. FOB is the fraction of the banking system's assets in the borrower's country that is foreign owned, in percentage points. Official supervisory power (Borrower, Lender) is an index of the power of the supervisory authorities in the borrower's (lender's) country to take specific actions to prevent and correct problems in banks, with higher values indicating greater power. Overall capital stringency (Borrower, Lender) is an index measuring the stringency in determining minimum capital adequacy in the borrower's (lender's) country, with higher values indicating greater stringency. Overall Restrictions on banking activities (Borrower, Lender) is an index of the extent to which banks in the borrower's (lender's) country can engage in securities, insurance and real estate activities, with higher values indicating more restrictions. ER flexibility is a dummy variable indicating that the borrower's country has a flexible exchange rate regime. Credit constraints (in) is a dummy variable indicating the presence of restrictions on the inflow of commercial credit in the borrower's country. GDP per capita is GDP per capita in constant 2005 US dollars. Credit is domestic credit to the private sector by banks as a percentage of GDP. Domestic credit is domestic credit provided by the financial sector as a percentage of GDP. Market cap is the market capitalization of listed companies as a percentage of GDP. Turnover ratio is the total value of shares traded during the period as a percentage of the average market capitalization for the period. QE is a dummy variable indicating that a quantitative easing program was in place in the lender's country. Concentration is the assets of the five largest banks as a share of total commercial banking assets in the borrower's country. Boone indicator is the elasticity of the median bank's profits to marginal costs in the borrower's country. H-statistic is the elasticity of the median bank's revenues with respect to input prices in the borrower's country. Lerner index is the markup of the median bank in the borrower's country. CPI is the annual percentage change of the consumer price index in the lender's country. GDP growth is the annual percentage change of real GDP in the lender's country. CPI and GDP growth are included but not reported. Regressions in Panel A include regulatory and institutional controls. Regressions in Panel B include controls related to economic and financial development, and banking competition. The sample includes non-financial borrowers only. Borrower firm*year-month and lender firm fixed effects are included. Standard errors clustered at the lender company and borrower country levels are reported in parentheses. *, **, and *** denote significance at 10%, 5%, and 1%.

Panel A	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IR	-2.657	-1.861**	-1.570	0.356	1.584	-2.788***	-1.351*	-1.398**
	(2.127)	(0.902)	(2.050)	(2.053)	(1.519)	(1.058)	(0.756)	(0.535)
IR * FOB	0.0533***	0.0534***	0.0523***	0.0578***	0.0492***	0.0525***	0.0501***	0.0472**
	(0.0149)	(0.0144)	(0.0152)	(0.0161)	(0.0135)	(0.0136)	(0.0165)	(0.0195)
IR * Official supervisory power (Borrower)	0.0761							
	(0.185)							
IR * Overall capital stringency (Borrower)		0.0213						
		(0.224)						
IR * Overall restrictions on banking activities (Borrower)			-0.0239					
			(0.227)					
IR * Official supervisory power (Lender)				-0.243				
				(0.193)				
Official supervisory power (Lender)				0.00313				
				(0.00404)				
IR * Overall capital stringency (Lender)					-0.826***			
					(0.242)			

Overall capital stringency (Lender)					0.00895			
					(0.00736)			
IR * Overall restrictions on banking activities (Lender)						0.148		
						(0.133)		
Overall restrictions on banking activities (Lender)						-0.00743		
						(0.00605)		
IR * ER flexibility (dummy)							-0.231	
							(0.922)	
IR * Credit constraints (in)								-1.258
								(0.775)
QE	-0.072***	-0.073***	-0.073***	-0.091***	-0.104***	-0.088***	-0.079***	-0.073***
	(0.0224)	(0.0223)	(0.0233)	(0.0184)	(0.0216)	(0.0241)	(0.0231)	(0.0231)
Observations	65826	66021	65977	63913	64196	64090	53326	61828
Adjusted R-squared	0.802	0.803	0.802	0.800	0.803	0.803	0.796	0.800
Borrower firm*Year-month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lender firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
IR	-2.930***	-2.276**	-3.583***	-2.919***	-2.761***	-2.104**	-0.0584	-4.453	-1.497**
	(0.716)	(0.914)	(1.019)	(0.736)	(0.591)	(0.844)	(0.826)	(3.305)	(0.662)
IR * FOB	0.0563***	0.0435**	0.0617***	0.0495**	0.0584***	0.0509***	0.0395**	0.0607*	0.0478***
	(0.0177)	(0.0169)	(0.0213)	(0.0212)	(0.0177)	(0.0169)	(0.0166)	(0.0356)	(0.0168)
IR * GDP per capita	0.0000450*								
	(0.0000250)								
IR * Credit		0.0112							
		(0.00869)							
IR * Domestic credit			0.0139**						
			(0.00639)						
IR * Market cap				0.0138**					
	*			(0.00623)					
IR * TOR					0.0101***				
					(0.00344)				
IR * Concentration						0.00377			
						(0.0140)			
IR * Boone indicator							2.712***		
							(0.813)		
IR * H-statistic								6.745*	
								(3.837)	
IR * Lerner index									-1.730
									(1.615)
QE	-0.0668***	-0.0743***	-0.0655**	-0.0719***	-0.0685***	-0.0704***	-0.0541**	0.0685	-0.0798***
	(0.0226)	(0.0238)	(0.0250)	(0.0232)	(0.0247)	(0.0223)	(0.0217)	(0.0417)	(0.0235)
Observations	64771	60034	60034	60213	60192	59807	49657	16171	59066
Adjusted R-squared	0.802	0.801	0.801	0.801	0.801	0.799	0.784	0.782	0.799
Borrower firm*Year-month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lender firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5: The role of subsidiaries of banks participating in the loan syndicate

The dependent variable in all regressions is Volume, which is the natural logarithm of the dollar amount of a banks' share in a syndicated loan, aggregated at the borrower-lender-time level. IR is the central bank policy rate or the discount rate in the lender's country. FOB is the fraction of the banking system's assets in the borrower's country that is foreign owned, in percentage points. Subsidiaries is a dummy variable that equals one if the lender company has at least one subsidiary in the borrower country during the sample period and zero otherwise. Share of other subsidiaries is the share of other international banks in the loan syndicate with at least one subsidiary in the borrower country. QE is a dummy variable indicating that a quantitative easing program was in place in the lender's country. CPI is the annual percentage change of the consumer price index in the lender's country. GDP growth is the annual percentage change of real GDP in the lender's country. CPI and GDP growth are included but not reported. In column 2 the sample includes loans that were provided by lenders that have no subsidiaries in the borrower's country. In columns 3 and 4 the sample includes loans provided by lenders that have at least one subsidiary in the borrower's country. Borrower firm*year-month and lender firm fixed effects are included. Standard errors clustered at the lender company and borrower country levels are reported in parentheses. *, **, and *** denote significance at 10%, 5%, and 1%.

	Baseline sample	Lender has subsidiary in borrower country	Lender has no subsidiary in borrower country	
	(1)	(2)	(3)	(4)
IR	-2.157***	-1.451***	-2.055**	-2.945***
	(0.694)	(0.497)	(0.862)	(1.025)
IR * FOB	0.0508***	0.0475	0.0536***	0.0483***
	(0.0146)	(0.0315)	(0.0173)	(0.0151)
IR * Subsidiaries	0.639			
	(0.513)			
Subsidiaries	0.0684***			
	(0.0180)			
IR * Share of other subsidiaries				3.518**
				(1.642)
Share of other subsidiaries				10.06***
				(0.357)
QE	-0.0689***	-0.0781***	-0.0622**	-0.0134
	(0.0213)	(0.0286)	(0.0301)	(0.0255)
Observations	66276	44438	18314	15222
Adjusted R-squared	0.803	0.780	0.843	0.904
Borrower firm*Year-month FE	Yes	Yes	Yes	Yes
Lender firm FE	Yes	Yes	Yes	Yes

Table 6: The role of other foreign lenders in the loan syndicate

The dependent variable in all regressions is Volume, which is the natural logarithm of the dollar amount of a banks' share in a syndicated loan, aggregated at the borrower-lender-time level. IR is the central bank policy rate or the discount rate in the lender's country. FOB is the fraction of the banking system's assets in the borrower's country that is foreign owned, in percentage points. Number of countries is the number of countries in which the lender has a subsidiary. Share of foreign lenders is the average share of foreign lenders in the loan facilities of a borrower in a given month excluding the pertinent lender weighted by the loan amount of the facility. Number of lenders is the average number of lenders in the loan facilities of a borrower in a given month excluding the pertinent lender weighted by the loan amount of the facility. Number of foreign lenders is the average number of foreign lenders in the loan facilities of a borrower in a given month excluding the pertinent lender weighted by the loan amount of the facility. QE is a dummy variable indicating that a quantitative easing program was in place in the lender's country. CPI is the annual percentage change of the consumer price index in the lender's country. GDP growth is the annual percentage change of real GDP in the lender's country. CPI and GDP growth are included but not reported. Borrower firm*year-month and lender firm fixed effects are included. Standard errors clustered at the lender company and borrower country levels are reported in parentheses. *, **, and *** denote significance at 10%, 5%, and 1%.

	(1)	(2)	(3)	(4)	(5)
IR	-0.268	0.841*	0.228	0.147	0.120
	(0.747)	(0.467)	(1.008)	(0.782)	(0.998)
IR * FOB	0.0500***	0.0680***	0.0422***	0.0499***	0.0501***
	(0.0149)	(0.0170)	(0.0120)	(0.0138)	(0.0128)
IR * Number of countries	-0.101***				
	(0.0217)				
IR * Share of foreign lenders		-3.895***			
		(0.633)			
Share of foreign lenders		-0.524***			
		(0.113)			
IR * Number of lenders			-0.101***		0.00577
			(0.0327)		(0.0620)
Number of lenders			-0.0396***		-0.0273***
			(0.00810)		(0.00845)
IR * Number of foreign lenders				-0.139***	-0.146***
				(0.0347)	(0.0488)
Number of foreign lenders				-0.0588***	-0.0272**
				(0.00815)	(0.0119)
QE	-0.0854***	-0.0657***	-0.0711***	-0.0674***	-0.0673***
	(0.0230)	(0.0220)	(0.0232)	(0.0237)	(0.0233)
Observations	66276	66276	66276	66276	66276
Adjusted R-squared	0.803	0.803	0.805	0.805	0.805
Borrower firm*Year-month FE	Yes	Yes	Yes	Yes	Yes
Lender firm FE	Yes	Yes	Yes	Yes	Yes

Table 7: The roles of lending experience and borrower country monetary policy

The dependent variable in all regressions is Volume, which is the natural logarithm of the dollar amount of a banks' share in a syndicated loan, aggregated at the borrower-lender-time level. IR is the central bank policy rate or the discount rate in the lender's country. FOB is the fraction of the banking system's assets in the borrower's country that is foreign owned, in percentage points. Experience is the natural logarithm of 1 + the number of loans extended by the lender in the country of the borrower in the three years prior to the loan. Experience with lender is a dummy variable indicating that the borrower had a prior lending relationship with the lender. Experience with any lender is a dummy variable indicating that the borrower had a prior lending relationship with any foreign lender. IR (Borrower) is the central bank policy rate or the discount rate in the borrower's country. QE is a dummy variable indicating that a quantitative easing program was in place in the lender's country. CPI is the annual percentage change of the consumer price index in the lender's country. GDP growth is the annual percentage change of real GDP in the lender's country. CPI and GDP growth are included but not reported. The sample includes non-financial borrowers only. Borrower firm*year-month and lender firm fixed effects are included. Standard errors clustered at the lender company and borrower country levels are reported in parentheses. *, **, and *** denote significance at 10%, 5%, and 1%.

	(1)	(2)	(3)	(4)	(5)
IR	-0.526	-1.939***	-1.919***	-0.504	-0.518
	(0.906)	(0.549)	(0.495)	(0.905)	(0.646)
IR * FOB	0.0272*	0.0531***	0.0509***	0.0283*	0.0560**
	(0.0147)	(0.0142)	(0.0135)	(0.0145)	(0.0235)
IR * Experience	0.219*			0.254*	
	(0.123)			(0.129)	
Experience	0.113***			0.0970***	
	(0.00821)			(0.00782)	
IR * Relationship with any lender		0.328	0.574	0.128	
		(0.420)	(0.408)	(0.564)	
IR * Relationship with lender			0.00547	-0.581	
			(0.402)	(0.472)	
Relationship with lender			0.239***	0.214***	
			(0.0231)	(0.0255)	
IR * IR (Borrower)					-12.28*
					(6.745)
QE	-0.0376**	-0.0712***	-0.0690***	-0.0390**	-0.0592**
	(0.0183)	(0.0229)	(0.0204)	(0.0174)	(0.0229)
Observations	51218	66276	66276	51218	58562
Adjusted R-squared	0.789	0.803	0.807	0.793	0.794
Borrower firm*Year-month FE	Yes	Yes	Yes	Yes	Yes
Lender firm FE	Yes	Yes	Yes	Yes	Yes