Nonbank Lenders as Global Shock Absorbers: Evidence from US Monetary Policy Spillovers*

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Abstract

We show that nonbank lenders act as global shock absorbers from US monetary policy tightening spillovers. For identification, we use loan-level data from the global syndicated lending market and US monetary policy surprises. We find that when US monetary policy tightens, nonbank lenders increase the supply of dollar credit to non-US borrowers, relative to banks. This partially mitigates the total reduction in dollar credit supply. The substitution is stronger for riskier borrowers, emerging market borrowers, and borrowers from non-dollar-anchored countries. However this increased risk-taking is not driven by particularly fragile nonbank lenders nor by zombie lending. Moreover, the credit substitution has real effects, as borrowers with existing relationships with nonbank lenders increase total debt, investment, and employment relative to borrowers without such relationships. Our results therefore suggest that having more diversified funding providers (nonbanks in addition to banks) reduces the volatility in capital flows and economic activity resulting from the global financial cycle.

Keywords: Nonbank lending; Banks; Monetary policy transmission; International monetary policy spillovers; Global financial cycle.

JEL classification: E51, E52, F34, F42, G21, G23.

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1 Introduction

Capital flows and credit growth are strongly correlated across countries (Calvo et al., 1996; Rey, 2015). Macroeconomic evidence suggests that this "global financial cycle" is largely driven by US monetary policy (Miranda-Agrippino and Rey, 2020): expansionary Federal Reserve policy drives increases in lending and risky asset prices globally, while contractionary policy leads to a tightening of financial conditions. Meanwhile, rapid credit growth — often driven by capital inflows — is the best predictor of financial crises (Jorda et al., 2011; Schularick and Taylor, 2012). The potential for US monetary policy to affect credit conditions in other countries has therefore been a source of significant concern for policymakers — especially those in emerging market economies, where the spillover effects are most pronounced (Kalemli-Ozcan, 2019). Indeed, BIS General Manager Caruana (2012) and Reserve Bank of India Governor Rajan (2014) have highlighted the potential for US monetary policy spillovers to lead to distortions and financial stability risks globally.[1]

It is therefore crucial to understand the channels through which these spillovers occur. Existing literature has highlighted the role played by the banking sector. When US monetary policy tightens, international bank lending declines (Bruno and Shin, 2015a) — that is, there is an international bank lending channel of monetary policy. The effect is stronger for lending to riskier borrowers and emerging market borrowers (Morais et al., 2019; Bräuning and Ivashina, 2020), suggesting an international risk-taking channel. However, in recent decades, *nonbank* financial intermediaries have grown in importance, accounting for 50% of global financial assets as of 2019 (FSB, 2020). Despite this growth, there is scant evidence on how lending by international nonbank financial intermediaries responds to US monetary policy, and whether nonbanks act as global shock propagators or absorbers.

In this paper, we fill this gap by studying how US monetary policy affects lending to non-US firms by nonbanks, relative to banks (depository institutions). This is ultimately an empirical question, because different theories offer starkly different predictions. On the one hand, several papers argue that US monetary policy affects international bank lending via its impact on lender risk aversion and borrower balance sheet strength. Contractionary US monetary policy leads to higher volatility, which tightens Value-at-Risk constraints (Bruno and Shin, 2015a); and causes dollar appreciation, which weakens the balance sheets of non-US firms with dollar liabilities (Bruno and Shin, 2015b). These mechanisms could work in a

[1]Federal Reserve policymakers have also debated the implications of US monetary policy spillovers: see, for example, Bernanke (2012), Powell (2013) and Fischer (2015).

similar way for both banks and nonbanks, suggesting that the presence of nonbank lenders could reinforce the international transmission of US monetary policy.

On the other hand, recent micro-studies of the domestic US monetary transmission mechanism suggest that banks and nonbanks respond to monetary policy differently due to specific frictions in funding markets. An increase in the Fed Funds rate causes deposits to flow out of banks, due to market power in deposit markets (Drechsler et al., 2017). These deposits flow to shadow banks such as money market funds, which in turn provide funding to 'downstream' nonbank lenders (Xiao, 2020). This enables nonbanks to increase real economy lending relative to banks (Elliott et al., 2020). If a similar mechanism operates at the international level, then nonbank lenders could attenuate US monetary spillovers, with nonbanks substituting for the reduction in bank credit supply.

Empirically distinguishing between these theoretical predictions is challenging because banks and nonbanks might lend to borrowers with different characteristics, and US monetary policy might affect the credit demand of these borrowers differently. To isolate credit supply effects, we therefore study the global syndicated lending market — a setting in which corporates borrow from multiple lenders (both banks and nonbanks) at the same time. This allows us to compare how banks and nonbanks lend to the same firm in the same period (even in the same loan), and how this varies with US monetary policy. Specifically, we use borrower-quarter fixed effects to control for time-varying borrower characteristics, including credit demand (Khwaja and Mian, 2008; Chodorow-Reich, 2014). A second challenge is that US monetary policy is not exogenous, but is affected by domestic and global economic conditions, which might themselves affect bank and nonbank credit supply. We address this challenge by measuring US monetary policy using the series of monetary policy *shocks* constructed by Jarociński and Karadi (2020).[2] In addition, we control for local economic conditions in both the borrower and lender country, and control for other global factors known to be associated with the global financial cycle (dollar strength, volatility, risk aversion, uncertainty). Our main sample covers 28 years (1990-2017) and borrowers in 121 countries.

We find that when monetary policy tightens, nonbanks increase the supply of syndicated dollar credit to non-US borrowers, relative to banks. The economic effect is large: a 100 basis point increase in the monetary policy measure is associated with a relative increase in nonbank loan size of around 30%. In other words, nonbank lenders attenuate the inter-

[2]We also use the Fed Funds rate and Wu and Xia (2016) shadow rate in robustness tests.

national transmission of US monetary policy. The result is robust to controlling for credit demand using borrower-quarter fixed effects, controlling for local and global measures of economic conditions, and measuring monetary policy using Jarociński and Karadi (2020) shocks, the Fed Funds rate, or the Wu and Xia (2016) shadow rate. The relative increase in nonbank lending holds for both of the main types of nonbank lender in this market (finance companies and investment banks), US and non-US lenders, and within-border and cross-border dollar loans.

Our finding that nonbanks increase credit supply relative to banks when US monetary policy tightens is consistent with the funding mechanisms proposed by Drechsler et al. (2017) and Xiao (2020) — whereby tighter monetary policy leads to an improvement in nonbank funding conditions relative to banks. We also find that the effect is driven by dollar loans specifically, with no significant increase in the supply of non-dollar loans, providing further support for a mechanism that works through dollar funding markets.

We next show that the relative increase in nonbank lending is stronger for riskier borrowers: specifically, borrowers from emerging markets, borrowers paying higher yields on their loans, and borrowers from countries whose currencies are not anchored to the US dollar (and whose balance sheets are therefore more vulnerable to exchange rate fluctuations caused by US monetary policy). Put another way, nonbank lenders attenuate not only the international bank lending channel of monetary policy, but also the international risk-taking channel identified by Bruno and Shin (2015a), Morais et al. (2019), Bräuning and Ivashina (2020) and Miranda-Agrippino and Rey (2020). However, we find no evidence that the relative expansion of nonbank lending is associated with an increase in destabilising or zombie lending: the increase is no larger for nonbanks with particularly unstable funding structures, for shorter maturity loans, or for loans to borrowers with lower ex-ante or ex-post profitability. Moreover, the relative expansion of nonbank lending is affected by prudential regulation in the lender's country.

We next aggregate the loan-level dataset to the borrower-quarter level in order to study the overall strength of substitution from bank to nonbank credit. In line with our loan-level results, we find that when US monetary policy tightens, total bank lending to a given borrower falls, while total nonbank lending increases, leading to an increase in the nonbank share of total lending. However, total borrower-level credit falls. That is, borrowers substitute from bank to nonbank credit, but the substitution is incomplete.

This incomplete substitution could reflect reduced credit demand. However it could also

reflect informational frictions. The syndicated loan market relies on soft information (Sufi, 2007), and nonbank lenders make up a relatively small fraction of the primary market. They are therefore likely to focus their increased credit supply on borrowers about which they have better information. To test this idea, we study whether credit supply increases more for borrowers that have established relationships with nonbank lenders in the past. We find that when US monetary policy tightens, non-US borrowers that have previously borrowed from nonbanks are more likely to obtain a new dollar syndicated loan. Matching the syndicated lending data to firm-level financial statements from Compustat Global, we find that borrowers with existing nonbank relationships also experience a relative increase in total balance sheet debt, suggesting that borrowers without such relationships are unable to use other debt markets (e.g. bonds) to perfectly substitute for a reduction in syndicated credit supply. Finally, the increase in credit has real economic effects, as borrowers with nonbank relationships increase investment and employment after a monetary contraction relative to borrowers without nonbank relationships.

Taken together, our loan-level and firm-level results suggest that nonbank lenders counteract the cyclical volatility in international bank credit supply, especially for the most vulnerable borrowers, and therefore act as shock absorbers from US monetary policy spillovers. Our results therefore suggest that having more diversified funding providers (nonbanks in addition to banks) reduces the volatility in capital flows and economic activity resulting from the global financial cycle.

Contributions to existing literature

Our paper contributes to the large recent literature on US monetary spillovers and the "global financial cycle" (McCauley et al., 2015; Bruno and Shin, 2015a,b; Rey, 2015; Bernanke, 2017; Kalemli-Ozcan, 2019; Avdjiev and Hale, 2019; Iacoviello and Navarro, 2019; Miranda-Agrippino and Rey, 2020). We complement these macro studies by providing micro evidence on the channels through which these spillovers can occur. In particular, our micro perspective allows us to demonstrate important heterogeneity in the response of different financial intermediaries (nonbank lenders vs banks) to US monetary policy.

We also add to empirical literature studying the international transmission of shocks to financial intermediaries (Peek and Rosengren, 1997; Giannetti and Laeven, 2012; De Haas and Van Horen, 2013; Ongena et al., 2015), in particular monetary policy shocks (Cetorelli and Goldberg, 2012; Morais et al., 2019; Bräuning and Ivashina, 2020). Our finding that

nonbanks increase international lending relative to banks in response to contractionary US monetary policy mirrors recent evidence in the domestic US context (Drechsler et al., 2019; Elliott et al., 2020). This provides suggestive evidence that the mechanisms underlying the bank and nonbank lending channels of monetary policy identified in the US (Drechsler et al., 2017; Xiao, 2020) also operate at the international level.[3]

Our paper also adds to a growing literature exploring the drivers and implications of the recent growth of nonbank credit intermediation (Pozsar et al., 2013; Moreira and Savov, 2017; Buchak et al., 2018a,b; Nelson et al., 2018; Fuster et al., 2019; Irani et al., 2020). Previous empirical studies have primarily focused on US nonbanks;[4] we extend the literature by providing cross-country evidence, which highlights important differences in nonbank vs bank lending across developed and emerging market economies.

Finally, we contribute to the literature on spillovers from macroprudential policies (for surveys, see Forbes, 2020; Bussiere et al., 2021). We provide evidence of a novel interaction between monetary and macroprudential spillovers: nonbank lenders subject to stricter prudential regulation are constrained in their ability to increase international lending when US monetary policy tightens.

The rest of the paper is structured as follows. Section 2 describes the international syndicated lending market and the datasets that we use. Section 3 provides loan-level evidence on the differential response to US monetary policy by bank and nonbank lenders. Section 4 provides evidence on the impact of nonbank lending on firm-level credit and real outcomes. Section 5 concludes.

2 Empirical setting and data sources

2.1 The international syndicated lending market

To compare how international bank and nonbank lending responds to US monetary policy, we study the global syndicated lending market. Syndicated loans are loans extended to one borrower (primarily non-financial corporates) by multiple lenders (including both banks and nonbanks), making this an ideal setting to study how lending by different financial intermediaries responds to monetary policy. This market is a very significant source of

[3] Our results on risk-taking by banks and nonbanks are also related to the literature on the bank risk-taking channel of monetary policy, e.g. Rajan (2005); Allen and Rogoff (2011); Borio and Zhu (2012); Jiménez et al. (2012, 2014); Dell'Ariccia et al. (2017).

[4] One exception is Chen et al. (2018), which studies the shadow banking system in China.

cross-border credit: according to BIS data, syndicated loans comprised 30% of total global cross-border debt issuance in 2012:Q4, and 46% for emerging markets.[5]

We obtain loan-level data on global syndicated loan originations from Refinitiv LPC's DealScan dataset for the period 1990 – 2019. In a typical syndicated loan, the borrower takes out a "package' that includes several loan "facilities." DealScan provides detailed information on individual loan facilities, including the identity of the borrower, the identities of the lenders in the syndicate, the type of facility (e.g. term loan or credit line), loan amount, maturity, and interest rate. Following Roberts (2015), we drop observations that we identify as likely to be amendments to existing loans, because these do not necessarily involve new credit. We then collapse the dataset to the borrower-lender-currency-quarter level. In order to study firm-level outcomes, we collapse the dataset again to the borrower-quarter or borrower-year level.[6]

Since we are interested in international spillovers from US monetary policy, our main sample is dollar-denominated loans to borrowers headquartered outside of the US.[7] As shown in Table 1, 65% of loans to non-US borrowers are denominated in the borrower's local currency. However foreign-currency loans are predominantly denominated in US dollars, reflecting the dominant position of the US dollar in international trade and finance (Gopinath and Stein, 2018): 74% of foreign-currency loans to non-US borrowers are denominated in dollars, with this share rising to 84% for emerging market borrowers. Over our sample period, annual dollar-denominated loan issuance to non-US borrowers has averaged around $400bn, with fluctuations in aggregate issuance following a broadly pro-cyclical pattern (Figure 1, Panel A).

DealScan includes a lender classification, which allows us to classify most lenders as banks (depository institutions) or nonbanks.[8] In our main sample (dollar-denominated loans to non-US borrowers), nonbanks account for around 6% of loan originations (Figure 1, Panel B). But there is substantial variation in this share across time and countries, with the

[5]Following Gadanecz (2004) and De Haas and Van Horen (2013), we define total cross-border debt issuance as the sum of international syndicated lending (BIS Table 10), international money market instruments (Table 14A), and international bonds and notes (Table 14B).

[6]We convert all monetary variables to 2012 US dollars to avoid capturing any effects from inflation.

[7]We drop borrowers in offshore centres, based on the BIS country classification.

[8]We classify the following lender types as banks: African bank, Asia-Pacific bank, Eastern European / Russian bank, foreign bank, Middle Eastern bank, mortgage bank, thrift / S&L, US bank, Western European bank, and unclassified lenders with the word "bank" in the name. All other types of lender are classified as nonbanks. Lenders for which DealScan does not provide a classification are dropped. Of the lenders that we classify as banks and for which DealScan also provides an SIC code, 94% have two-digit SIC code 60 (depository institution).

nonbank share increasing to 12% in developed economies in 2004, and rising from 4% to 9% between 2011 and 2018 in emerging economies. While DealScan only provides information on the primary syndicated lending market, there is also an active secondary market, where nonbanks play a much larger role (Bord and Santos, 2012; Irani et al., 2020).

The large majority of nonbanks in the primary market are finance companies and investment banks, which each account for around 40% of nonbank loan originations. In contrast to banks — which typically receive much of their funding from retail depositors — these nonbanks are typically wholly reliant on wholesale funding. We also observe a small number of loan originations by institutional investors and other funds, but these investors are usually only active in the secondary market. We observe nonbank lenders headquartered in all regions of the world; most are based in developed economies (Table 2).

Identifying credit supply effects An important challenge to identifying the differential credit supply response of banks and nonbanks to US monetary policy is that banks and nonbanks might lend to borrowers with different characteristics, and US monetary policy might affect the credit demand of these borrowers differently. Two features of the syndicated lending market allow us to cleanly isolate the credit supply response.

First, syndicated loans are extended by multiple lenders to one borrower. This allows us to exploit within-borrower variation by comparing how different lenders lend to the same firm at the same time. Specifically, we use borrower-quarter fixed effects to control for time-varying borrower characteristics, including credit demand (Khwaja and Mian, 2008; Chodorow-Reich, 2014; Gao and Jang, 2020).[9]

Second, while the borrower chooses the lead arranger, the other lenders in the syndicate (participants) are selected in a book-building process run by the lead arranger and are therefore beyond the borrower's control (Bruche et al., 2020). This ensures that the composition of the syndicate is supply-driven, and alleviates concerns that borrowers might vary their credit demand across lenders in response to credit demand shocks (Paravisini et al., 2015).

2.2 Other data sources

We match the DealScan syndicated lending dataset to a variety of other data sources. Summary statistics for the variables used in the regressions are presented in Table 3.

[9]Firms very rarely take out more than one loan package in the same quarter, so these borrower-quarter fixed effects are essentially loan package fixed effects. When we additionally split the sample by term loans and credit lines, the borrower-quarter fixed effects are essentially loan facility fixed effects.

Monetary policy measures Our main measure of US monetary policy is the series of interest rate "surprises" constructed by Jarociński and Karadi (2020), which is available from 1990:Q1 to 2016:Q4. This measure is based on high-frequency changes in the price of three-month Fed Funds futures around FOMC monetary policy announcements. Since the dependent variable in most of our regressions is the *level* of new credit provision, we convert this measure of monetary policy shocks into a level measure by taking the cumulative sum, following Coibion (2012), Cloyne and Hürtgen (2016) and Nelson et al. (2018). In robustness tests, we also use two additional measures of US monetary policy: the effective Federal Funds rate, and the shadow rate of Wu and Xia (2016), which adjusts the Federal Funds rate to incorporate the effects of unconventional monetary policy at the zero lower bound.

Macroeconomic control variables To control for local economic conditions in the borrower and lender country, we collect quarterly country-level macroeconomic variables from the IMF International Financial Statistics dataset: real GDP growth, CPI inflation, the monetary policy rate,[10] and quarterly exchange rate appreciation or depreciation against the dollar. We also collect data on other global factors typically associated with the global financial cycle (Rey, 2015; Bruno and Shin, 2015a,b; Miranda-Agrippino and Rey, 2020): the Federal Reserve dollar index, the VIX (a measure of equity market volatility), and the risk aversion and economic uncertainty indices of Bekaert et al. (2019).

Compustat In order to study firm-level real effects, we match DealScan to borrower-level financial statements from Compustat North America and Compustat Global using the updated link provided by Chava and Roberts (2008). We extend this link using a matching algorithm based on firm names, countries and SIC codes, following an approach similar to Cohen et al. (2018).

Macroprudential regulation To investigate the impact of macroprudential regulation on monetary policy spillovers, we use the IMF Integrated Macroprudential (iMaPP) database. Originally constructed by Alam et al. (2019), this is a comprehensive database of macroprudential policies covering 134 countries from 1990 to 2018. The dataset consists of indicator variables for tightening and loosening of various prudential policies. Following Bergant et al. (2020) and Forbes (2020), we construct a time-varying proxy for each country's over-

[10] We use the central bank policy rate where available, and the money market rate or short-term government bond rate otherwise.

all macroprudential policy stance by cumulating the changes in macroprudential policies since the start of the dataset in 1990.

3 Loan-level results

In this section we use the loan-level syndicated lending data to estimate the differential response of international bank and nonbank credit supply to US monetary policy.

3.1 International bank lending

We start by estimating the response of international bank lending to US monetary policy. We drop nonbank lenders from the sample and estimate the following regression:

$$\text{Log(New credit)}_{b,l,t} = \alpha_b + \delta_l + \beta \text{JK}_{t-1} + \gamma \text{Macro controls}_{b,l,t-1} + \varepsilon_{b,l,t} \tag{1}$$

where $\text{Log(New credit)}_{b,l,t}$ is the log of the total amount of new syndicated credit extended by lender l to borrower b in quarter t. The main variable of interest is JK_{t-1}, the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. We control for time-invariant borrower and lender characteristics using borrower fixed effects α_b and lender fixed effects δ_l. And we control for local macroeconomic economic conditions (one-quarter lags of GDP growth, inflation, monetary policy rate, and exchange rate appreciation) in both the borrower and lender country. The sample consists of dollar-denominated loans from banks (in any country) to non-US borrowers from 1990 to 2017. We triple-cluster standard errors by borrower, lender, and quarter.

Regression results for equation (1) are shown in Table 4. Consistent with existing evidence (Morais et al., 2019; Bräuning and Ivashina, 2020), we find that banks cut international lending in response to contractionary monetary policy. In our baseline regression including the full set of controls (column 2), we find that a 100 basis point monetary tightening[11] is associated with a reduction in bank lending of around 37%.[12] Also consistent with existing studies, we find that the reduction in lending is substantially larger for borrowers in emerging markets (column 3).

[11] The standard deviation of JK over the sample is 93 basis points.

[12] In these regressions we do not yet include borrower-quarter fixed effects, so some of this reduction could reflect reduced credit demand. We introduce borrower-quarter fixed effects when we compare nonbank to bank lending below.

In columns 4 – 7, we find that the estimated response to monetary policy is robust to controlling for other factors typically associated with the global financial cycle (with the coefficient estimate remaining very stable across specifications): the strength of the dollar (Bruno and Shin, 2015b), financial market volatility (Rey, 2015; Bruno and Shin, 2015a), and the risk aversion and uncertainty indices of Bekaert et al. (2019). This suggests a direct transmission channel from US monetary policy to international bank lending. Consistent with Bruno and Shin (2015b), we also find that, conditional on US monetary policy, an appreciation of the US dollar leads to a reduction in bank lending. The coefficient estimate suggests that a one-standard deviation increase (9.86) in the dollar index is associated with a reduction in bank lending of around 6%.

Overall these results suggest that banks transmit the effects of US monetary policy across the globe, and particularly to emerging markets. That is, there is an international bank lending channel and international risk-taking channel of US monetary policy.

3.2 International nonbank lending

We now add nonbank lenders to the sample to estimate how nonbanks respond to US monetary policy relative to banks. In Section 3.1 above, where we only include bank lenders, we control for borrower characteristics using borrower fixed effects. These fixed effects do not fully control for demand, because the credit demand of different borrowers is likely to change differently over time. However, once we add nonbank lenders to the sample, we observe both banks and nonbanks lending to the same borrower at the same time, meaning that we can now include borrower-quarter fixed effects to control for credit demand. That is, we can isolate differential credit supply effects by comparing how bank and nonbank credit provision to the same borrower varies with US monetary policy.

Our baseline regression specification is:

$$\text{Log(New credit)}_{b,l,t} = \alpha_{b,t} + \delta_l + \beta\,(\text{Nonbank}_l \times \text{JK}_{t-1}) + \gamma\text{Controls}_{b,l,t-1} + \varepsilon_{b,l,t} \qquad (2)$$

where $\text{Log(New credit)}_{b,l,t}$ is the log of the total amount of new syndicated credit extended by lender l to borrower b in quarter t. Nonbank_l is an indicator variable equal to one for nonbank lenders and zero for banks. The coefficient β therefore provides an estimate of how nonbank lending changes relative to bank lending when the monetary policy measure JK_{t-1} tightens. Borrower-quarter fixed effects $\alpha_{b,t}$ control for observed and unobserved time-

varying borrower characteristics, including credit demand. Lender fixed effects δ_l control for time-invariant lender characteristics, such as business model. Finally, we include a vector of macroeconomic controls (GDP growth, inflation, monetary policy rate, exchange rate appreciation) for both the borrower and lender country, including interactions with the nonbank lender indicator. The sample consists of dollar loans to non-US borrowers over 1990 – 2017. Standard errors are triple-clustered by borrower, lender, and quarter.

Table 5 presents the results of estimating equation (2). We find that when US monetary policy tightens, nonbanks increase international lending relative to banks. In other words, nonbank lenders attenuate the international transmission of US monetary policy. This result is robust to including different sets of fixed effects and macroeconomic control variables (columns 1 – 3). And the effect is large: the coefficient estimate in our baseline specification including borrower-quarter fixed effects (column 3) suggests that a 100 basis point monetary policy tightening increases nonbank lending by around 30% relative to banks. Columns 4 – 7 show that result is robust to controlling for other factors typically associated with the global financial cycle (dollar strength, the VIX, and the risk aversion and uncertainty indices of Bekaert et al. (2019)). And the coefficient estimate is very similar when we only include the 1990 – 2006 sample period, implying that the result is not driven by the financial crisis (column 8).

The relative increase in nonbank lending in response to tighter US monetary policy is consistent with the funding mechanisms proposed by Drechsler et al. (2017) and Xiao (2020), whereby tighter monetary policy causes deposits to flow from banks to nonbank intermediaries (such as money market funds) that invest in wholesale funding markets, resulting in an improvement in funding conditions for nonbank lenders relative to banks.[13] Meanwhile, our finding that conditional on US monetary policy, banks and nonbanks do not respond differently to dollar strength (column 4) or to measures of volatility and risk aversion (columns 5 – 7) is consistent with the borrower balance sheet and lender risk aversion mechanisms of Bruno and Shin (2015a,b), which could work in the same way for banks and nonbanks.[14]

Table 6 shows that our main result is robust to using a range of alternative dependent

[13] Drechsler et al. (2017) find that banks use their market power in deposit markets to raise deposit rates by less than the Fed Funds rate, which causes some deposits to be withdrawn. In Xiao (2020), shadow banks face a more yield-sensitive clientele than banks, and hence pass more of the rate rise through to depositors, which attracts more deposits.

[14] In Bruno and Shin (2015b), dollar appreciation weakens the balance sheets of non-US borrowers with dollar liabilities, which reduces the capacity of banks to lend to these borrowers. Bruno and Shin (2015a) argue that an increase in volatility tightens Value-at-Risk constraints and hence restricts bank lending.

variables and monetary policy measures. In columns 1 and 2, we measure the dependent variable at the level of the two main types of loan facility (term loans and credit lines), rather than summing across all facilities. We find that the relative increase in nonbank lending holds for both facility types. In column 3, the dependent variable is an indicator variable for lead arrangers.[15] We find that a 100 basis point tightening in monetary policy is associated with a 10 percentage point increase in the propensity for a nonbank to be lead arranger.[16] In column 4, we keep only the two main types of nonbank lender — investment banks and finance companies, which each account for around 40% of nonbank loan originations — and estimate separate coefficients for these two types. We find that the relative increase in credit holds for both types, and is of almost exactly equal magnitude. In columns 5 and 6, we consider two alternative measures of US monetary policy: the effective Fed Funds rate, and the shadow rate of Wu and Xia (2016). In these columns we also extend the end of the sample period from 2017 to 2019. We again find that a tightening in US monetary policy leads to a relative increase in international nonbank lending.[17]

The sample considered so far consists of dollar-denominated loans to non-US borrowers. In Table 7, we explore how the relative response of banks and nonbanks to US monetary policy varies across currencies and borrower / lender nationalities. In column 1, we expand the sample to include loans in all currencies to non-US borrowers. Consistent with a mechanism involving dollar funding markets, we find that the relative expansion in nonbank credit is driven by dollar-denominated lending specifically: we do not observe a statistically significant increase in lending in other currencies. The difference between the estimated coefficients for dollar and non-dollar loans is significant at the 5% level. In column 2, the sample consists of dollar-denominated loans to borrowers in all countries, i.e. including US borrowers. We find that the relative increase in nonbank lending to international borrowers is very similar to the effect for domestic US borrowers.

In columns 3 and 4, the sample is again defined to be dollar loans to non-US borrowers. In column 3, we find that the relative increase in nonbank lending is driven by both US

[15] We identify lead arrangers following the classification in Bharath et al. (2011).

[16] Data on the quantity of credit provided by individual lenders is often missing in DealScan, whereas the identity of the lead arranger(s) is always observed. This explains why the sample size increases substantially in column 3. Lead arrangers typically provide a much larger quantity of credit than other members of the syndicate (Ivashina, 2009). So the result in column 3 acts as a robustness test for our main finding that nonbank credit quantity relatively increases.

[17] The coefficient size is much smaller in columns 5 and 6, compared to the regressions using Jarociński and Karadi (2020) shocks. This partly reflects the fact that the standard deviations of the Fed Funds rate (2.44) and the Wu-Xia shadow rate (2.85) are substantially larger than the standard deviation of the JK cumulative sum (0.93).

and non-US lenders. The estimated coefficient is somewhat larger for US lenders, although the difference is not statistically significant. Finally, in column 4, we find that the effect is very similar for within-border loans (defined as loans where the borrower and lender are headquartered in the same country) and cross-border loans.[18] Taken together, the results in Table 7 suggest that our key finding is robust across borrower and lender nationalities.

3.3 Heterogeneity by borrower risk

The results in Section 3.2 establish that nonbank credit substitutes for bank credit when US monetary policy tightens. In this subsection, we consider how the strength of this substitution varies by borrower risk.

In columns 1 and 2 of Table 8, we interact our main variable of interest ($\text{Nonbank}_l \times \text{JK}_{t-1}$) with an indicator variable for borrowers in emerging markets, using the BIS Locational Banking Statistics classification. We find that the relative increase in nonbank credit supply is substantially larger for emerging market borrowers, which are those typically seen as most vulnerable to volatility from the global financial cycle (Calvo et al., 1996; Kalemli-Ozcan, 2019). The coefficient estimates in column 2 suggest that when US monetary policy tightens by 100 basis points, nonbanks relatively increase lending by around 16% for developed market borrowers and 45% for emerging market borrowers.

We next consider a within-country borrower-level measure of risk. For each country, we compute the median syndicated loan spread, and we define borrowers whose average loan spread in a quarter is greater than the country-level median as 'high yield.'[19] The relative increase in nonbank lending is larger for these high yield borrowers (columns 3 and 4).

In columns 5 and 6, we interact $\text{Nonbank}_l \times \text{JK}_{t-1}$ with an indicator variable equal to one for borrowers in countries whose currency is not anchored to the US dollar, using the classification of Ilzetzki et al. (2019).[20] Borrowers in these countries are potentially more risky from the perspective of international lenders, because their balance sheets are more likely to be vulnerable to dollar appreciation. We find that the bank-to-nonbank substitution is stronger for borrowers without dollar anchors, although this result is only statistically significant when we also include local macroeconomic control variables (column

[18] Around 80% of loans in our main sample (dollar loans to non-US borrower) are cross-border.

[19] We use DealScan's all-in drawn spread, which includes fees and the spread over Libor paid on each dollar drawn.

[20] In these regressions, we also include the EME interaction variable, because most countries with dollar anchors are also emerging markets.

6).

In short, the results in Table 8 show that the relative increase in nonbank credit supply is stronger for riskier borrowers. This suggests that nonbanks attenuate the international risk-taking channel of US monetary policy.

An important question from a policy perspective is whether this increased risk-taking by nonbanks is likely to increase borrower vulnerabilities, or alternatively sustain 'zombie' firms. Table 9 presents suggestive evidence that this is not the case. In column 1, we include an interaction variable for nonbank lenders that typically have more unstable funding structures, i.e. a heavy reliance on short-term or runnable funding.[21] Such lenders might be less able to fulfil their commitments or roll-over funding in the event of stress. We find no evidence that the increase in lending is driven by these more unstable nonbank lenders. In column 2, we test whether the increase in nonbank lending varies with the maturity of the loan: an increased reliance on short-term funding might make borrowers more vulnerable if capital flows dry up in the future. Again, we find no relationship between the expansion of nonbank lending and loan maturity. Finally, in columns 3 and 4, we interact our main variable with measures of the borrower's ex-ante and ex-post profitability, specifically return-on-assets in the year before (column 3) and after (column 4) the loan. We find no evidence that the increase in nonbank credit supply is stronger for less profitable firms, suggesting that nonbanks are not increasingly engaging in zombie lending.[22]

3.4 Effect of macroprudential regulation

Recent research has emphasised the potential for macroprudential policies to affect international capital flows (Forbes, 2020; Bussiere et al., 2021). We therefore test whether the ability of nonbanks to expand international lending when US monetary policy tightens is affected by the strictness of local macropruential policy. For each country, we compute a proxy for the stance of macroprudential policy by taking the cumulative sum of policy changes since 1990, as recorded in the iMaPP dataset of macroprudential policies constructed by Alam et al. (2019). Each year, we then compute the median macroprudential policy stance across countries, and define countries whose macroprudential policy is stricter than the me-

[21] Following Irani et al. (2020), these are defined as investment banks, hedge funds, and mutual funds. In our sample, this group is dominated by investment banks, because very few hedge funds and mutual funds appear in the primary market.

[22] In unreported results, we also find no relationship with an indicator variable for borrowers that are ex-ante or ex-post loss-making.

dian as 'tight macropru.' We then add to our baseline regression (2) the interaction between our main variable $\text{Nonbank}_l \times \text{JK}_{t-1}$ and an indicator variable for lenders headquartered in countries with relatively tight macroprudential policy.

Columns 1 –3 of Table 10 show that nonbank lenders from countries with stricter prudential regulation increase lending by less when US monetary policy tightens. In columns 4 – 6, we estimate separate coefficients for investment banks (which are likely to be subject to their country's prudential regime) and other nonbank lenders (which are typically less regulated). Consistent with our prior, we find that the impact of macroprudential policy is driven by investment banks. This result suggests that monetary and macroprudential spillovers can interact, as nonbank lenders subject to stricter prudential regulation are constrained in their ability to increase international lending when US monetary policy tightens.

In summary, our loan-level evidence suggests that nonbank lenders mitigate the reduction in international credit supply when US monetary policy tightens. The relative increase in nonbank credit supply is stronger for emerging market and riskier borrowers, and weaker for investment bank lenders subject to stricter prudential regulation. Moreover, we find no evidence that it is associated with an increase in destabilising or zombie lending.

4 Firm-level results

The previous section established that when US monetary policy tightens, nonbanks increase the supply of dollar credit to non-US borrowers, relative to banks. In this section we first aggregate the loan-level dataset to the borrower-quarter level in order to study the overall strength of substitution from bank to nonbank credit. We then estimate firm-level real effects of the relative expansion of nonbank credit.

4.1 Firm-level credit

In order to estimate the overall strength of substitution from bank to nonbank credit, we aggregate to the borrower-quarter level by summing over total dollar credit, total dollar credit from banks, and total dollar credit from nonbanks. We run regressions of the following form:

$$\text{Outcome}_{b,t} = \alpha_b + \beta \text{JK}_{t-1} + \gamma \text{Macro controls}_{b,t-1} + \varepsilon_{b,t}, \tag{3}$$

where $\text{Outcome}_{b,t}$ is a measure of total dollar credit at the borrower-quarter level, α_b is a borrower fixed effect, JK_{t-1} is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks, and $\text{Macro controls}_{b,t-1}$ is a vector of lagged macroeconomic variables for the borrower's country: GDP growth, inflation, the monetary policy rate, and exchange rate appreciation. The sample consists of non-US borrowers for the period 1990 to 2017. We cluster standard errors by borrower and quarter.

The results for this regression are shown in Table 11. We find that when US monetary policy tightens, total dollar bank lending to a given borrower falls (column 2), while total nonbank lending increases (column 3), leading to an increase in the nonbank share of total dollar lending (column 4). Specifically, a 100 basis point increase in the monetary policy measure is associated with an increase in the nonbank share of 2.8 percentage points (this is a large increase, given that the mean of nonbank share is 6.4%). That is, in line with our loan-level results, there is substitution from bank to nonbank credit at the borrower level. However, total borrower-level credit falls (column 1),[23] meaning that the substitution is incomplete.[24]

4.2 Nonbank relationships and firm-level real effects

The incomplete substitution from banks to nonbanks documented above could reflect demand, since borrowers might reduce dollar credit demand when US monetary policy tightens. However it could also reflect informational frictions. Relationships are important in the syndicated lending market (Sufi, 2007). Lead arrangers monitor borrowers over time and share the information with other syndicate members, meaning that lenders accumulate soft information about their borrowers (Gustafson et al., 2021). Borrowers are therefore more likely to benefit from the increased credit supply after a US monetary contraction if they have existing relationships with nonbank lenders.

To test this idea, we measure past nonbank relationships by constructing an indicator variable equal to one for firms that have borrowed from nonbank lenders in a previous syndicated loan. We then match this firm-level variable to annual financial statement data

[23]The dependent variables in columns 2 – 4 are only observed for loans where the individual lender quantities are observed, whereas the dependent variable in column 1 is observed for all loans. This explains why the sample size is larger in column 1.

[24]Since these regressions include borrower fixed effects, the sample only includes repeat borrowers. We obtain qualitatively similar results when we include country and industry fixed effects instead of borrower fixed effects, and therefore additionally include one-time borrowers.

from Compustat, and estimate regressions of the following form at the firm-year level:[25]

$$\begin{aligned}\text{Outcome}_{b,t} = \alpha_b + \delta_{c,t} + \psi_{i,t} + \beta\,(\text{Nonbank relation}_{b,t} \times \text{JK}_{t-1}) \\ + \gamma_1\,(\text{Nonbank relation}_{b,t} \times \text{Macro controls}_{b,t-1}) + \gamma_2 \text{Firm controls}_{b,t-1} + \varepsilon_{b,t},\end{aligned} \tag{4}$$

where $\text{Nonbank relation}_{b,t}$ is our indicator variable for past nonbank lending relationships. We interact this variable both with our measure of US monetary policy JK_{t-1} and with a vector of lagged macroeconomic control variables for the firm's country. We control for country-level and industry-level shocks with country-year fixed effects $\delta_{c,t}$ and industry-year fixed effects $\psi_{i,t}$ (industry is measured using SIC division). To control for firm characteristics, we include firm fixed effects α_b and lagged values of log(total assets) and return-on-assets. The sample consists of non-US firms from 1991 to 2017. We only include firms that appear as borrowers in DealScan at least once,[26] and drop financial services firms. Standard errors are clustered by firm and year.

Table 12 shows estimated regression results for equation (4) across a range of dependent variables. The dependent variable in column 1 is an indicator variable equal to one if the firm obtains a new dollar syndicated loan. We find that when US monetary policy tightens, non-US firms that have previously borrowed from nonbanks are more likely to obtain a new loan, suggesting an increase in syndicated credit supply on the extensive margin. A 100 basis point increase in the monetary policy measure is associated with a 6 percentage point increase in the probability of obtaining a new loan (mean = 7.3%). We do not, however find any significant effect on loan size conditional on obtaining a loan (column 2).

The dependent variables in columns 3 – 8 are from Compustat. Columns 3 and 4 suggest that firms without nonbank relationships are unable to use other debt markets (such as bonds) to perfectly substitute for a reduction in syndicated credit supply: a 100 basis point increase in US monetary policy is associated with a 13% increase in total balance sheet debt (column 3) and a 1.8 percentage point increase in leverage (column 4) for firms with nonbank relationships relative to firms without such relationships. This differential access to credit results in a relative expansion of total assets for firms with nonbank relationships (column 5). Finally, we find evidence that the relative increase in nonbank credit supply has

[25] We use annual rather than quarterly data because Compustat has better firm coverage at annual frequency, and only provides employment data at annual frequency.

[26] This is to ensure that we are comparing firms with or without nonbank relationships, rather than with or without access to the syndicated credit market in general.

real economic effects: following a 100 basis point tightening in US monetary policy, firms with existing nonbank lending relationships relatively increase CAPEX by 5% (column 6), resulting in a greater stock of fixed assets (column 7), and relatively increase employment by around 4%.

5 Conclusions

Growing evidence that US monetary policy has important effects on financial conditions and economy activity across the globe (Rey, 2015; Bruno and Shin, 2015a; Miranda-Agrippino and Rey, 2020), and especially in emerging markets (Calvo et al., 1996; Kalemli-Ozcan, 2019), has inspired significant debate among policymakers — both in the "core" country from which the most significant monetary shocks emanate (Bernanke, 2012; Powell, 2013; Fischer, 2015) and in the emerging economies to which they flow (Rajan, 2014). Recent research has highlighted the role of the banking sector in transmitting US monetary policy internationally (Morais et al., 2019; Bräuning and Ivashina, 2020). But there is scant evidence on how international *nonbank* lending responds to US monetary policy. This is an important gap, because nonbanks are playing an increasingly large role in credit markets, and it is theoretically ambiguous as to whether they would respond to US monetary policy in a similar way to banks. In particular, while some theories suggest that nonbank lenders could reinforce international monetary policy spillovers (Bruno and Shin, 2015a,b), others suggest that nonbanks could act as global shock absorbers (Drechsler et al., 2017; Xiao, 2020).

We address this question using loan-level data for the global syndicated lending market, which crucially allows us to control for credit demand and hence identify the differential supply response of banks and nonbanks to US monetary policy. Focusing on dollar-denominated loans to non-US borrowers over the period 1990 – 2017, we find that nonbanks increase credit supply relative to banks when US monetary policy tightens, and hence attenuate the reduction in total credit supply. The substitution from bank to nonbank credit is stronger for riskier borrowers, emerging market borrowers, and borrowers from countries whose currencies are not anchored to the dollar. This increased risk-taking is not, however, associated with more fragile nonbank lenders or with zombie lending.

The syndicated lending market is subject to important informational frictions, and we find that these frictions limit the relative increase in nonbank credit, leading to real effects.

Specifically, borrowers with existing relationships with nonbank lenders are better able to issue new syndicated loans when monetary policy tightens, and this improved access to credit is associated with relative growth in total assets, investment, and employment.

Overall, our results suggest that nonbank lenders act as shock absorbers from US monetary policy spillovers, and that having more diversified funding providers (nonbanks in addition to banks) reduces the volatility in capital flows and economic activity resulting from the global financial cycle.

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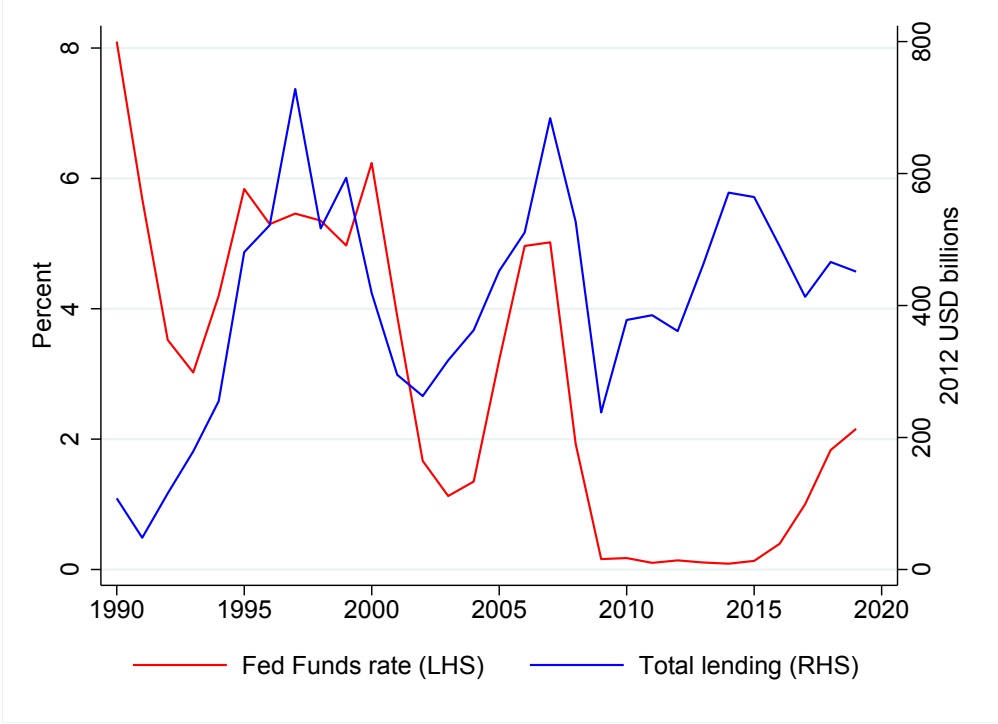
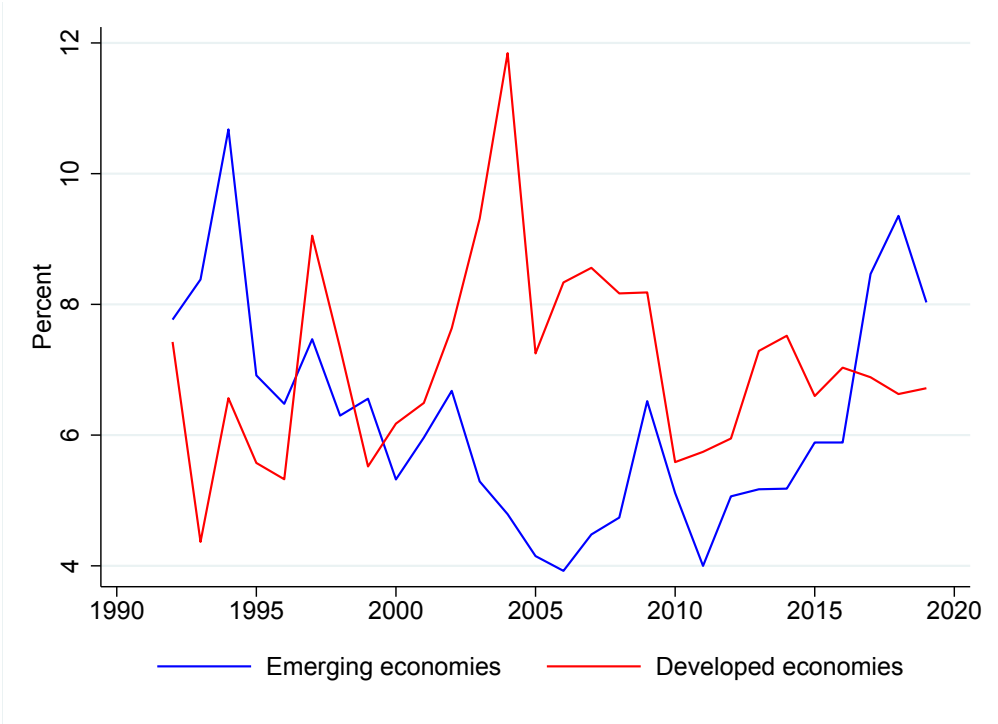
Figure 1: International dollar syndicated lending

(a) Total international dollar syndicated loan issuance



(b) Nonbank share of lending



Notes: Panel A shows annual total dollar-denominated syndicated loan issuance to non-US borrowers. Panel B shows the nonbank share of lending (based on number of loan facilities). The country classifications (emerging and developed) refer to the borrower country, and are based on the BIS Locational Banking Statistics classification. Offshore centres and observations identified as likely to be amendments to existing loans are dropped.
Source: DealScan.

Table 1: Borrowers and loans by borrower region

Region	# Firms	# Loans	Percent of loans in		
			Dollar	Local	Other
Developed economies					
Asia and Pacific	12,079	37,888	6	87	7
Europe	16,036	54,952	18	70	12
North America	2,851	8,787	40	57	3
TOTAL:	30,966	101,627	15	75	10
Emerging economies					
Africa and Middle East	1,741	4,628	69	18	13
Asia and Pacific	12,057	29,173	36	58	6
Europe	1,630	5,058	56	11	32
Latin America and Caribbean	2,272	4,980	88	11	2
TOTAL:	17,700	43,839	48	43	9
GLOBAL TOTAL:	48,666	145,466	25	65	9

Notes: The table shows the number of borrowers and loan facilities by borrower region, and the percentage of loan facilities denominated in US dollars, local currency (i.e. the currency of the borrower), and other currencies. The sample consists of loans to non-US borrowers over 1990-2019. The country classifications are based on the BIS Locational Banking Statistics classification. Offshore centres and observations identified as likely to be amendments to existing loans are dropped. Currency shares are based on number of loan facilities. The equivalent data at country-level are reported in Appendix A.
Source: DealScan.

Table 2: Lenders and loans by lender region

Region	Number of lenders		Number of loans	
	Bank	Nonbank	Bank	Nonbank
Developed economies				
Asia and Pacific	539	108	24,823	1,235
Europe	1,698	315	108,753	2,419
North America	873	696	37,713	9,062
TOTAL:	3,110	1,119	171,289	12,716
Emerging economies				
Africa and Middle East	354	65	10,112	617
Asia and Pacific	1,417	173	29,918	1,125
Europe	268	22	2,645	78
Latin America and Caribbean	233	34	2,696	291
TOTAL:	2,272	294	45,371	2,111
GLOBAL TOTAL:	5,382	1,413	216,660	14,827

Notes: The table shows the number of lenders and loan originations by lender region, split by lender type (bank and nonbank). The sample consists of dollar loans to non-US borrowers over 1990-2019. The country classifications are based on the BIS Locational Banking Statistics classification. Offshore centres and observations identified as likely to be amendments to existing loans are dropped. The equivalent data at country-level are reported in Appendix A.
Source: DealScan.

Table 3: Regression summary statistics

Statistic:	Obs	Mean	Std dev	p25	p50	p75
Macroeconomic variables						
JK shocks (cumulative sum)	108	-2.70	0.93	-3.54	-3.13	-2.02
Fed Funds effective rate	112	2.97	2.44	0.28	3.02	5.25
Wu-Xia shadow rate	112	2.54	2.85	0.45	2.88	5.15
Dollar index	112	87.24	9.86	80.12	87.49	93.31
VIX	112	19.38	7.29	13.72	17.43	23.13
Risk aversion	112	2.74	0.50	2.44	2.59	2.87
Economic uncertainty	112	1.93	0.61	1.57	1.97	2.29
Loan-level variables						
Log(New credit)	58,988	2.769	1.312	1.8	2.7	3.6
Log(Term loans)	30,911	2.656	1.232	1.8	2.6	3.4
Log(Credit lines)	18,778	2.866	1.388	1.8	2.9	3.9
Lead arranger	173,541	0.549	0.793	0.0	0.0	1.0
Nonbank lender	173,541	0.061	0.240	0.0	0.0	0.0
Investment bank lender	173,541	0.025	0.156	0.0	0.0	0.0
Finance company lender	173,541	0.024	0.152	0.0	0.0	0.0
Unstable nonbank lender	173,541	0.025	0.157	0.0	0.0	0.0
US lender	173,541	0.144	0.351	0.0	0.0	0.0
Cross-border loan	173,541	0.795	0.404	1.0	1.0	1.0
EME borrower	173,541	0.578	0.494	0.0	1.0	1.0
High yield borrower	123,468	0.479	0.500	0.0	0.0	1.0
No dollar anchor	162,983	0.527	0.499	0.0	1.0	1.0
Log(Maturity)	162,476	3.647	0.846	2.9	3.9	4.1
RoA_{t-1} (%)	72,975	7.115	6.091	3.2	6.2	10.0
RoA_{t+1} (%)	75,337	6.446	5.918	2.9	5.8	9.3
Tight macroprudential regulation	171,893	0.402	0.490	0.0	0.0	1.0
Quarterly borrower-level variables						
Log(Total borrowing)	25,631	5.099	1.341	4.22	5.07	5.94
Log(Bank borrowing)	8,052	4.565	1.464	3.63	4.56	5.48
Log(Nonbank borrowing)	8,052	0.874	1.584	0.00	0.00	1.58
Nonbank share	8,052	0.064	0.165	0.00	0.00	0.04
Annual borrower-level variables						
Past nonbank relationship	131,952	0.237	0.425	0.00	0.00	0.00
New loan indicator	131,952	0.073	0.260	0.00	0.00	0.00
Log(New credit)	9,646	5.356	1.427	4.45	5.32	6.26
Log(Total debt)	122,164	5.283	2.214	3.98	5.33	6.73
Leverage	127,251	0.286	0.191	0.14	0.27	0.40
Log(Total assets)	127,256	6.752	1.855	5.55	6.69	7.94
Log(CAPEX)	110,604	3.428	2.309	2.00	3.50	4.98
Log(PP&E)	126,599	5.426	2.201	4.11	5.46	6.85
Log(Employment)	80,701	1.071	1.867	-0.10	1.08	2.30

Notes: The table shows summary statistics for the variables used in the regressions. The sample consists of dollar loans to non-US borrowers over 1990-2017. Offshore centres and observations identified as likely to be amendments to existing loans are dropped.

Table 4: Impact of US monetary policy on global lending by banks

Dependent variable:	Log(New credit amount)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
JK	-0.348***	-0.374***	-0.270***	-0.355***	-0.373***	-0.370***	-0.351***
	(0.064)	(0.066)	(0.084)	(0.063)	(0.067)	(0.068)	(0.079)
JK × EME borrower			-0.220**				
			(0.102)				
Dollar index				-0.006**			
				(0.003)			
VIX					0.001		
					(0.004)		
Risk aversion index						0.024	
						(0.059)	
Uncertainty index							0.050
							(0.061)
Lender fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower fixed effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Lender macro controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Borrower macro controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Observations	53,864	31,639	31,639	31,639	31,639	31,639	31,639
Number of borrowers	5,596	3,171	3,171	3,171	3,171	3,171	3,171
Number of lenders	2,422	1,663	1,663	1,663	1,663	1,663	1,663
R^2	0.420	0.821	0.821	0.821	0.821	0.821	0.821

Notes: The table shows regression results for equation (1) estimated at the borrower-lender-quarter level. The sample consists of dollar-denominated loans from banks (in any country) to non-US borrowers from 1990 to 2017. The dependent variable is the log of the total amount of new syndicated credit extended by a lender to a borrower in a quarter. 'JK' is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. 'Dollar index' is the lagged Federal Reserve US dollar index. 'VIX' is the lagged CBOE Volatility Index. 'Risk aversion index' and 'uncertainy index' are the lagged indices of Bekaert et al. (2019). 'EME borrower' is an indicator variable for borrowers headquartered in emerging markets, based on the BIS country classification. Lender macro controls are one-quarter lags of the following variables for the country of the lender, obtained from IMF International Financial Statistics: GDP growth, inflation, monetary policy rate, and exchange rate apprecation against the dollar. Similarly for borrower macro controls. Standard errors are triple-clustered by borrower, lender, and quarter, and shown in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Table 5: Impact of US monetary policy on global lending by nonbanks relative to banks

Dependent variable:	Log(New credit amount)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Nonbank lender × JK	0.213***	0.281***	0.311***	0.298***	0.310***	0.312***	0.301***	0.283***
	(0.064)	(0.059)	(0.062)	(0.066)	(0.065)	(0.064)	(0.064)	(0.069)
Nonbank lender × Dollar index				0.002				
				(0.003)				
Nonbank lender × VIX					0.000			
					(0.003)			
Nonbank lender × Risk aversion index						-0.014		
						(0.041)		
Nonbank lender × Uncertainty index							-0.020	
							(0.046)	
Lender fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	-	-	-	-	-	-
Borrower industry-country fixed effects	Yes	-	-	-	-	-	-	-
Borrower fixed effects	No	Yes	-	-	-	-	-	-
Borrower-quarter fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Lender macro controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Lender macro controls × Nonbank	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Borrower macro controls × Nonbank	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Observations	53,290	55,528	33,049	33,049	33,049	33,049	33,049	22,345
Number of borrowers	5,106	4,923	3,220	3,220	3,220	3,220	3,220	1,882
Number of lenders	2,585	2,625	1,839	1,839	1,839	1,839	1,839	1,371
R^2	0.676	0.831	0.878	0.878	0.878	0.878	0.878	0.868

Notes: The table shows regression results for equation (2) estimated at the borrower-lender-quarter level. The sample consists of dollar-denominated loans from banks and nonbank lenders (in any country) to non-US borrowers from 1990 to 2017 (columns 1 – 7) or 1990 to 2006 (column 8). The dependent variable is the log of the total amount of new syndicated credit extended by a lender to a borrower in a quarter. 'Nonbank lender' is an indicator variable equal to one for nonbank lenders and zero for banks. 'JK' is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. 'Dollar index' is the lagged Federal Reserve US dollar index. 'VIX' is the lagged CBOE Volatility Index. 'Risk aversion index' and 'uncertainy index' are the lagged indices of Bekaert et al. (2019). Lender macro controls are one-quarter lags of the following variables for the country of the lender, obtained from IMF International Financial Statistics: GDP growth, inflation, monetary policy rate, and exchange rate apprecation against the dollar. Similarly for borrower macro controls. Industry is defined by two-digit SIC code. Standard errors are triple-clustered by borrower, lender, and quarter, and shown in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Table 6: Global lending by nonbanks relative to banks – alternative measures

Dependent variable:	Term loans	Credit lines	Lead arranger	Log(New credit amount)		
	(1)	(2)	(3)	(4)	(5)	(6)
Nonbank lender × JK	0.173**	0.148***	0.104***			
	(0.071)	(0.039)	(0.038)			
Investment bank lender × JK				0.285***		
				(0.076)		
Finance company lender × JK				0.282**		
				(0.133)		
Nonbank lender × Fed Funds					0.035*	
					(0.018)	
Nonbank lender × Wu-Xia						0.035**
						(0.015)
Lender fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Borrower-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Lender macro controls	Yes	Yes	Yes	Yes	Yes	Yes
Lender macro controls × Nonbank	Yes	Yes	Yes	Yes	Yes	Yes
Borrower macro controls × Nonbank	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15,085	12,097	116,101	32,765	34,976	34,970
Number of borrowers	2,085	872	8,918	3,201	3,466	3,465
Number of lenders	1,278	907	3,161	1,779	1,927	1,927
R^2	0.874	0.902	0.612	0.878	0.877	0.877

Notes: The table shows regression results for equation (2) estimated at the borrower-lender-quarter level. The sample consists of dollar-denominated loans from banks and nonbank lenders (in any country) to non-US borrowers from 1990 to 2017 (columns 1 – 4) or 1990 to 2019 (columns 5 and 6). In column 4, nonbank lenders that are neither investment banks nor finance companies are dropped. The dependent variable is the log of the amount of term loans extended by a lender to a borrower (column 1), the log of the amount of credit lines extended by a lender to a borrower (column 2), an indicator variable equal to one for lead arrangers and zero for participants (column 3), or the log of the total amount of new syndicated credit extended by a lender to a borrower (columns 4 – 6). 'Nonbank lender' is an indicator variable equal to one for nonbank lenders and zero for banks. 'Investment bank lender' and 'finance company lender' are indicator variables equal to one for investment bank lenders and finance company lenders, respectively. 'JK' is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. 'Fed Funds' is the effective Federal Funds rate. 'Wu-Xia' is the shadow rate of Wu and Xia (2016). Lender macro controls are one-quarter lags of the following variables for the country of the lender, obtained from IMF International Financial Statistics: GDP growth, inflation, monetary policy rate, and exchange rate apprecation against the dollar. Similarly for borrower macro controls. Standard errors are triple-clustered by borrower, lender, and quarter, and shown in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Table 7: Global lending by nonbanks relative to banks – by currency and nationality

Dependent variable:	Log(New credit amount)			
	(1)	(2)	(3)	(4)
Nonbank lender × JK × Dollar loan	0.259***			
	(0.062)			
Nonbank lender × JK × Non-dollar loan	0.121			
	(0.075)			
Nonbank lender × JK × US borrower		0.211***		
		(0.042)		
Nonbank lender × JK × Non-US borrower		0.242***		
		(0.054)		
Nonbank lender × JK × US lender			0.389***	
			(0.083)	
Nonbank lender × JK × Non-US lender			0.240***	
			(0.085)	
Nonbank lender × JK × Within-border loan				0.274***
				(0.078)
Nonbank lender × JK × Cross-border loan				0.328***
				(0.066)
Lender fixed effects	Yes	Yes	Yes	Yes
Borrower-quarter fixed effects	Yes	Yes	Yes	Yes
Lender macro controls	Yes	Yes	Yes	Yes
Lender macro controls × Nonbank	Yes	Yes	Yes	Yes
Borrower macro controls × Nonbank	Yes	Yes	Yes	Yes
Lower-order interactions	Yes	Yes	Yes	Yes
Observations	108,570	134,768	33,049	33,049
Number of borrowers	12,602	10,719	3,220	3,220
Number of lenders	3,363	3,422	1,839	1,839
R^2	0.966	0.832	0.878	0.880

Notes: The table shows regression results for equation (2) estimated at the borrower-lender-quarter level, with additional interaction terms. The sample consists of loans in all currencies to non-US borrowers (column 1), dollar-denominated loans to borrowers in all countries (column 2), and dollar-denominated loans to non-US borrowers (columns 3 and 4). The sample period is 1990 to 2017. The dependent variable is the log of the total amount of new syndicated credit extended by a lender to a borrower in a quarter. 'Nonbank lender' is an indicator variable equal to one for nonbank lenders and zero for banks. 'Dollar loan' is an indicator variable for loans denominated in US-dollars. 'US borrower' is an indicator variable for borrowers headquartered in the US. 'US lender' is an indicator variable for lenders headquartered in the US. 'Within-border loan' is an indicator variable for loans where the borrower and lender are headquartered in the same country. 'JK' is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. Lender macro controls are one-quarter lags of the following variables for the country of the lender, obtained from IMF International Financial Statistics: GDP growth, inflation, monetary policy rate, and exchange rate apprecation against the dollar. Similarly for borrower macro controls. Standard errors are triple-clustered by borrower, lender, and quarter, and shown in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Table 8: Global lending by nonbanks relative to banks – by borrower risk

Dependent variable:	Log(New credit amount)					
	(1)	(2)	(3)	(4)	(5)	(6)
Nonbank lender × JK	0.187***	0.164***	0.206***	0.251***	0.116	-0.036
	(0.048)	(0.049)	(0.056)	(0.071)	(0.089)	(0.102)
Nonbank lender × JK × EME borrower	0.173***	0.290***			0.237***	0.468***
	(0.057)	(0.074)			(0.075)	(0.089)
Nonbank lender × JK × High yield borrower			0.112**	0.140**		
			(0.048)	(0.070)		
Nonbank lender × JK × No dollar anchor					0.061	0.206**
					(0.084)	(0.094)
Lender fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Borrower-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Lender macro controls	No	Yes	No	Yes	No	Yes
Lender macro controls × Nonbank	No	Yes	No	Yes	No	Yes
Borrower macro controls × Nonbank	No	Yes	No	Yes	No	Yes
Lower-order interactions	Yes	Yes	Yes	Yes	Yes	Yes
Observations	55,072	33,049	46,205	26,740	50,721	32,805
Number of borrowers	4,876	3,220	3,705	2,289	4,476	3,195
Number of lenders	2,613	1,839	2,326	1,621	2,546	1,830
R^2	0.878	0.879	0.881	0.885	0.876	0.877

Notes: The table shows regression results for equation (2) estimated at the borrower-lender-quarter level, with additional interaction terms. The sample consists of dollar-denominated loans from banks and nonbank lenders (in any country) to non-US borrowers from 1990 to 2017. The dependent variable is the log of the total amount of new syndicated credit extended by a lender to a borrower in a quarter. 'Nonbank lender' is an indicator variable equal to one for nonbank lenders and zero for banks. 'JK' is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. 'EME borrower,' 'high yield borrower,' and 'no dollar anchor' are, respectively indicator variables for borrowers in emerging markets, based on the BIS classification; borrowers whose average loan spread in the quarter is greater than the median in the borrower's country; and borrowers headquartered in countries with currencies not anchored to the US dollar, based on the Ilzetzki et al. (2019) classification. Lender macro controls are one-quarter lags of the following variables for the country of the lender, obtained from IMF International Financial Statistics: GDP growth, inflation, monetary policy rate, and exchange rate apprecation against the dollar. Similarly for borrower macro controls. Standard errors are triple-clustered by borrower, lender, and quarter, and shown in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Table 9: Global lending by nonbanks – no evidence of destabilising or zombie lending

Dependent variable:	Log(New credit amount)			
	(1)	(2)	(3)	(4)
Nonbank lender × JK	0.335***	0.349**	0.262**	0.335**
	(0.099)	(0.135)	(0.131)	(0.132)
Nonbank lender × JK × Unstable nonbank lender	-0.036			
	(0.116)			
Nonbank lender × JK × Log(Maturity)		-0.008		
		(0.032)		
Nonbank lender × JK × RoA_{t-1}			-0.005	
			(0.011)	
Nonbank lender × JK × RoA_{t+1}				-0.004
				(0.010)
Lender fixed effects	Yes	Yes	Yes	Yes
Borrower-quarter fixed effects	Yes	Yes	Yes	Yes
Lender macro controls	Yes	Yes	Yes	Yes
Lender macro controls × Nonbank	Yes	Yes	Yes	Yes
Borrower macro controls × Nonbank	Yes	Yes	Yes	Yes
Lower-order interactions	Yes	Yes	Yes	Yes
Observations	33,049	32,434	15,199	15,770
Number of borrowers	3,220	3,138	1,239	1,268
Number of lenders	1,839	1,819	1,117	1,153
R^2	0.878	0.878	0.880	0.878

Notes: The table shows regression results for equation (2) estimated at the borrower-lender-quarter level, with additional interaction terms. The sample consists of dollar-denominated loans from banks and nonbank lenders (in any country) to non-US borrowers from 1990 to 2017. The dependent variable is the log of the total amount of new syndicated credit extended by a lender to a borrower in a quarter. 'Nonbank lender' is an indicator variable equal to one for nonbank lenders and zero for banks. 'JK' is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. 'Unstable nonbank lender' is an indicator variable equal to one for investment banks, hedge funds, and mutual funds. 'Log(Maturity)' is the log of the loan maturity. RoA_{t-1} and RoA_{t+1} are the borrower's return-on-assets in the year before and after the loan, respectively. Lender macro controls are one-quarter lags of the following variables for the country of the lender, obtained from IMF International Financial Statistics: GDP growth, inflation, monetary policy rate, and exchange rate apprecation against the dollar. Similarly for borrower macro controls. Standard errors are triple-clustered by borrower, lender, and quarter, and shown in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Table 10: Macroprudential spillovers via investment banks

Dependent variable:	Log(New credit amount)					
	(1)	(2)	(3)	(4)	(5)	(6)
Nonbank lender × JK	0.348***	0.362***	0.370***			
	(0.054)	(0.060)	(0.073)			
Nonbank lender × JK × Tight macropru	-0.172**	-0.180**	-0.249***			
	(0.079)	(0.077)	(0.088)			
Investment bank lender × JK				0.373***	0.363***	0.370***
				(0.066)	(0.080)	(0.092)
Other nonbank lender × JK				0.312***	0.396***	0.446***
				(0.082)	(0.094)	(0.097)
Investment bank lender × JK × Tight macropru				-0.225*	-0.239**	-0.395***
				(0.116)	(0.101)	(0.128)
Other nonbank lender × JK × Tight macropru				-0.129	-0.148	-0.155
				(0.089)	(0.096)	(0.094)
Lender fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Borrower-quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Lender country-quarter fixed effects	No	No	Yes	No	No	Yes
Lender macro controls	No	Yes	-	No	Yes	-
Lender macro controls × Nonbank	No	Yes	Yes	No	Yes	Yes
Borrower macro controls × Nonbank	No	Yes	Yes	No	Yes	Yes
Lower-order interactions	Yes	Yes	Yes	Yes	Yes	Yes
Observations	54,777	32,847	32,173	54,777	32,847	32,173
Number of borrowers	4,871	3,212	3,171	4,871	3,212	3,171
Number of lenders	2,588	1,821	1,759	2,588	1,821	1,759
R^2	0.878	0.879	0.892	0.878	0.879	0.892

Notes: The table shows regression results for equation (2) estimated at the borrower-lender-quarter level, with additional interaction terms. The sample consists of dollar-denominated loans from banks and nonbank lenders (in any country) to non-US borrowers from 1990 to 2017. The dependent variable is the log of the total amount of new syndicated credit extended by a lender to a borrower in a quarter. 'Nonbank lender' is an indicator variable equal to one for nonbank lenders and zero for banks. 'Investment bank lender' is an indicator variable for investment bank lenders. 'Other nonbank lender' is an indicator variable for nonbank lenders that are not investment banks. 'JK' is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. 'Tight macropru' is an indicator variable for lenders headquartered in countries whose stance of macroprudential policy is stricter than the global median that year, based on the IMF's Integrated Macroprudential Dataset. Lender macro controls are one-quarter lags of the following variables for the country of the lender, obtained from IMF International Financial Statistics: GDP growth, inflation, monetary policy rate, and exchange rate apprecation against the dollar. Similarly for borrower macro controls. Standard errors are triple-clustered by borrower, lender, and quarter, and shown in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Table 11: Impact of US monetary policy on firm-level syndicated credit

Dependent variable:	Total borrowing	Bank borrowing	Nonbank borrowing	Nonbank share
	(1)	(2)	(3)	(4)
JK	-0.176***	-0.292***	0.276*	0.028**
	(0.036)	(0.092)	(0.143)	(0.011)
Borrower macro controls	Yes	Yes	Yes	Yes
Borrower fixed effects	Yes	Yes	Yes	Yes
Observations	11,900	2,429	2,429	2,429
Number of borrowers	3,482	837	837	837
R^2	0.688	0.716	0.553	0.464

Notes: The table shows regression results for equation (3) estimated at the borrower-quarter level. The sample consists of non-US borrowers from 1990 to 2017. The dependent variable is the log of the total amount of new dollar syndicated credit (column 1), the log of the total amount of new dollar syndicated credit from banks (column 2), the log of the total amount of new dollar syndicated credit from nonbanks (column 3), and the nonbank share of new dollar syndicated credit (column 4). The dependent variable in column 1 is based on all loans, whereas the dependent variables in columns 2 – 4 are based only on loans where individual lender quantities are observed. 'JK' is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. Borrower macro controls are one-quarter lags of the following variables for the country of the borrower, obtained from IMF International Financial Statistics: GDP growth, inflation, monetary policy rate, and exchange rate apprecation against the dollar. Standard errors are double-clustered by borrower and quarter, and shown in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

Table 12: Impact of past nonbank relationships on firm-level outcomes

Dependent variable:	Loan indicator	New credit	Total debt	Leverage	Total assets	CAPEX	PP&E	Employment
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Past nonbank relation × JK	0.060***	-0.049	0.128***	0.018***	0.031***	0.050*	0.042*	0.037*
	(0.013)	(0.096)	(0.033)	(0.005)	(0.010)	(0.028)	(0.023)	(0.021)
Borrower fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Borrower controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macro controls × Nonbank relation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	102,899	4,844	97,655	101,905	101,910	93,227	101,442	74,502
Number of borrowers	6,864	1,252	6,759	6,819	6,819	6,756	6,807	6,135
R^2	0.260	0.699	0.870	0.682	0.976	0.884	0.945	0.960

Notes: The table shows regression results for equation (4) estimated at the firm-year level. The sample consists of non-US firms from 1991 to 2017. The dependent variables in columns 1 and 2 are from DealScan: indicator variable equal to one if the firm obtains a new dollar syndicated loan (column 1); and log of total amount of new dollar syndicated credit, conditional on obtaining a new loan (column 2). The dependent variables in columns 3 – 8 are from Compustat: log of total debt (column 3), leverage (column 4), log of total assets (column 5), log of CAPEX (column 6), log of property, plant and equipment (column 7), and log of employment (column 8). 'Past nonbank relation' is an indicator variable equal to one for borrowers that have borrowed from nonbank lenders in the syndicated credit market in a previous year. 'JK' is the lagged cumulative sum of Jarociński and Karadi (2020) US monetary policy shocks. Borrower controls are lags of log(total assets), return-on-assets, and past nonbank relation. Industry is defined by SIC division. Macro controls are lags of the following variables for the country of the borrower, obtained from IMF International Financial Statistics: GDP growth, inflation, monetary policy rate, and exchange rate appreciation against the dollar. Standard errors are double-clustered by borrower and year, and shown in parentheses. *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

A Loans by country

Table A.1: Borrowers and loans by borrower country

Country	# Firms	# Loans	Percent of loans in		
			Dollar	Local	Other
Asia and Pacific, developed economies					
Australia	2686	11576	12	68	20
Japan	9024	24862	3	96	1
New Zealand	369	1450	9	78	13
TOTAL:	12,079	37,888	6	87	7
Europe, developed economies					
Andorra	1	2	0	0	100
Austria	154	685	8	83	8
Belgium	280	1117	15	81	5
Cyprus	48	104	70	11	19
Denmark	174	595	18	25	57
Estonia	27	64	16	25	59
Finland	268	973	15	69	16
France	2356	8310	9	83	8
Germany	1965	8322	7	85	9
Greece	221	601	49	43	7
Iceland	63	174	40	2	57
Ireland	320	1123	31	45	23
Italy	1424	4040	8	90	2
Latvia	30	64	25	5	70
Liechtenstein	1	3	0	0	100
Lithuania	32	71	37	27	37
Luxembourg	271	993	35	49	16
Malta	26	60	68	27	5
Monaco	18	76	92	0	8
Netherlands	1026	3630	26	61	13
Norway	507	1580	36	35	29
Portugal	163	462	16	81	3
San Marino	1	2	0	0	100
Slovakia	66	149	36	43	21
Slovenia	39	135	19	50	30
Spain	1996	5677	9	88	2
Sweden	391	1615	21	32	46
Switzerland	328	1386	41	23	35
United Kingdom	3840	12939	26	62	12
TOTAL:	16,036	54,952	18	70	12
North America, developed economies					
Canada	2851	8787	40	57	3
TOTAL:	2,851	8,787	40	57	3
Africa and Middle East, emerging economies					
Algeria	8	54	43	4	54
Angola	13	52	71	0	29

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Table A.1: (Continued)

Country	# Firms	# Loans	Percent of loans in		
			Dollar	Local	Other
Benin	5	7	71	0	29
Botswana	4	9	89	11	0
Burkina Faso	4	4	50	0	50
Burundi	1	4	100	0	0
Cameroon	11	25	60	0	40
Cape Verde	2	3	0	0	100
Chad	2	5	60	0	40
Congo	3	8	75	0	25
Djibouti	2	2	100	0	0
Egypt	106	291	82	9	9
Equatorial Guinea	1	1	100	0	0
Eritrea	1	1	100	0	0
Ethiopia	6	15	87	0	13
Gabon	7	19	16	0	84
Gambia	1	2	100	0	0
Ghana	37	111	94	0	6
Guinea	7	18	100	0	0
Iran	21	60	68	0	32
Iraq	6	14	71	0	29
Israel	70	189	70	7	22
Ivory Coast	31	57	60	0	40
Jordan	47	75	91	7	3
Kenya	29	62	65	0	35
Kuwait	79	172	91	6	3
Lesotho	2	2	100	0	0
Liberia	42	69	94	0	6
Libya	4	5	60	0	40
Madagascar	2	2	50	0	50
Malawi	2	3	100	0	0
Mali	10	23	48	0	52
Mauritania	2	2	100	0	0
Morocco	17	58	50	10	40
Mozambique	13	32	91	0	9
Namibia	9	16	81	0	19
Niger	3	3	0	0	100
Nigeria	76	197	87	7	6
Oman	84	207	95	3	2
Palestine	3	5	80	0	20
Qatar	88	230	90	3	7
Rwanda	6	14	100	0	0
Saudi Arabia	183	563	56	37	8
Senegal	14	23	39	0	61
Seychelles	1	8	88	0	13
Sierra Leone	2	2	50	0	50
South Africa	243	710	36	53	10

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Table A.1: (Continued)

Country	# Firms	# Loans	Percent of loans in		
			Dollar	Local	Other
Sudan	2	2	50	0	50
Swaziland	2	2	50	0	50
Syria	2	2	100	0	0
Tanzania	16	31	90	0	10
Togo	2	9	89	0	11
Tunisia	23	54	48	2	50
Uganda	18	31	87	0	13
United Arab Emirates	325	971	71	17	12
Yemen	2	8	100	0	0
Zaire	3	9	100	0	0
Zambia	20	43	81	9	9
Zimbabwe	16	32	97	0	3
TOTAL:	1,741	4,628	69	18	13
Asia and Pacific, emerging economies					
Armenia	8	18	72	0	28
Azerbaijan	22	99	92	0	8
Bangladesh	58	95	73	15	13
British Virgin Islands	155	329	66	0	34
Brunei	5	7	100	0	0
Cambodia	16	33	94	0	6
China	3828	5548	31	64	6
Fiji	1	1	100	0	0
Georgia	9	26	100	0	0
India	1724	3482	28	67	5
Indonesia	939	2245	77	19	4
Kazakhstan	73	233	93	0	7
Kyrgystan	4	6	33	0	67
Laos	17	50	90	0	10
Malaysia	910	2527	23	73	4
Maldives	4	6	100	0	0
Mongolia	20	45	87	0	13
Myanmar	7	13	100	0	0
Nepal	6	9	89	0	11
North Korea	2	2	0	0	100
Pakistan	125	263	44	53	3
Papua New Guinea	14	40	100	0	0
Philippines	266	859	64	26	10
South Korea	1334	4750	45	45	10
Sri Lanka	20	60	78	0	22
Taiwan	1699	6174	13	86	1
Tajikistan	6	11	91	0	9
Thailand	603	1868	42	52	6
Turkmenistan	7	25	64	0	36
Uzbekistan	18	45	82	0	18
Vanuatu	1	3	100	0	0

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Table A.1: (Continued)

Country	# Firms	# Loans	Percent of loans in		
			Dollar	Local	Other
Vietnam	156	301	86	2	12
TOTAL:	12,057	29,173	36	58	6
Europe, emerging economies					
Albania	4	7	0	0	100
Belarus	18	70	59	0	41
Bosnia and Herzegovina	10	14	0	0	100
Bulgaria	44	134	3	2	95
Croatia	71	211	28	2	70
Czech Republic	147	350	27	36	37
Hungary	112	315	37	7	56
Kosovo	12	30	0	0	100
Macedonia	10	18	39	0	61
Moldova	2	9	78	0	22
Montenegro	2	4	75	0	25
Poland	183	506	20	44	36
Romania	103	261	35	12	53
Russia	466	1414	77	10	13
Serbia	6	9	11	0	89
Turkey	345	1432	71	2	28
Ukraine	95	274	84	0	16
TOTAL:	1,630	5,058	56	11	32
Latin America and Caribbean, emerging economies					
Argentina	278	666	97	2	1
Belize	2	3	100	0	0
Bolivia	6	8	100	0	0
Brazil	662	1384	82	16	2
Chile	279	556	91	8	1
Colombia	134	262	90	10	1
Costa Rica	17	31	100	0	0
Dominican Republic	18	26	100	0	0
Ecuador	21	25	100	0	0
El Salvador	18	31	100	0	0
Guadeloupe	1	1	100	0	0
Guatemala	13	21	100	0	0
Guyana	3	6	100	0	0
Haiti	1	1	100	0	0
Honduras	12	41	90	0	10
Jamaica	17	35	97	0	3
Mexico	544	1411	83	15	2
Nicaragua	3	4	100	0	0
Paraguay	6	9	100	0	0
Peru	132	234	95	3	3
Suriname	2	5	60	0	40
Trinidad and Tobago	18	52	88	4	8
Uruguay	31	44	100	0	0

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Table A.1: (Continued)

Country	# Firms	# Loans	Percent of loans in		
			Dollar	Local	Other
Venezuela	54	124	94	2	4
TOTAL:	2,272	4,980	88	11	2
DEVELOPED TOTAL:	30,966	101,627	15	75	10
EMERGING TOTAL:	17,700	43,839	48	43	9
GLOBAL TOTAL:	48,666	145,466	25	65	9

Notes: The table shows the number of borrowers and loan facilities by borrower country, and the percentage of loan facilities denominated in US dollars, local currency (i.e. the currency of the borrower), and other currencies. The sample consists of loans to non-US borrowers over 1990-2019. The country classifications are based on the BIS Locational Banking Statistics classification. Offshore centres and observations identified as likely to be amendments to existing loans are dropped. Currency shares are based on number of loans.

Source: DealScan.

Table A.2: Lenders and loans by lender country

Country	Number of lenders		Number of loans	
	Bank	Nonbank	Bank	Nonbank
Asia and Pacific, developed economies				
Australia	120	30	3874	592
Japan	406	76	20861	641
New Zealand	13	2	88	2
TOTAL:	539	108	24,823	1,235
Europe, developed economies				
Andorra	1	0	15	0
Austria	65	2	3501	36
Belgium	58	4	3461	28
Cyprus	6	2	38	18
Denmark	22	5	1114	49
Estonia	2	0	4	0
Finland	20	6	500	28
France	228	30	19765	260
Germany	230	23	24501	142
Greece	29	3	770	5
Iceland	10	1	76	2
Ireland	32	16	949	90
Italy	173	10	6379	64
Latvia	13	0	103	0
Liechtenstein	1	0	2	0
Lithuania	5	1	6	1
Luxembourg	53	9	1332	15
Malta	7	1	27	6
Netherlands	112	24	11713	194
Norway	30	9	1930	69
Portugal	32	5	887	42
Slovakia	6	2	41	2
Slovenia	7	1	55	2
Spain	195	19	4579	48
Sweden	29	7	1467	36
Switzerland	82	30	4818	187
United Kingdom	250	105	20720	1095
TOTAL:	1,698	315	108,753	2,419
North America, developed economies				
Canada	106	49	12293	537
USA	767	647	25420	8525
TOTAL:	873	696	37,713	9,062
Africa and Middle East, emerging economies				
Algeria	3	3	5	3
Angola	7	0	9	0
Burkina Faso	1	0	3	0
Burundi	1	0	13	0
Cameroon	4	0	7	0
Congo	2	0	3	0

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Table A.2: (Continued)

Country	Number of lenders		Number of loans	
	Bank	Nonbank	Bank	Nonbank
Egypt	29	0	692	0
Gabon	1	0	18	0
Ghana	14	1	112	1
Iran	4	0	55	0
Iraq	1	0	1	0
Israel	12	8	520	12
Ivory Coast	7	1	51	4
Jordan	16	0	622	0
Kenya	5	0	19	0
Kuwait	23	4	905	57
Liberia	1	0	1	0
Libya	2	0	2	0
Mali	1	0	4	0
Morocco	9	0	79	0
Mozambique	1	0	5	0
Namibia	2	1	5	2
Nigeria	31	5	238	43
Oman	13	1	476	1
Palestine	1	2	1	5
Qatar	21	3	782	5
Rwanda	2	0	2	0
Saudi Arabia	24	9	1228	250
Senegal	2	0	3	0
Seychelles	2	0	5	0
South Africa	23	13	725	30
Swaziland	2	0	2	0
Syria	3	0	3	0
Tanzania	6	4	21	6
Togo	5	0	39	0
Tunisia	8	0	98	0
Uganda	6	0	34	0
United Arab Emirates	51	10	3296	198
Zambia	3	0	10	0
Zimbabwe	5	0	18	0
TOTAL:	354	65	10,112	617
Asia and Pacific, emerging economies				
Azerbaijan	1	0	4	0
Bangladesh	18	1	68	5
British Virgin Islands	2	2	2	8
Brunei	2	0	12	0
Cambodia	3	0	4	0
China	349	33	4159	103
Fiji	1	0	1	0
Georgia	2	0	2	0
India	88	14	2048	37

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Table A.2: (Continued)

Country	Number of lenders		Number of loans	
	Bank	Nonbank	Bank	Nonbank
Indonesia	197	13	2256	87
Kazakhstan	15	0	58	0
Laos	3	0	5	0
Malaysia	114	11	1427	22
Maldives	1	0	2	0
Mongolia	2	0	29	0
Nepal	2	0	2	0
North Korea	2	0	15	0
Pakistan	23	0	181	0
Papua New Guinea	1	0	4	0
Philippines	56	9	549	28
South Korea	214	63	5755	683
Sri Lanka	9	0	32	0
Taiwan	224	17	12548	129
Thailand	67	8	719	21
Uzbekistan	2	0	5	0
Vietnam	19	2	31	2
TOTAL:	1,417	173	29,918	1,125
Europe, emerging economies				
Albania	1	0	30	0
Belarus	3	0	3	0
Bulgaria	4	0	14	0
Croatia	9	0	48	0
Czech Republic	13	1	198	1
Hungary	28	1	292	1
Kosovo	1	0	5	0
Macedonia	1	0	2	0
Poland	35	4	324	7
Romania	16	2	109	2
Russia	86	8	763	32
Turkey	62	6	813	35
Ukraine	9	0	44	0
TOTAL:	268	22	2,645	78
Latin America and Caribbean, emerging economies				
Argentina	34	1	351	2
Brazil	70	10	940	144
Chile	25	3	352	7
Colombia	19	2	123	6
Costa Rica	2	1	2	1
Dominican Republic	3	0	8	0
Ecuador	1	0	1	0
El Salvador	3	1	12	1
Guatemala	1	1	1	2
Honduras	4	1	11	2
Jamaica	2	2	3	2

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Table A.2: (Continued)

Country	Number of lenders		Number of loans	
	Bank	Nonbank	Bank	Nonbank
Mexico	33	7	725	37
Nicaragua	1	0	1	0
Paraguay	3	0	3	0
Peru	12	3	43	84
Trinidad and Tobago	6	1	16	2
Uruguay	1	0	2	0
Venezuela	13	1	102	1
TOTAL:	233	34	2,696	291
DEVELOPED TOTAL:	3,110	1,119	171,289	12,716
EMERGING TOTAL:	2,272	294	45,371	2,111
GLOBAL TOTAL:	5,382	1,413	216,660	14,827

Notes: The table shows the number of lenders and loan originations by lender country, split by lender type (bank and nonbank). The sample consists of dollar loans to non-US borrowers over 1990-2019. The country classifications are based on the BIS Locational Banking Statistics classification. Offshore centres and observations identified as likely to be amendments to existing loans are dropped.

Source: DealScan.