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In lands of foreign currency credit, bank lending channels run through?

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In Lands of Foreign Currency Credit, Bank Lending Channels Run Through?

Abstract

We study the impact of monetary policy on the supply of bank credit when bank lending is denominated in foreign currencies. Accessing a comprehensive supervisory dataset from Hungary, we find that the supply of bank credit in a foreign currency is less sensitive to changes in domestic monetary conditions than the equivalent supply in the domestic currency. Changes in foreign monetary conditions similarly affect bank lending more in the foreign than in the domestic currency. Hence when banks lend in multiple currencies the domestic bank lending channel is weakened and international bank lending channels become operational.

Keywords: Bank balance-sheet channel, monetary policy, foreign currency lending.

JEL: E51, F3, G21.

I. Introduction

Bank lending in a foreign currency to local businesses and households has been a widely observed phenomenon in many “dollarized” (or “euroized”) countries around the world, in South-America, East Asia, and more recently in Eastern Europe. Even in the Euro area around ten percent of credit by resident financial institutions to the non-financial sector is granted in a foreign currency (e.g., Brown et al. (2009)). And in countries with large credit exposures denominated in foreign currencies, policy makers never fail to point out the adverse effects of foreign currency lending on the transmission of domestic monetary policy, and – in the aftermath of the financial crisis – to call for tighter international monetary co-operation.¹

Yet, despite the prevalence of foreign currency lending and its widely surmised effect on monetary policy transmission mechanism, there is little or no empirical work *with micro data* identifying the impact of domestic monetary conditions on the local supply of credit in *the domestic versus the foreign currency*, and equally important there is no work identifying the impact of monetary policy set by the relevant central bank abroad that issues the foreign currency on the local supply of credit *in the different currencies*.

To fill this gap in the literature, this paper investigates the impact of monetary policy on the supply of bank loans in the presence of widespread foreign currency lending. First, we examine whether foreign currency lending *per se* is a relevant compositional dimension of the bank lending channel of domestic monetary policy by testing whether changes in domestic monetary conditions have a differential impact on the supply of bank loans in the domestic and foreign currencies.

¹ The 2005 Annual Report of the National Bank of Romania for example states that “[y]et another challenge to monetary policy implementation was to maintain the upward trend in financial intermediation by increasing the share of RON [Romanian New Leu] denominated loans in non-government credit, which would entail an improvement of the transmission mechanism [...]”. See, e.g., Fischer (2014) and Rajan (2015) on international monetary coordination.

Second, we investigate whether foreign currency lending introduces international transmission channels through which foreign monetary policies also (differentially) affect the local supply of bank loans in the domestic and foreign currencies.²

We test two key hypotheses. First, we hypothesize that a loosening of monetary conditions in the domestic currency (issued by the domestic central bank) decreases the local banks' cost of funding in the domestic currency but not (or at least not to the same extent) in the foreign currency, generating a differential impact on banks' loan supply decisions in the different currencies. Second, we hypothesize that a loosening of monetary conditions in the foreign currency (issued by the foreign central bank) lowers the domestic (but potentially foreign owned) banks' cost of funding in the foreign currency but not in the domestic currency and examine, again, the local banks' consequent lending decisions in the domestic and foreign currencies. To the best of our knowledge (see the literature review in Section II), our paper is the first to show with micro data that foreign monetary policy may alter the currency composition of the local loan supply through an international bank-lending channel.

Our hypotheses build on the evidence that for most banks funding currencies are unlikely to be perfectly substitutable.³ The underlying economic mechanism for the differential impact of

² With respect to the first question we acknowledge that besides lending in foreign currency, banks' access to foreign currency funding can also mute the effects of domestic monetary policy when banks engage in carry-trade. Given our data on loan currency denomination, we analyze the direct effects of monetary changes on the composition of loan supply. Our results do not, however, exclude the possibility that the domestic bank lending channel can be muted through banks' access to foreign funding. The second question relates to the academic and policy debate on the spillover effects of monetary policy. It has been shown that the monetary policies set in large economies considerably impact the rest of the world, and that this impact mostly operates through asset prices and capital flows (Chen et al. (2014) and Bank for International Settlements (2015), p. 83). In our paper we analyze the cross-border impact through the bank-lending channel. This channel also consists of international capital flows; however, the spillover effects through the particular channel we analyze in our paper have not been identified before.

³ Global banks can manage liquidity on a global scale actively using cross-border internal funding in response to local shocks (Cetorelli and Goldberg (2012), Bacchetta and Merrouche (2020)). Having global operations therefore should insulate banks from changes in local monetary policy, while banks without global operations are more affected by these changes. In Bräuning and Ivashina (2020) global banks even increase their lending abroad in response to a

monetary policy shocks on banks' lending responses in different currencies arises from frictions in international financial markets, in particular, the FX swap market.

More precisely, two frictions play a role in generating our results. First, agency costs of obtaining funding (in any currency) represent frictions especially for banks with weak balance sheets. Due to moral hazard considerations, the lending of banks with low capital ratios will be more sensitive to funding shocks in either the domestic or the foreign currency. Identifying the transmission channel from the differential responses, to changes in the monetary policy rate, of low and high capitalization banks, has been the standard approach in the literature since the seminal paper by Kashyap and Stein (2000) and our identification builds on that approach.

Second, since there are frictions in international financial markets resulting from the violation of interest parity conditions, monetary policy changes in one currency will generate currency compositional shifts in banks' loan supply. Our mechanism is thus consistent with the idea that shocks to banks' relative costs of funding in different currencies translate into shifts in the currency composition of banks' loan supply due to violations of interest parity and the consequent change in the cost of synthetic funding in the low cost currency, a mechanism proposed by Ivashina et al. (2015) and further developed by Bräuning and Ivashina (2020).⁴

tightening of domestic monetary policy because monetary tightening in the home currency area reduces pressure on the swap market, making lending abroad more attractive.

⁴ Note that without financial market frictions, we are unlikely to identify currency compositional supply effects of monetary policy transmission. Bank capitalization affects agency costs banks face from their own financiers and thus the volume of lending when banks respond to monetary policy shocks. Bank capitalization in itself will not, however, generate changes in the currency composition of loan supply: If interest parity conditions hold, banks should be able to use the financial market to keep the currency composition of their lending unchanged when their relative cost of funding in different currencies is altered. Agency costs may have an impact on the currency composition of banks' loan supply, when, for example, lending in one currency represents higher risk taking from the banks' perspective and banks with weak balance-sheets are more prone to lend to riskier clients. The result that equity capitalization affects the risk composition of loan supply, when banks respond to monetary policy shocks, has been well established in the literature (e.g., Rajan (2006), Borio and Zhu (2012), Jiménez et al. (2014), Ioannidou et al. (2015), Dell'Ariccia et al. (2017), Gyöngyösi et al. (2019)) and explicitly exploring this channel is outside of the scope of our paper.

Similar to our approach, Bräuning and Ivashina (2020) estimate the impact of monetary policy changes on global banks' lending in foreign currencies and find that lower domestic interest rates lead to lower loan supply in foreign currencies. As a response to domestic monetary easing, global banks reallocate capital to their foreign subsidiaries, i.e., to the high-yield currency, thereby increasing the use of FX swaps and the cost of swap funding, the forward premium.

Consistent with this idea, we propose that frictions in FX swap markets create heterogeneity for banks in our sample in the easiness to fund lending in foreign rather than domestic currencies.⁵ Notably, most banks in our sample rely on the FX swap market to exchange domestic for foreign currency funding, while some banks also have direct funding from foreign parent banks (in form of loans). We hypothesize that for banks with funding from foreign parents it is easier to overcome the FX market friction that may generate a negative effect of domestic monetary easing on lending in the foreign currency than for other banks. Specifically, banks relying heavily on the swap market to fund their foreign currency lending are more sensitive to frictions in that market than banks receiving currency funding directly from foreign parents (see, e.g., Eguren-Martin et al. (2019)).

Hungary provides an almost ideal setting to identify the currency compositional effect in monetary policy transmission arising from the imperfect substitutability of funding currencies.

⁵ According to Hungarian regulation, foreign currency lending does not require banks to maintain different bank capital levels as long as the position is hedged through foreign currency funding (on-balance) or through the foreign exchange swap market (off-balance sheet). Similarly, banks' reserve requirements do not differ for deposits in different currencies. A comprehensive analysis of banks' motivation to lend in foreign rather than domestic currency is, however, beyond the scope of the present paper. Analyzing information on the requested and granted loan currency for all loans granted by one comparable Bulgarian bank, Brown et al. (2014a) examine how bank funding affects the denomination of the loan currency. They document that foreign currency lending is at least partially driven by the bank's eagerness to match the currency structure of assets with that of its liabilities. Hungarian banks mostly used foreign currency funding when lending in foreign currency, but at times also relied on domestic currency funds while hedging some of the resultant on-balance sheet open positions with foreign exchange swap transactions (Mák and Páles (2009)).

Although the Hungarian economy is not “dollarized” or “euroized”,⁶ many local loans are denominated in Euro or in Swiss Franc (in some sample years more than a third of the bank lending was). The comprehensive credit register at the Central Bank of Hungary (*Magyar Nemzeti Bank*) contains granular information on all loans extended by all credit institutions operating in Hungary, including and – essential for our purposes – their currency denomination. And with an economic system dominated by banks,⁷ we can identify the causal impact of monetary policy on the supply of bank credit by exploiting theoretically-motivated interactions between changes in monetary conditions on the one hand and a key bank balance-sheet strength variable, i.e., the bank capital-to-total-assets ratio, on the other hand (Bernanke et al. (1996), Kashyap and Stein (2000)). The definition of the bank capital-to-total-assets ratio we employ closely follows the theoretical literature that attributes a prominent role to net worth in determining the ability of banks to obtain financing from their own financiers (Holmstrom and Tirole (1997), Holmstrom and Tirole (1998), Bernanke et al. (1999), Gertler and Kiyotaki (2011)), which may equally pertain to their ability to get long-term foreign currency funding to match their corporate lending. We also employ each bank’s individual regulatory capital ratio as an alternative measure (or as an instrument for the capital ratio), and assess total assets, liquidity and foreign ownership as alternative and competing bank characteristics.

⁶ The amount of foreign cash held in the form of Dollar and Euro has traditionally been very low in Hungary. Based on survey data from the Austrian National Bank, Feige (2003) for example estimates that the fraction of total currency held as foreign currency was only 6 percent in Hungary in 2001.

⁷ Bank financing has traditionally been the most important source of funding for corporations in Hungary. In 2005-2011, the ratio of bank credit to non-financial firms to GDP varied between 25 and 31 percent, corporate bond issues were below 2 percent, and the value of IPOs was about 0.1 percent of the country’s GDP (Bijlsma and Zwart (2013)).

In this way our identification strategy closely follows the most recent empirical literature assessing the effects of monetary policy on the provision of bank credit.⁸ We account for all firm-level time-varying heterogeneity in credit demand by including firm-time fixed effects and also identify supply effects from the differential responses to changes in monetary conditions by banks with different capitalization ratios. We differ, however, from the literature in that we identify the impact of monetary changes on the supply of loans in different currencies (rather than by different banks) while controlling for credit demand at the firm-time level. Since a large number of firms in our sample borrow from one bank only (but in multiple currencies), for those firms we include in essence *bank-firm-time* fixed effects that account then fully for each firm's bank-specific credit demand.

In sum, we will focus on the *set of loans in various currencies granted in the same month to the same firm* by one or more banks of varying balance-sheet strengths. Within this set of loans, for which the (observed and unobserved) quality of potential borrowing firms is constant, we study how monetary conditions affect the granting of loans in different currencies depending on bank capital. Consequently, what we require for the identification of supply effects is that the changes in the domestic (or foreign) interest rate do not affect firms' demand for domestic versus foreign currency loans in a way that is somehow correlated with banks' capitalization ratios.⁹ In this way,

⁸ Jiménez et al. (2012) and Jiménez et al. (2014) for example explore a dataset of firms' credit exposures to multiple banks and control for firm-level time-varying heterogeneity in credit demand by including firm-time fixed effects as in Khwaja and Mian (2008). Their identification of the impact of monetary policy on the volume and composition of credit supply, respectively, rests *à la* Kashyap and Stein (2000) on the differential responses (to changes in the monetary policy rate) by banks of different balance-sheet strengths. Using fixed effects is a standard way to control for demand side heterogeneity also in other strands of the literature. Paravisini et al. (2015) for example analyze the effect of credit supply on trade and also include various sets of fixed effects to account for all non-credit determinants.

⁹ This condition seems more readily satisfied than the one in Khwaja and Mian (2008). They estimate the impact of bank-specific liquidity shocks on bank lending for a sample of firms with multiple banking relationships. They include firm fixed effects and in their case identification requires that concurrent changes in firm credit demand are not bank-specific. Becker and Ivashina (2014) analyze business cycle fluctuations in bank lending using a sample of firms raising new debt financing, either by taking a bank loan or issuing public debt. In their context, demand explanations

our firm-time fixed effects control for all features of firm-level loan demand, even those arising from non-random matching between firms and banks, as long as bank-firm relationships last long enough, i.e., longer than a month.¹⁰ Nevertheless, we also account for the possibility that over time banks' specialization in different industries, export destination markets (Paravisini et al. (2020)), and/or firm type (Brown et al. (2014b), Salomao and Varela (2016)) results in assortative matching between banks and firms, by analyzing a subsample of non-exporting firms and large firms only to further emphasize the robustness of our results.

As common in the literature, we account for the stance of monetary policy with changes in representative short-term interest rates. We further comprehensively account for changes in domestic GDP growth and inflation (Taylor (1993)), at all levels of interaction where the domestic interest rate is also featured. To identify the currency compositional effect, we focus on corporate rather than household bank loan supply. Focusing on corporate loans is likely to generate conservative estimates of the currency compositional effect, since the volume of foreign currency lending was larger in the household than in the corporate sector in Hungary. Furthermore, firms may seek natural hedges and many firms may not actively seek to carry trade (Brown et al. (2011)),¹¹ a risky activity that could be associated with borrowing from banks with low capital or liquidity ratios.

are properly ruled out by the use of firm-time fixed effects since their sample is conditioned on firms' issuing new debt. Finally, recall that Kashyap and Stein (2000) use bank-level data that does not allow controlling for heterogeneity in credit demand, making disentangling credit supply from demand a steep challenge.

¹⁰ Since ample evidence shows that bank-firm relationships are stable over time (e.g., Ongena and Smith (2001); Degryse et al. (2009)), the condition is duly satisfied, especially in our single-bank firm subsample.

¹¹ Their paper analyzes firm level data and documents that foreign currency borrowing by small firms is related to (firm-level) foreign currency revenues suggesting that the macroeconomic and institutional environment may not be the only determinant of financial dollarization. Consequently, their paper also suggests that firm-level controls are essential to identify the effects of monetary conditions on bank lending in various currencies. See also the recent detailed study by Harasztosi and Kátay (2020) using the Hungarian credit register.

Given these ingredients we can identify the impact of the monetary conditions set by both domestic and foreign central banks on the supply of credit by local banks in both domestic and foreign currencies. We find that looser domestic monetary conditions substantially increase lending from banks with lower capital ratios in the domestic currency but not in the foreign currency. Looser foreign monetary conditions on the other hand spur lending in the foreign currency but less so in the domestic currency.¹² These estimated differences in potency of the bank lending channels in domestic and foreign currency are not only statistically significant but also economically relevant (as our detailed discussion in the paper demonstrates). So when credit is also granted in foreign currencies, domestic monetary policy drives only part of the local supply of credit, and foreign monetary policies will also matter. In that case “multiple bank lending channels of various strengths may run through a country.”

The rest of the paper is organized as follows. Section II reviews the literature, while Section III discusses the identification strategy. Section IV introduces the data, methodology and the variables. Section V contains the results assessing the potency of the bank lending channels in both domestic and foreign currency. Section VI concludes.

II. Literature Review

Our paper fits in the recent literature that identifies the impact of banks’ funding shocks on the provision of credit.¹³ Khwaja and Mian (2008) for example provide evidence that bank-specific liquidity shocks contract corporate loan supply in Pakistan. The impact of monetary policy changes

¹² I.e., we find that the differences in the response of highly versus lowly capitalized banks to changes in the Euro and Swiss monetary rates are larger when banks lend in a foreign currency.

¹³ A related stream of the literature shows how the contraction in bank credit affects the real economy (Ivashina and Scharfstein (2010), Lemmon and Roberts (2010), Carvalho et al. (2015), and Kalemli-Ozcan et al. (2016)).

on the supply of credit has also been widely analyzed, by the early literature using credit aggregates (Bernanke and Blinder (1992), Kashyap and Stein (2000)) and by recent papers using micro-level data (Jiménez et al. (2012), Becker and Ivashina (2014)). Research on the impact of the monetary policy rate on the *composition* of the supply of credit has so far focused on direct credit risk taken (e.g., Jiménez et al. (2014), Dell’Ariccia et al. (2017)).¹⁴

Recent papers have started to identify the impact on the supply of credit of foreign monetary policy. Ioannidou et al. (2015) for example assess if changes in the US federal funds rate have compositional effects on the supply of US Dollar denominated credit granted in Bolivia, an almost entirely dollarized country, while Morais et al. (2019) assess the impact of foreign monetary policy on lending by foreign versus domestic banks in Mexico. However, neither paper assesses – like we do – the differential potencies of the bank lending channels in both the domestic and foreign currencies.¹⁵

The closest to our paper is Bräuning and Ivashina (2020). They estimate the impact of monetary policy changes on foreign currency lending by global banks and find that domestic

¹⁴ But credit risk and currency denomination may be intimately connected. For example, looser foreign monetary conditions will lead to more foreign currency lending domestically, which exposes borrowers to foreign exchange risk that metastases in credit risk for the lenders when the domestic currency depreciates. The latter possibility may not have been fully recognized in bank capital regulation.

¹⁵ Recent work also investigates the determinants and effects of global liquidity at the aggregate level. Cerutti et al. (2017) for example use country-to-country level data on cross-border bank flows to study the non-price determinants of the cross-border supply of credit. They find that global liquidity is driven primarily by uncertainty (VIX), US monetary policy (term premia but not federal funds rate *per se*), and UK and Euro Area bank conditions (proxied by leverage and TED spreads). Dinger and te Kaat (2020) study the impact of country-level current account balances on individual bank risk-taking. See also He and McCauley (2013), Cerutti et al. (2015), McCauley et al. (2015), Lo Duca et al. (2016), Avdjiev et al. (2017), Du and Schreger (2018), Temesváry (2018), Temesváry et al. (2018) and Takáts and Temesváry (2020). Another related stream is the literature on the global financial cycle that analyzes how global factors affect the domestic financial conditions (Rey (2013), Obstfeld (2015), Miranda-Agrippino and Rey (2020)). Our paper presents a particular transmission channel of global financial shocks, which is the international bank lending channel.

monetary easing leads to lower bank loan supply in foreign currencies.¹⁶ They show, using a sample of global banks that an increase in the differential between foreign and domestic interest rates leads to less lending in foreign currencies. Their mechanism arises from frictions in the FX market: as a response to domestic monetary policy easing, global banks reallocate capital to their foreign subsidiaries i.e., to the high-yield currency. Lending in the high-yield currency requires the use of FX swaps and increases the cost of synthetic funding, the forward premium. Because of frictions in FX markets, an increase in the interest rate differential results in less bank lending in the foreign currency, i.e., a currency compositional shift in banks' loan supply.

Similar to Bräuning and Ivashina (2020), we establish the result that lower domestic interest rates generate a currency compositional shift in domestic banks' loan supply. In the group of banks in our sample, however, monetary policy easing generates, on average, a substantially lower increase in banks' loan supply in the foreign than in the domestic currency. In our setting therefore, unlike in theirs, cross-currency spill-over effects of domestic monetary policy changes arise. We hypothesize that the source of such spill-over effects is that for certain banks it is easier to overcome the FX market friction that imposes the negative effect of monetary policy easing on banks' lending in the foreign currency, than for other banks. In our setting, domestic banks lend domestically in the foreign currency and may use internal capital markets to obtain funding for foreign currency lending from their parent banks. We show that banks obtaining foreign currency

¹⁶ Other papers showing that negative shocks to funding in one currency affect banks' lending responses in that currency include Ivashina et al. (2015) and Acharya et al. (2017). The first paper shows that when U.S. money market funds sharply reduced their US Dollar exposure to European banks due to concerns about their credit quality, Dollar lending by Eurozone banks fell relative to their Euro lending. Acharya et al. (2017) compare lending responses of US and foreign banks in the syndicated loan market to the freeze of the asset-backed commercial paper market in 2007. Their results confirm that even for global banks, lending in a given currency is affected by shocks to the availability of funding in that currency.

funding primarily from the swap market (i.e., receive little direct currency funding from parent banks) are more sensitive in their lending to frictions in that market.

Our paper also fits in a specific literature assessing the potency of a domestic bank lending channel in Central and Eastern Europe. Matousek and Sarantis (2009) for example use bank-level data from eight countries in the region and find evidence for the channel's existence – though with varying strength – in each country. Benkovskis (2008) and Kujundžić and Otašević (2013) use credit aggregates from Latvia and Serbia to show that interest rate changes may affect credit in the domestic currency but seem to have limited impact on credit granted in the foreign currency.¹⁷ Although, in line with our approach, these papers focus on the effects of domestic monetary policy on the provision of credit, analyzing aggregate information they are unable to disentangle supply from demand effects. Our paper is the first to consider the differential effects of domestic (and foreign) monetary policy on the supply of credit by individual banks to individual firms in local and foreign currencies, directly accounting for time-varying firm-level loan demand (at a monthly frequency).

In addition, our paper relates to the large empirical literature on financial dollarization that studies the determinants of banks' domestic lending in foreign currency in Latin American and transition economies (Nagy et al. (2011)). This literature finds that in general the lack of macroeconomic policy credibility, inflation volatility, low institutional quality, interest rate differentials, financial market development, and foreign funding of bank credit all contribute to a

¹⁷ In addition, few recent papers consider the effectiveness of macroeconomic policies in the presence of financial dollarization (e.g., Brown et al. (2018)). Using credit aggregates from four Central and Eastern European economies Brzoza-Brzezina et al. (2010) find that restrictive monetary policy may lead to a substitution in the demand for domestic to foreign currency loans. Mora (2013) analyzes a sample of 56 banks in Mexico and documents that banks with a low amount of foreign currency deposits are more (less) sensitive to domestic (foreign) monetary policy changes than banks with a substantial amount of foreign currency deposits.

high level of foreign currency bank loans in these economies (e.g., Barajas and Méndez Morales (2003), De Nicolo et al. (2005), Rajan and Tokatlidis (2005), Rosenberg and Tirpák (2009), Basso et al. (2011), Neanidis and Savva (2015)). In contrast to this literature that focuses on macro-level money, credit and output aggregates, and often highlights carry-trade on the demand side, we employ micro-level data to identify the impact of changes in monetary conditions on the supply of bank credit across currencies.

III. Identification Strategy

Do low monetary policy rates at home and/or abroad spur changes in the currency denomination of the credit that is supplied by banks? To address this question one needs to disentangle the impact of the changes in the interest rate on the currency denomination of the supply of credit from changes in the volume of the supply and changes in the quality and the volume of the demand – while accounting for the impact of other key macro variables. This bank supply channel involves compositional changes in the supply of credit at the *bank-firm-currency denomination* level.

Our identification strategy consists of two crucial ingredients: (1) Interacting the change in the interest rate with bank capital and currency denomination, while saturating with firm-time fixed effects; (2) “horseracing” the interest rate, in its interaction with bank capital and currency denomination, with the corresponding triple interactions of other key macro variables, in particular GDP growth and inflation.

In essence, our identification scheme follows standard state-of-the-art methodology in the most recent literature (Jiménez et al. (2012), Jiménez et al. (2014)) that builds on, but goes well beyond, the path-setting methodology to identify the effect of monetary policy changes on banks’ loan supply decisions first employed by Kashyap and Stein (2000).

As we are assessing the within-firm credit composition (along currency), first-stage firm-level loan application information as in Puri et al. (2011), Jiménez et al. (2012), Jiménez et al. (2014), Berg and Kirschenmann (2015) and Antoniadou (2016), for example, would be potentially less informative for our purposes. Given that we focus on the currency denomination of credit granted to a firm in a certain month knowing the currency requested by the firm would be helpful. However, and as far as we are aware, no credit register in the world records this type of information (Miller (2003)) and only one study so far employs information on the currency requested from loan applications made to one bank (Brown et al. (2014a)).

We now discuss the two aforementioned strategy components in more detail, along with our measures of credit granting.

A. Saturation with Fixed Effects and Triple Interactions

Our benchmark specification is a model that explains the extensive margin of the granting of loans in a currency given the firm had no precedent loan in the currency before. We also investigate the ending of lending across currencies and the increase in the amount of different currency lending.

1. Firm-Time Fixed Effects

Given the prominent role of net worth in determining the borrowing by banks from their financiers, and given that the majority of banks may have little capital at stake, looser monetary conditions in one currency may spur banks into lending in this respective currency but – given imperfect hedging opportunities for either the bank and/or its financiers – not necessarily (or at least not to an equal degree) in other currencies.

However, this testable prediction can also be consistent with demand channels, in particular with the firm balance sheet and the interest rate channels of monetary policy (Bernanke and Gertler

(1995)). Therefore, we saturate our benchmark specifications with firm-time fixed effects to account for concurrent changes in the type (along balance sheet strength or export opportunities, for example) and volume of the firm demand for credit. Observed and unobserved time-varying firm characteristics that are accounted for in this way include the net present value of firm projects, export and investment opportunities, agency problems, risk, pledgeable income and collateral.

Our saturated specifications also account for the endogeneity of bank loan supply when changes in macroeconomic conditions affect banks' lending decisions indirectly, by altering the performance and profitability of borrowing firms. In our saturated specifications, identification comes from comparing changes in lending by one or more banks (that are different with respect to their capital-to-asset ratios) in the *same* month to the *same* firm in *different* currencies.¹⁸ Only a quarter of the firms deal with multiple banks in Hungary,¹⁹ so in robustness we break out the single-bank firms for which we know the exact bank – firm exposure.

In our most robust specifications, firm-time fixed effects also account for the possibility that assortative matching between firms and banks generates bank-specific currency loan demand as a consequence of changes in domestic and/or monetary policy rates at home and/or abroad. Firms exporting to specific destination markets may borrow from banks that specialize in those markets (Paravisini et al. (2020)), therefore currency-specific loan demand may be correlated with bank characteristics. Firm-time fixed effects in estimations on a subsample of single-bank firms – the firm-time fixed effects then actually turn into *bank*-firm-time fixed effects – will control for such

¹⁸ Note that our third panel dimension (that we need for the inclusion of firm-time fixed effects) is the currency dimension. Unlike recent research analyzing loan applications made by firms to different banks (Jiménez et al. (2012)), Jiménez et al. (2014)), we do not observe multiplicity in the firm-bank relationship dimension.

¹⁹ Hence multiple firm-bank relationships are much less commonly observed in Hungary than in Spain and Italy for example. For their sample of very large firms, Ongena and Smith (2000) document that the mean number of relationships in Hungary equals 4, while in Spain and Italy it equals 10 and 15, respectively.

demand characteristics as long as bank-firm relationships are stable over time, i.e., do not change within a period of few months.

The remaining within bank-firm-time variation is the domestic versus foreign currency credit outcome, as associated with the combination of changes in monetary policy rates and bank capital-to-asset ratios. For changes in foreign currency loan demand spurred by differences in firm export activity, opacity (Brown et al. (2014b)) and/or growth potential (Salomao and Varela (2016)) to explain our findings,²⁰ these would have to correspond to the changes in monetary policy rates and bank capital-to-asset ratios. We will account for the possibility that over time banks' specialization in different export destination markets or firm type results in assortative matching by using a subsample of non-exporting and large firms to further identify our estimates as supply side driven. This way, our exercises control for all possible sources of firm specific heterogeneity that may influence the variation in loan granting at the bank-firm-time level.

A key assumption behind our identification approach is that from the firms' perspective domestic and foreign currency loans are substitutes, i.e., the choice of the loan currency is (mainly) made by the bank. Using firm-time fixed effects, we control for time-variation in the *volume* of firms' total loan demand, but we are not able to account for potential effects of heterogeneity in firms' *currency specific* loan demand.²¹ In robustness estimations we use fixed effects with a currency component, so that we can better control for variation in that dimension. Specifically, we

²⁰ Also analyzing Hungarian data the latter paper finds that at the firm-year level “deviations from the uncovered interest rate parity associate with higher leverage in foreign currency, particularly of productive firms with high marginal product of capital.”

²¹ In fact, it is not straightforward whether in our sample loans in different currencies are substitutes or complements and examining this question empirically can be a challenge. For subsets of firms in our sample, however, we can reasonably assume a preference for taking loans in foreign currencies. Firms with substantial foreign currency revenues, i.e., exporting firms, or large firms are more likely to prefer foreign currency loans. In robustness estimations, we use firm characteristics such as export share and firm size to identify these sets of firms and estimate whether our main results hold in their contexts. The results indicate that from the firms' perspective we can reasonably assume the substitutability of foreign and domestic currency loans.

use firm-currency fixed effects to capture the time-invariant currency specific firm demand and time-currency fixed effects that control for firms' aggregate time-varying currency-specific demand for credit. In addition, for the subsample of single-bank firms, where the corresponding banks are unambiguous, we use bank-currency fixed effects to control for the heterogeneity in banks' access to foreign currency funding. All resultant findings with these alternative approaches support our key identifying assumption.

2. Triple Interaction of Interest Rate, Bank Capital Ratio, and Currency Denomination

Given the set of fixed effects, identification of a bank lending channel comes from exploiting the testable prediction that when the monetary policy rate decreases for one particular currency, banks with lower net worth will react more by lending more in this currency than banks with higher net worth. Therefore, it is essential to have a sharp measure for the intensity of the agency conflict that besets banks' own borrowing from their financiers. The bank capital-to-assets ratio is such a measure (Holmstrom and Tirole (1997)).²²

To identify the "currency composition channel" of monetary policy we interact the change in the interest rate with the lagged bank capital ratio (in the spirit of Kashyap and Stein (2000)) and a dummy variable indicating the currency of the bank-firm exposure.²³ When explaining new credit granted or credit growth we expect a negative sign for the estimated coefficient on this triple interaction term: When the domestic interest rate decreases, banks with a lower capital ratio are

²² The ratio is particularly meaningful since banks in Hungary did not develop conduits or Structured Investment Vehicles (SIVs). Total bank assets therefore cover most of the banks' business. Securitization is also not practiced and therefore cannot be a significant motive for lending in the foreign currency.

²³ In our sample loans denominated in different currencies also differ in their maturity. In order to examine if the currency dummy captures the effect of maturity, we run regressions where we use the maturity of the loan instead of the currency dummy. The coefficients of main interest are insignificant suggesting that it is not the loan maturity that is driving our main results.

less likely to grant more credit in the foreign currency. However, if the different currencies are substitutable for banks (through hedging for example), this estimated coefficient should be close to zero, while if lending in a foreign currency is perceived to facilitate extra risk taking the estimated coefficient may even be positive (or at least less negative).²⁴

To identify potential cross-currency spillover effects we examine whether a source of heterogeneity, to monetary policy shocks, is discernible, in the lending responses of banks using the FX swap market. We argue that Hungarian banks have little impact on equilibrium conditions in international financial markets. However, frictions in those markets may create heterogeneity for these banks in the ease to fund lending in foreign rather than the domestic currency. Consistent with the mechanism suggested by Ivashina et al. (2015) and Bräuning and Ivashina (2020), we use data on banks' FX swap exposures and test the hypothesis that banks that heavily rely on the FX swap market to fund their foreign currency lending are more sensitive to frictions in that market than banks that potentially receive funding from foreign parent banks. Figure 1 shows the growing importance of the swap market for Hungarian banks by displaying their net position in swap volumes for the three main currencies for the sample period 2005-2011.²⁵

²⁴ In this case the bank's lower net worth (or "skin in the game") could lead to more foreign currency lending. Relatedly, Ongena et al. (2013) provide evidence that foreign banks may engage in risky lending in domestic markets, especially when entry barriers and restrictions on non-core bank activities in domestic markets are low. Notice that banks' engagement in risky foreign currency lending may coincide with more risky lending in the domestic currency and that lending in a foreign currency not necessarily involves more risk-taking (Dell'Ariccia et al. (2016)).

²⁵ Appendix Table A.I provides details on the volumes and implied yields of swap transactions where one leg of the transaction involves the Hungarian Forint (HUF). Euros (EUR), US Dollar (USD) and Swiss Franc (CHF) are the currencies swapped in the highest volumes against the Forint by banks in Hungary. Beyond these currencies, we include data on British Pound (GBP)-HUF swaps which are used in the fourth highest volume although their volume is substantially lower than the volume of transactions in the previous three currency pairs. In the raw data, we see that banks also engage in swapping Romanian Leu (RON), Czech Koruna (CZK), and Japanese Yen (JPY) against the local currency (HUF), the swap volumes in these pairs are, however, even more negligible. We note that swap transactions where both the requested and offered currencies are foreign currencies (EUR-USD swaps, for example) are done for purposes that are difficult to relate directly to banks' foreign currency lending activities without access to more granular data and we therefore do not include them in the table below.

[Insert Figure 1]

To test this mechanism, we use a specification similar to one employed by Bräuning and Ivashina (2020) and run regressions of credit granting on the differential between the foreign and domestic interest rates interacted with the bank capital ratio, and high swap ratio and currency denomination dummies. In addition, to fully account for the impact of varying financial and risk conditions in international markets, we take into account the cost of FX swap funding, the forward premium (which is likely to be exogenous for the banks in Hungary) by running regressions on a subsample of months with above median forward premium in both foreign currencies.

[Insert Table I here]

In accordance with the focus of our analysis, we cluster standard errors at the firm level.²⁶ Clustering at the firm and time level at a frequency lower than year-month maintains our main findings, while likely due to the low frequency of most variables' series clustering at the firm and year-month level robs *all* the estimated coefficients of their statistical significance.²⁷

²⁶ Banks may prefer to lend in a currency in which the firm has revenues for example (even though revenue currency denomination may not always be fully observable, potentially leading to more foreign currency credit as in Brown et al. (2014b)).

²⁷ Clustering at the main bank level (as in, e.g., Jiménez et al. (2020)) throughout the analysis is impossible as we do not know the respective bank shares of the credit exposures.

B. Horseracing Triple Interactions

1. Interest Rate

Banks are mostly funded by short-term debt, the interest rates of which will likely respond to changes in the monetary policy rate. As in Angeloni et al. (2003), we employ the yearly change in a three-month interest rate, for Hungarian Forint exposures on a Hungarian government bond, and for euro lending on a generic government bond. For Swiss Franc lending we use the annual change in the Swiss 3-month LIBOR interest rate.²⁸ For all three interest rates our sample period spans a full yet (across-interest-rates) distinct cycle and corresponding changes in the foreign exchange rate (see Figure 2). The use of variations in a short-term interest rate as a measure that proxies the change in the stance of monetary policy is fully in line with the literature analyzing the credit channel at the micro level.²⁹ In some of our specifications we use the relative changes of domestic and foreign interest rate changes (i.e., the change in the relative interest rate) instead of the change in each interest rate in itself.

[Insert Figure 2]

The Figure confirms that Hungarian monetary authorities set interest rates mostly independently from the European Central Bank.³⁰

²⁸ We use a three-month interbank rate because there is no three-month Swiss Treasury bill or government bond. We rerun all key exercises with the relevant three-month interbank rate from the three currency areas, but results are unaffected.

²⁹ See Jayaratne and Morgan (2000), Kishan and Opiela (2000), Ashcraft (2006), Black et al. (2009), Jiménez et al. (2012), Zaheer et al. (2013), among others. Kashyap and Stein (2000) find very similar results using either the variation in the federal funds rate, the Boschen and Mills (1995) index or the Bernanke and Mihov (1998) measure.

³⁰ Király (2008) for example stresses that prior to 2008 the Hungarian authorities' most important considerations for setting the monetary policy rate included the domestic budgetary consolidation, the onset of the financial crisis and

2. Other Key Macro Variables

Despite the predominance of banks' short-term funding, their lending could also be affected by other key macro variables. Hence, the third crucial component in our identification strategy is to concurrently account for the effects of changes in GDP growth and prices as the main determinants of the monetary policy rate (but which may also capture firm investment opportunities and pledgeable income) and other aggregate variables including changes in exchange rate and foreign direct investment. We therefore horserace the triple interaction of changes in GDP growth, prices and other macro variables, with bank capital and currency denomination, with the equivalent triple interactions with the monetary policy rate.³¹

Given their correlation with the interest rate, these macro variables in triples also feature as controls, to the extent that the firm-time fixed effects did not already soak up relevant macroeconomic variation.

IV. Data, Methodology and Variables

A. Data

The Hungarian Central Credit Information System (KHR) contains information on *all* outstanding loans extended by *all* credit institutions operating in Hungary. As such this credit register contains loans from commercial banks, branch offices of foreign banks, saving cooperatives, credit unions, specialized credit institutions and other financial enterprises. We restrict our sample to corporate loans granted by commercial banks and branch offices of foreign banks and we focus on

also the expansion of foreign currency lending in general (which if successfully acted upon would yield an underestimation of our documented effects).

³¹ We also run specifications dropping GDP growth and inflation as well as the corresponding double and triple interaction terms of these variables from the regression. Coefficients of the interest rate variable and its interaction terms remain both statistically and economically significant.

commercial and industrial loans that represent 66 percent of total corporate loans registered in the credit register (Endrsz et al. (2012)).

We observe all outstanding loans denominated in the domestic as well as foreign currency, between 2005 and 2011, at a monthly frequency.³² An Appendix describes the overall development of domestic and foreign currency lending in Hungary. We aggregate the data to the firm-month-currency level that will be the focal unit of observation in our analysis. Our dataset includes credit lines but the results we present in subsequent sections are however robust to the exclusion of credit lines from the sample.

We match the thus-organized loan data to firm and bank characteristics. Firms' financial statement data are available from the Hungarian National Tax and Custom Administration (APEH) database that contains the balance sheet and income statement of all Hungarian firms with double-entry book-keeping. Banks' financial and ownership data are available from bank regulatory reports accessible at the Central Bank of Hungary. Because the credit register provides information only about the type of the lender (bank, branch office, savings cooperative, leasing company, or other type) but not the individual lender's identity, we obtain information on the extant bank-firm relationships from a firm register called Complex that contains each firm's bank account numbers. The first three digits of the bank account number (called GIRO code) uniquely identify the bank belonging to a particular account number. For the majority of firms, this information unambiguously identifies the lender since three quarters of the firms in our dataset borrow from one bank only. A quarter of the firms have multiple bank relationships (and 2.36 banks on average).

³² This time period looks favorable in length compared to those used in recent papers that analyze the effects on the provision of credit of monetary and financial shocks. Aforementioned papers by Jimnez et al. (2012) and Jimnez et al. (2014) cover 2002 to 2008, Ioannidou et al. (2015) analyze data ranging from 1999 to 2003, while Khwaja and Mian (2008) study data from 1996 to 2000.

For these firms, we are not able to identify the exact lender (and consequently have to take averages across the reported banks when constructing the relevant bank characteristics).

B. Methodology

This Section presents and discusses our methodology. We estimate models with as dependent variables new credit granted (extensive margin), ending credit (extensive margin) and increase in the amount of credit (intensive margin). To stepwise saturate with fixed effects and make robust inferences, we employ linear probability models.³³

The sample period goes from January 2005 to December 2011. We distinguish loans by currency denomination; in the baseline specification we differentiate local and foreign currency denominations, while in some other specifications we separate the three main currency denominations present in Hungary, i.e., Hungarian Forint, Euro and Swiss Franc. The total number of observations (i.e., total firm – credit in currency – year:month) equals 24,440,822 (36,661,233, when Euro and Swiss Franc exposures are disaggregated), but given computing constraints the regressions employ a 10 percent random sample of firms.³⁴ Table II presents the summary statistics. Summary statistics for banks (firms) are based on the average values of the bank (firm) characteristics over the sample period. The number of banks in our sample is 39 since we include all commercial banks and branch offices of foreign banks that are lending in Hungary during our sample period, but do not include saving cooperatives lending primarily to households. With one

³³ Given the extensive sets of fixed effects we include and as we are primarily interested in the estimated coefficients on the triple interactions (as the next sections explain), we employ linear probability models (Ai and Norton (2003); Norton et al. (2004)). In further unreported robustness exercises we also run probit models at the quarterly level that only include time (i.e., year:quarter) fixed effects. The higher level of aggregation and the exclusion of firm fixed effects is necessary for estimations to be technically feasible. Results are similar however.

³⁴ Our 10 percent random sample does not suffer from the problem of overrepresentation of short-lived firms. The mean life span of firms in the population and our random sample, in any given month, is approximately the same. Moreover, our results are robust in other random samples as well.

exception, all banks in the sample offered both Hungarian forint and foreign currency loans. The number of firms in our sample is 318,411.

C. Specification and Dependent Variables

The complete model before saturation with firm-time fixed effects, which is e.g., Model (5) in Table III, equals (in abridged form):

$$(1) \quad \text{CREDIT}_{ikt} = \alpha_i + \alpha_t + \beta \text{INFX}_{ikt} + \delta \Delta \text{INTEREST RATE}_{t-1} * \text{INFX}_{ikt} + \gamma \Delta \text{INTEREST RATE}_{t-1} \\ * \text{BANK CAPITAL}_{it-1} * \text{INFX}_{ikt} + \text{Controls} + \varepsilon_{ikt}$$

The dependent variable is a measure of the CREDIT_{ikt} granted to firm i in currency k in month t .³⁵ Hence, for each firm-month pair, there is an outcome value by currency, i.e., there is one firm-month series for credit in Forint and there is one firm-month series for credit in foreign currency.³⁶ For each firm for each year we know the set of banks the firm is having an account with but do not know the individual bank-firm credit exposure, except when the firm maintains only one bank which (“fortunately” in a sense) happens in 74 percent of the cases.

We first focus on the extensive margin of new credit, i.e., *New Granting of Credit*, which equals one if firm i receives credit in currency k in month t , conditional on having no debt in currency k in month $t-1$, and equals zero otherwise.³⁷ Analyzing the extensive margin of new credit

³⁵ We also run specifications on a quarterly sample and find that the effect of the interest rate change on the likelihood of credit granting per quarter is four times the monthly effect, confirming the results we obtain from the analysis of monthly data.

³⁶ In the benchmark specifications the currency (k) is binary, it is either Hungarian Forint or foreign currency. However, in some specifications (in particular all the models in Tables VIII, IX, X and XI), we further dissect foreign currency and thus k can take three values: Forint, Euro and Swiss Franc.

³⁷ This conditionality merely defines this credit variable as an extensive margin at the firm-currency level, and not at the firm-bank level as in Jiménez et al. (2012) and Jiménez et al. (2014) who focus on credit to non-current, i.e., “new”

in a binary manner has several advantages. Such an analysis is comprehensive, comparable and directly interpretable across all loan types and conditions, it avoids having to adjust for exchange rate changes (which could create spurious correlations in our estimations), and it is least affected by the continuous decrease in firm-bank exposures, according to their contracted repayment schedules.

Later we assess the ending of credit and growth in amount with two additional dependent variables: *Ending Credit* which equals one if firm i receives no more credit in currency k in month t , conditional on having received some credit in currency k in month $t-1$, and equals zero otherwise;³⁸ and *Increase in the Amount of Credit* which is the logarithm of the increase in the amount of credit firm i holds in currency k in month t . In the latter case, in order to alleviate the mechanical effect of the exchange rate fluctuations on the amount of loan, we include only the pre-Lehman period (when exchange rates were quite stable) in our estimations and use the average exchange rates during the period to convert foreign currency loans to domestic currency. With these two additional dependent variables we will therefore also investigate in robustness the extensive margin of ending credit and the intensive margin of increasing credit.

The main independent variables are as follows: $IN\ FX_{ikt}$ is the abridged label for *Credit Is Granted in Foreign Currency*,³⁹ which equals one if the credit to firm i in month t is in currency k which is a foreign currency, and equals zero otherwise.⁴⁰ $\Delta INTEREST\ RATE_{t-1}$ is the annual

borrowers from a bank. This condition of no credit in the respective currency in the previous month is replaced by the condition of non-zero credit in the respective currency in the previous month for the other two dependent variables we focus on (i.e., *Ending Credit* and *Increasing the Amount of Credit*).

³⁸ For most firms, the variable is equal to one when the firm repays all of its debt and does not take a new loan.

³⁹ In those specifications where Euro and Swiss Franc exposures are disaggregated (see Tables VIII, IX, X and XI) there are in fact two variables, *Credit Is Granted in Euro* and *Credit is Granted in Swiss Franc*.

⁴⁰ An alternative notation would be to use α_k instead of $\beta\ IN\ FX_k$ and interpret it as a currency dummy or currency fixed effect. This independent (indicator) variable separates within one regression model (that can be saturated with firm-time fixed effects) the granting of credit to an individual firm in a specific month in a particular currency. The dependent (credit outcome) variables and this indicator variable are in principle uncorrelated (as for each currency

change in the relevant (in some specification only HUF, in others HUF, EUR and CHF) three-month interest rate at $t-1$.⁴¹ $BANK\ CAPITAL_{it-1}$ is the capital ratio at time $t-1$ defined as the ratio of bank equity and retained earnings over total assets of the set of banks granting the credit to firm i .⁴² These latter two variables are discussed more at length in the next section.

We are interested in the three coefficients, i.e., β , δ and γ , the coefficients on currency denomination and its double and triple interactions with the interest rate, and the interest rate and bank capital. The specification further loads in firm- and time fixed effects (represented by α_i and α_t), and as controls include the following sets of variables: (1) the triple interactions of the change in GDP and inflation, respectively, with bank capital, and currency denomination; (2) bank capital ratio, size, liquidity, profitability and non-performing loans; (3) firm capital ratio, size, liquidity, profitability and export sales ratio and (4) in specifications with no time fixed effects the changes in the exchange rate, foreign direct investment, sovereign credit default swap spread and yield curve.

category there is independently credit granting taking place or not). The coefficient estimated on this indicator variable (when not interacted) represents the average difference in credit outcome values between the featured currency categories.

⁴¹ We also run specifications replacing the one-month lag of the interest rate with its two-, three-, four-, five-, or six-month lags. Results are similar. Furthermore, we run specifications including up to four lags of the interest rate variable as well as interactions between each lag, bank capitalization, and currency denomination of the loan (even on a quarterly dataset to follow Kashyap and Stein (2000)). We find that the sum of the coefficients on the double and triple interaction terms are both statistically and economically significant, and their sum similar in magnitude to those we report on the first lag.

⁴² $BANK\ CAPITAL$ denotes the average capitalization of the set of banks the firm has an account with. Consequently, the variable is firm-specific and we use the subscript i in notation. Since 74 percent of the firms in our sample maintain only one bank relationship, for most observations the variable is both firm- and bank-specific.

D. Main Independent Variables

1. Short-Term Interest Rate

The main variable of interest in our analysis is the yearly change in the three-month Forint interest rate that we measure by the yield on the three-month Hungarian government bond rate. The average change in the three-month interest rate during the sample period is -0.73 percentage points and it varies between -5.29 percentage points and 4.25 percentage points. To proxy for monetary policies from the other central banks that issue the currencies that are employed often, we also use the yearly change in three-month interest rates from the Eurozone and Switzerland. The Euro interest rate is based on the average yield on the three-month Euro benchmark government bonds while the Swiss interest rate is the three-month Swiss interbank rate. The average Euro and Swiss three-month interest rates in the sample period are -0.19 percentage points and -0.05 percentage points, respectively. The former varies between -3.91 percentage points and 1.25 percentage points, the latter between -2.73 percentage points and 1.19 percentage points. Definitions and summary statistics of all variables are in Table II.

[Insert Table II here]

To comprehensively account for changes in domestic GDP growth and inflation (Taylor (1993)), we include both variables at all levels of interaction where the domestic interest rate is also featured.⁴³ The average GDP growth rate in Hungary during the sample period was 0.80

⁴³ Alternatively, we run the interest rate first on GDP growth and inflation and employ the residuals of this regression rather than the interest rate itself. Results are very similar (and obviously independent of whether we then also feature in the second step GDP growth and inflation as independent variables). These results hold for both three-month government bond and interbank interest rates.

percent ranging between -8.00 percent and 4.70 percent, while average inflation was -0.40 percent, ranging between -4.10 and 6.73 percent. Additional macro controls are the annual change in the nominal effective exchange rate index of the Forint, foreign direct investment captured by the annual change in the amount of currency reserves at the Central Bank of Hungary, the annual change in the CDS rate on 5-year Hungarian sovereign bonds, and the annual change in the difference between 10-year and 1-year government bond yields.⁴⁴ The macro variables are available monthly, except for GDP growth and currency reserves, which are measured quarterly. For interim months, we use the end-of-quarter GDP growth rate and currency reserve values.

2. Bank Capital Ratio

Our key bank balance-sheet variable is the *Bank Capital Ratio* defined as the ratio of bank equity over total assets.⁴⁵ This ratio is a proxy for the bank's ability to obtain funding from its own financiers (Holmstrom and Tirole (1997)) and lend in the currency of the interest rate change ("bank balance sheet channel") but at the same time also for bank moral hazard (i.e., more "skin in the game" may deter 'other' currency lending if that is riskier). The average bank capital ratio during the sample period is 12.76 percent.⁴⁶

We include as control variables a number of bank characteristics that capture the time-variation in banks' loan supply.⁴⁷ In particular, we use the natural logarithm of total assets (*Bank*

⁴⁴ In unreported regressions, we also include the annual change in the one-year forward exchange rate as a control variable. Results are robust to controlling for the EUR/HUF and/or CHF/HUF forward exchange rates.

⁴⁵ Consistent with the literature, for bank subsidiaries we use local subsidiary rather than bank-group-level capital ratios (see, for example, Kashyap and Stein (2000)). Nevertheless, we test the robustness of our findings to a redefinition of the bank-capital variable and estimate our main specifications using group-level capital ratios. Results do not change.

⁴⁶ For a few branch offices of foreign banks, the bank capital ratio takes negative values. In our final sample, observations with negative bank-capital ratio represent less than 0.03 percent of the total number of observations, and removing these few observations does not alter our main findings.

⁴⁷ As noted before our data does not allow us to identify the individual bank-firm exposures when firms maintain multiple banks. Multiplicity occurs in around a quarter of the observations. We then simply average bank characteristics across the firms' banks.

Total Assets) to proxy for bank size and the ratio of liquid to total assets (*Bank Liquidity Ratio*) to measure bank liquidity. We also include the *Bank Return on Assets* to measure profitability,⁴⁸ and the *Bank Doubtful Loan Ratio* to proxy for the current non-performance and riskiness of the bank's portfolio. We note that the firm fixed effects we include also control for the average time-invariant characteristics of the banks the firms maintain.

All bank balance-sheet and income statement variables are available at the monthly frequency. Balance-sheet variables for month t are proxied by their values at the end of month $t-1$, while bank performance variables for month t are the annualized values of their values measured over month $t-1$. The values account for total amounts not only the parts denominated in Hungarian Forint.

E. Control Variables Including Fixed Effects

To control for the variation in the amount and quality of loan demand faced by the banks, we also include a set of firm characteristics, as well as firm and firm-time fixed effects in our specifications (with time equal to year:month).⁴⁹ In particular, in all regressions without firm-time fixed effects, we include the *Firm Capital Ratio* measured by the ratio of the firm's equity capital to total assets, the natural logarithm of the firm's total assets (*Firm Total Assets*), the *Firm Liquidity Ratio* measured by the ratio of current to total assets, the *Firm Return On Assets* that equals to the firm's net income over total assets, as control variables. To capture foreign linkages, we also use the *Firm Export Sales Ratio* calculated as the ratio of export sales to total sales.

⁴⁸ Table II shows that the average bank in our sample has zero return-on-assets. Indeed, banks operate with large balance sheets compared to pretax profits that turn out to be negative in some years during the sample period.

⁴⁹ When the sample includes only single-bank firms, the firm-time fixed effects also account for all observed and unobserved heterogeneity at the bank-time level, e.g., changes over time in technology and business model in each individual bank.

Firm characteristics are available at yearly frequency. For each month in a given year, our firm-level balance-sheet variables are proxied by their values taken at the end of the preceding year, while income statement variables are proxied by their values measured over year $t-1$.

V. Results

A. Effect of Domestic Monetary Policy on the Composition of Loan Supply

1. Domestic versus Foreign Currency Credit

We start analysing the effect of domestic monetary policy on banks' loan supply decisions focusing on domestic vis-à-vis foreign currency loans, without distinguishing between firms' exposures in Euro and Swiss Franc. We focus on the extensive margin of lending by examining the effect of monetary policy on changes in the likelihood of banks' first-time credit granting in a certain currency (i.e., the extensive margin of new credit, henceforth abridged as "credit initiation").

Table III presents our first results. Models 1 to 4 provide a step-by-step development towards the base specification which is Model 4. This model includes all relevant interaction terms for the interest rate; Interactions for GDP growth and inflation are also included but to assure the readability of Table III the estimated coefficients are reported in Appendix Table A.III (in the gray box).⁵⁰

The estimated coefficients of the domestic interest rate variable are highly significant in all models and have the expected negative sign suggesting that an interest rate decrease expands

⁵⁰ Similar Appendix Tables with matching table numbers will be added for Tables VIII, IX, X and XI below.

credit.⁵¹ In addition, Model 2 shows that the coefficient of the interaction of the interest rate with the bank capital ratio is statistically significant and takes a positive sign implying that a lower interest rate boosts credit granting especially by banks with low capital-to-asset ratios. This estimate is consistent with the existence of a bank-lending channel in Hungary, similar to the U.S. (e.g., Kashyap and Stein (2000)) and Spain (Jiménez et al. (2012)).

The bottom panel in Table III presents the economic relevance of the estimated coefficients on the interest rate – capital ratio interactions. A 25 basis point decrease in the domestic interest rate in Model 2 increases the likelihood of initiating credit by a lowly capitalized bank by 8 percent more than by a highly capitalized bank (if we take the difference between low and high capitalization to be equal to two standard deviations of the sample capitalization ratio). The estimated effect is thus economically sizable.⁵² Jiménez et al. (2012) for example find – in a somewhat different setup – that the differential effect of a 25 basis point change in the interest rate on the likelihood of loan granting between lowly and highly capitalized banks in Spain is less than 1 percent.⁵³

[Insert Table III here]

⁵¹ The effect is also economically relevant. A 1 percentage point decrease in the domestic interest rate for example increases the likelihood of initiating credit in Model 1 by more than 1 percentage point, or almost 5 percent, while the increase in the likelihood of initiating credit in foreign currency is less than half of that in Model 3. Given that we control for the demand side we expect the interest rate change to have a negative coefficient if the bank-lending channel is effective.

⁵² This semi-elasticity is calculated as $0.019 / 0.23$, for a 0.019 percentage point increase and a sample probability of new credit for any firm of 0.23 percent. In robustness we will assess if the low probabilities involved make inference problematic (*à la* King and Zeng (2001) and King and Zeng (2006)).

⁵³ Jiménez et al. (2012) find that a 100-basis point decrease in the interest rate increases loan granting by lowly capitalized banks by 3.9 percent more than by highly capitalized banks, where the difference in bank capitalization is defined as the difference between the tenth and ninetieth percentiles of the distribution. Along the bank liquidity ratio the estimated impact is almost double however. Other differences between their and our setup include the sample (i.e., they study loan applications) and method of identification (i.e., they rely on loan fixed effects).

We next study the compositional effect of monetary policy on banks' loan supply decisions in Models 4 to 7. The estimates in Model 4 show that the differential impact of an interest rate change between lowly and highly capitalized banks is magnified when lending occurs in the domestic currency and minimized when lending occurs in a foreign currency. The same result is obtained in Model 5, which includes time – i.e., year:month – fixed effects, in addition to the firm fixed effects that were present in Models 1 to 4.

Model 4 shows that a 25 basis point decrease in the domestic interest rate generates a 13 percent higher likelihood of credit initiation by a lowly- than by a highly capitalized bank when credit is granted in the domestic currency (Hungarian Forint). Model 5 indicates that the estimated economic effect is even higher – 14 percent of the sample probability of granting first-time credit – when, besides firm fixed effects, we also include time fixed effects in the regression.

Coefficients on triple interaction terms including the interest rate variable in Models 4 and 5 show, however, that when lending takes place in a foreign currency, the economic impact of bank capitalization on the likelihood of first-time credit granting substantially declines. According to Model 4 (Model 5), a 25 basis point decrease in the domestic interest rate generates a differential impact between low and high capitalization banks that equals only 4 percent (5 percent) of the unconditional probability of initiating credit in the sample. This difference in estimated elasticities suggests that, when banks grant loans in different currencies, the supply of credit in domestic currency reacts most vigorously to changes in domestic monetary conditions.

Models 6 and 7 saturate the empirical specification with firm-time fixed effects that account for all time-varying firm-specific heterogeneity in loan demand (volume and quality). The estimated coefficients on the triple interactions of the interest rate, bank capitalization, and

currency denomination, indicate that the differential impact of interest rate changes along capitalization on credit initiation in domestic and foreign currency is robust to accounting for all time-varying firm heterogeneity in loan demand.

The lowest-but-one panel in Table III shows that the size of the difference in the economic impact between the domestic and foreign currencies equals 8 and 4 percent, respectively. The two models differ in the sample employed: Model 7 restricts the sample to firms with only one bank relationship (making the bank singularly identifiable), which represent 74 percent of all firms in our sample. Model 7 reveals that our results on the currency compositional effect of monetary policy are robust to the restriction of our analysis to one-bank firms.

For the specification without time or firm-time fixed effects, we can calculate how the relative impact corresponds to an aggregate volume impact,⁵⁴ which we report in the bottom panel. According to Model 4 the aggregate impact of a 25 basis point decrease in the interest rate on the likelihood of a first-time credit being granted in Hungarian Forint and in foreign currency is 0.0021 and 0.0013 percentage points, respectively, which equals almost 10 percent and more than 5 percent of the unconditional mean monthly probability of the granting of new credit to a firm (which equals 0.23 percent). In 2008 (and assuming equal loan amounts would be disbursed for all successful applications) this would have implied up to around 400 billion in Forints extra new credit to corporations, and around 150 billion Forint in foreign currency (if in Euros amounting to 0.6 billion).

⁵⁴ The aggregate volume impact is calculated as the impact weighted by the mean of the bank capital in the sample (that is weighted by the number of firms related to a bank). Since we can calculate the aggregate volume impact only for those specifications where we have no time (or firm-time) fixed effects, we report this impact for this table only and report the differential impact (which we can calculate for the most saturated specifications as well) throughout the paper.

Overall, the results of Models 4 to 7 in Table III suggest that there is also a compositional effect in banks' loan supply decisions when responding to a change in the domestic interest rate: Looser monetary conditions substantially increase the likelihood of credit initiation in the domestic currency, but banks' foreign currency lending is less affected. Put differently, the bank lending channel of domestic monetary conditions which is estimated to operate vigorously in the domestic currency, loses its potency when it comes to the supply of credit in the foreign currency. This finding is consistent with Bräuning and Ivashina (2020) who show that as a response to a domestic monetary expansion, global banks' lending in foreign currencies exhibit a contraction. In contrast to their result, however, we find a cross-currency effect: A domestic monetary expansion increases (rather than decreases) Hungarian banks' foreign currency lending, although to a much lower extent than their domestic currency lending. We explore the mechanism for cross-currency effects generated by domestic monetary changes, subsequently, in Table VIII.

Concerning the effects of other key macro variables, Table A.III confirms the economic relevance of GDP growth and CPI inflation in banks' loan supply decisions. Model 1 shows that both GDP growth and inflation have negligible aggregate effect on credit granting. Model 2, however, indicates that there is heterogeneity in how banks respond to changes in these macroeconomic variables. High GDP growth and low inflation boost credit granting by lowly capitalized banks, while reduce lending by highly capitalized banks. This finding corresponds to results in Jiménez et al. (2012) suggesting that GDP growth increases the probability of loan granting by Spanish banks. Estimates on the triple interactions of the GDP growth or inflation variables, bank capital, and the foreign currency dummy in Model 4 suggest that the differential impacts of changes in GDP growth and inflation between lowly and highly capitalized banks are magnified when lending occurs in the domestic currency and minimized when lending occurs in a

foreign currency. Models 5 to 7 show that these results are robust to the inclusion of time fixed effects or firm-time fixed effects.

2. Other Macroeconomic Conditions, Asymmetric and Non-linear Effects

In this robustness section we first examine whether, besides GDP growth and inflation, banks' loan supply decisions are sensitive to changes in other macroeconomic variables. In particular, we horserace triple interactions of bank capital, currency denomination, and various macroeconomic variables, including, besides GDP growth and inflation, the nominal effective exchange rate,⁵⁵ the amount of foreign direct investment, and the credit default swap spread in the country.

The estimates in Models 1 and 2 in Table IV suggest that neither changes in the exchange rate nor changes in foreign direct investment affect the currency composition of credit granting.⁵⁶ Inclusion of triple interactions of the three macro variables with bank capital and currency denomination does not alter our findings regarding the differential supply effects of monetary policy. The difference in the economic impact between the domestic and foreign currencies is 13 and 5 percent, similar in magnitude to the differential impact obtained in our baseline specifications (see Models 6 and 7 in Table III).

To test the sensitivity of our results to changes in the macroeconomic context, in unreported regressions we also include either one of two regulatory dummies. The first dummy equals one after 2008:01, the introduction of Basel II, and equals zero before. The second dummy equals one after 2008:09, when Swiss Francs lending by banks to households was no longer allowed, and

⁵⁵ E.g., Bruno and Shin (2015). If firms have a currency mismatch on their balance sheet, changes in the exchange rate could change their credit risk for example which could lead banks to adjust lending relatively more in either the domestic or foreign currency, but it is *a priori* not clear if this would be correlated with banks' capital-to-assets ratio.

⁵⁶ To conserve space in Table IV we focus on firms' aggregate foreign currency exposures without distinguishing between Euro and Swiss Franc loans (as we will do in the next section) and we present only the most saturated specification that includes firm-time fixed effects. Results are unaffected when splitting up by currency as the next section will show. To conserve space we henceforth also only report the estimated semi-elasticities.

equals zero before. These dummies are introduced at all levels, including the triple interactions with bank capital and the currency of exposure. But results on the triple interactions with the interest rate are unaffected in both cases.

[Insert Table IV here]

To test for the asymmetric impact of the interest rate, we replace the change in the interest rate with relevant interactive terms,⁵⁷ i.e., the interactions of the change of interest rate with (1) a dummy variable that equals one if the change in the interest rate during the previous month was larger than or equal to zero (and equals zero otherwise) and (2) a dummy variable that equals one if the change in the interest rate during the previous month was smaller than zero (and equals zero otherwise). The estimated coefficients on the resultant quadruples remain qualitatively similar, but it is especially the lowering of the domestic interest rate that has the most pronounced differential impact on domestic versus foreign currency lending. We also include squared terms (of the changes in the interest rate in all relevant interactions) but find no significant second order terms. To conserve space we choose not to report these specifications (that load in these extra terms and become somewhat unwieldy to present).

To control for the macroeconomic environment more completely, in unreported regressions we include changes in the Euro area and Swiss GDP growth rates and inflation as well as their full set of double and triple interactions with bank capitalization and currency denomination, to control for effects of other foreign macroeconomic aggregates. In other regressions we also include

⁵⁷ Our methodology is standard and similar to, e.g., Thoma (1994) and Weise (1999). They find no asymmetric effects of monetary policy changes on prices or output either.

squared and cubed terms of the interest rate change, GDP growth and inflation and their interactions with bank capitalization and currency denomination in order to control for non-linear co-movements of these macro variable with the interest rate change. Our results remain robust in all cases.

3. Other Bank Characteristics, Before and After Lehman, and Non-Exporting and Large Firms Only

So far we have focused on bank equity to total bank assets as the only bank balance-sheet characteristic that may affect changes in banks' lending decisions following monetary policy changes (Holmstrom and Tirole (1997)). We now alter the measurement of bank capital and also follow the previous literature by examining whether bank size (the natural logarithm of bank assets) and bank liquidity (the ratio of liquid to total bank assets) also affect the impact of interest rate changes on banks' loan supply. Furthermore, we examine whether bank foreign ownership matters.

In Table V Models 1 and 2 we employ as an alternative to the Bank Capital Ratio the (one-month lagged) Bank Regulatory Capital Ratio which is defined as regulatory capital over risk-weighted assets. The reasons for this replacement are twofold. First, bank capital is the outcome of strategic choices made by the bank, and even when pre-determined in time endogeneity concerns may linger. Regulatory capital suffers (somewhat less) on this account. Second, Popov and Udell (2012) for example document that especially regulatory capital constraints determine bank lending. Our results remain robust however to the choice of bank capital measure. Alternatively in further unreported regressions we also instrument the Bank Capital Ratio with for example one and two-quarter lags of the Bank Regulatory Capital Ratio (and/or lags of the bank capital ratio itself). Again results are very similar.

[Insert Table V here]

In Models 3 and 4 we follow Kashyap and Stein (1995) and focus on the impact of monetary policy changes on the supply of loans by banks of different size, measuring bank size by total assets. The estimated coefficients of triple interactions of the interest rate change, bank size, and currency denomination are all insignificant suggesting that following monetary policy changes there is no currency compositional effect in the supply of loans identifiable from the adjustment of banks of different size. In Models 5 and 6 we add the Bank Capital Ratio and its interactions and observe that the estimated coefficient on the triple interaction term that includes the bank capital ratio is statistically significant and economically large, while the triple term that includes Bank Total Assets is at best marginally significant and is always economically very small.

In Models 7 and 8, inspired by Kashyap and Stein (2000)) and Jiménez et al. (2012), we examine the impact of monetary policy changes on the supply of credit by banks with different liquidity ratios. The estimates suggest a differential impact of interest rate changes along the bank liquidity characteristic. Estimates of Model 7, for example, indicate that when credit is granted in the domestic currency a 25 basis point decrease in the domestic interest rate generates a 5 percent larger difference (measured by the semi-elasticity of the coefficient) in the impact on the likelihood of credit granting between banks with low and high liquidity ratios, than when credit is granted in the foreign currency. In Models 9 and 10 we horserace the bank capital ratio with liquidity. The estimates indicate it is especially the bank capital ratio that drives adjustments in banks' loan supply decisions following monetary changes.⁵⁸

⁵⁸ In unreported robustness, and following Hahm et al. (2013), Baskaya et al. (2017) and di Giovanni et al. (2018), we also field the non-core liabilities ratio as a measure of such non-traditional form of financing: Results for the capital ratio are unaffected and this ratio loads similar to size with which it is regularly correlated.

Because foreign ownership may affect banks' own funding across currencies differentially, we horserace the bank capital ratio with foreign ownership in Models 11 and 12.⁵⁹ The estimated coefficients on foreign ownership are not statistically significant while the estimated coefficients on the triple interaction term with bank capital ratio again imply that when credit is granted in the domestic currency, a 25 basis point decrease in the domestic interest rate generates a 7 and 5 percent larger difference (again, measured by the semi-elasticity of the coefficients), respectively, in the impact on the likelihood of credit granting between banks with low and high capital ratios, than when credit is granted in a foreign currency.⁶⁰

In Model 1 and 2 in Table VI we further split the sample by foreign ownership of banks and find similar estimated coefficients on these triple interactions of interest.

[Insert Table VI here]

Next we study the period before and after the filing for bankruptcy by Lehman Brothers on September 15, 2008, which is now commonly considered as the start of the most acute phase of

⁵⁹ Foreign owned banks may be able to manage liquidity on larger regional scale and also have more foreign currency-denominated liabilities on their balance sheets. A decrease in the Forint interest rate may then affect their capital-to-assets ratio through its effect on the exchange rate with the Forint. The Forint depreciation will increase the Forint equivalent of the value of foreign currency denominated liabilities on the banks' balance sheets and may concurrently decrease the capital-to-assets ratios of these banks. However, all our specifications employ a one-month lagged capital ratio and in previous models this ratio was replaced or instrumented with one- and two- quarter lags of the regulatory capital ratio. In general foreign banks may follow a different business model (e.g., Giannetti and Ongena (2009), Gormley (2010), Giannetti and Ongena (2012), Giannetti and Laeven (2012), Schnabl (2012), Beck et al. (2018)) than domestic banks which may change their sensitivity to changes in monetary conditions (see similarly Morck et al. (2013) on state-owned banks and Zaheer et al. (2013) on Islamic banks).

⁶⁰ The estimated coefficients on foreign ownership are also not statistically significant when the bank capital ratio is not included. As an alternative for foreign ownership we also impute from the Swiss Franc Lending Monitor dataset (also used in, e.g., Krogstrup and Tille (2017)) and from Hungarian bank regulatory reports the quarterly varying currency composition of the balance sheet of the average bank from Austria, Germany, France, Italy, or Hungary, and assign these values to the banks in our dataset that are headquartered in these countries. But we find no statistical significance on the terms of interest, which may be due to the likely substantial measurement error involved.

the global financial crisis that eventually also spread to Hungary. Models 3 and 4 contain the estimated coefficients from the period before Lehman.⁶¹ The difference in potency between the lending channels in domestic and foreign currency is larger than for the entire period. For the short period after Lehman none of the estimated coefficients are statistically significant (further unreported).⁶²

In Models 5 and 6 in Table VI we analyse a subsample of non-exporting firms to assess whether our results are driven by non-random matching between firms and banks. Banks' specialization in different industries or export destination markets may result in assortative matching between firms and banks (Paravisini et al. (2020)) and this may generate differential supply effects for banks with low and high capitalization ratios. Our results, however, hold in the subsample of non-exporting firms, suggesting that the currency compositional supply effect we identify is not driven by the selection of exporting firms to specific types of banks.

Finally, in Models 7 and 8 we similarly focus our analysis on the 50 percent largest firms by total assets (the 50 largest percent by number of employees yields similar results) that may be less opaque and have a lower growth potential and therefore less likely turn to foreign currency credit when interest rate differentials change (Brown et al. (2014b), Salomao and Varela (2016)). We are also interested if the economic relevancy of the difference in potency between the two channels

⁶¹ We include 2008:09 in the before-Lehman period but this choice is not consequential for our findings.

⁶² There are a number of potential explanations why the estimates in the post-Lehman period are different: (1) Banks may have substantially changed their lending policies if not voluntarily (e.g., Cetorelli and Goldberg (2011), de Haas and van Lelyveld (2014)) then various regulatory limits may have become binding (Rosenberg and Tirpák (2009)); and/or (2) due to unconventional monetary policies changes in short-term interest rates may have become less representative of changes in monetary conditions.

also pertains to these large firms.⁶³ It does, making the observed phenomenon also relevant in an aggregate sense. Indeed, our results hold in the subsamples of both large and small firms.⁶⁴

4. Additional Fixed Effects

In the most saturated regressions with firm-time fixed effects we can control for time-variant firm-specific variations. However, we also have variations in the currency dimension of what firm, time, and firm-time fixed effects cannot account for. We now saturate our regressions with additional fixed effects in order to better control for variations in the currency dimension.

First, instead of firm and time fixed effects we include firm-currency and currency-time fixed effects in order to account for heterogeneity in firms' currency-specific loan demand. The results are reported in columns 1 to 3 in Table VII. Although, even with this broader set of fixed effects, we are not able to fully control for firms' time-varying currency-specific loan demand, the inclusion of firm-currency and month-currency fixed effects account for firm-level time-invariant as well as firms' aggregate time-varying currency-specific demand for credit. Our results on the impact of monetary policy changes on the volume and currency composition of banks' loan supply are robust to the inclusion of these fixed effects. Moreover, Model 4 in Table VII shows that our results are also robust to the inclusion of bank-month fixed effects. Note, that we run Models 3 and 4 on our single-bank firm subsample, where accounting for firm-currency fixed effects is essentially equivalent to the inclusion of bank-firm-currency fixed effects, therefore our

⁶³ We also assess results across EU and various other firm-size categorization schemes. Results are similar except for some largest-size classes. However, given the continuous financing needs of the largest firms, changes on their extensive margins of borrowing are also less frequent (potentially leading to less statistical significance). Notice that some small business owners in Hungary are thought to have personal bank accounts in Switzerland or the Euro area, making their (for us un-observable) personal financial situation potentially an omitted variable. We expect this effect to play less of a role for large firms.

⁶⁴ The results for the subsample of small firms are available from the authors upon request.

regressions also control for the endogenous selection of firms to certain banks based on firms' currency-specific credit demand.

[Insert Table VII here]

Then, in Models 5 to 7, additional to the firm, time or firm-time fixed effects, we include bank-currency fixed effects. The heterogeneity in banks' access to foreign currency funding and thus the composition of the liability side of banks' balance sheets may also affect lending responses to funding shocks, including monetary policy changes. With bank-currency fixed effects we can isolate the impact of the heterogeneity in the currency composition of banks' balance-sheets. In these robustness regressions we use only the subsample of single-bank firms where the corresponding bank and thus the bank-currency fixed effects are unambiguous. Our results on the impact of monetary policy changes in the volume and currency composition of banks' loan supply are also robust to the inclusion of bank-currency fixed effects.

5. Economic Mechanism for Cross-Currency Effects

Next, we focus on the economic mechanism for the currency compositional supply effects of domestic and foreign monetary policy changes. In Table VIII, we show regressions of credit granting on the differential between changes in the foreign and domestic interest rates and its relevant double, triple, and quadruple interactions with bank capital, currency denomination and the high swap ratio dummy variables. Consistent with our main specifications in Table III, we also include, in these regressions, the change in GDP growth, inflation rate, and their respective triple and quadruple interaction terms.

[Insert Table VIII here]

Focusing on the mechanism generating our results, we explicitly test the impact of *bank equity* (Models 1 and 2) as well as banks' *exposure to FX market frictions* (Models 7 and 8) on the currency composition of loan supply. Models 1 and 2 examine whether the impact of changes in the interest rate *differential* between the foreign and domestic currencies depends primarily on the banks' equity ratios. The results are consistent with our earlier findings as well as results by Bräuning and Ivashina (2020). A higher differential between foreign and domestic interest rates implies a lower likelihood of credit granting in the foreign than in the domestic currency. In particular, we find that the coefficients on the triple interaction of the interest rate differential, currency denomination dummy and bank capital ratio are positive and significant indicating that a domestic monetary expansion (i.e., higher interest rate differential) generates a larger change in lending for banks with low capitalization than for banks with high capitalization. Using firm-time fixed effects to control for firms' time-varying credit demand, we assess the difference, across currencies, in the differential reaction of banks with low and high capitalization. We find that following a 25 bps decrease in the Hungarian interest rate, the differential impact between low and high capitalization banks is higher by 14-16 percent when credit is granted in the foreign rather than the domestic currency suggesting that the reaction of low capitalization banks is especially strong when lending takes place in the foreign currency.⁶⁵ The result implies that bank capital *may* generate currency compositional loan supply effects. The estimated coefficients represent however the average effect and we argue that the result arises because violations of interest parity increase

⁶⁵ This differential impact is also discernible, although with a somewhat lower economic impact, when only single-bank firms are included in the sample, implying the results hold when we account for fixed effects at the bank-firm-time level as well (the results are available from the authors upon request).

the cost of banks' FX funding when banks rely on the swap market and we present evidence for this in Models 7 to 10 discussed below.

Next, in Models 3 and 4, we assess the impact of monetary policy changes on banks' lending responses, by currency denomination, for the high and low swap user banks. We therefore substitute the bank capital ratio by a dummy variable indicating that the bank uses the swap market to a high extent to be able to generate foreign currency funding for its foreign currency lending activities.

The estimated coefficients on the double interaction term of interest rate differential and currency denomination are insignificant. The negative and significant coefficients on the triple interaction of interest rate differential, foreign currency and above median gross swap ratio dummy variables indicate that a higher differential between foreign and domestic interest rates implies a lower likelihood of credit granting in the foreign than in the domestic currency only for banks with an above median ratio of open swap positions.⁶⁶ The result suggests that following domestic monetary expansion, banks relying primarily on the international swap market to obtain resources for lending in foreign currencies decrease their foreign currency lending more than banks that may obtain foreign currency for their lending from other sources.

Models 5 and 6 show that the size and significance of the estimated coefficients raises substantially when we restrict the sample to months exhibiting above median forward premium in both foreign currencies, confirming that the lending of high swap user banks is especially sensitive

⁶⁶ To classify banks as high and low swap user banks we consider their outstanding gross swap volume (banks' open HUF short swap volume, i.e., volume of Hungarian Forint exchanged for foreign currency). When using net swap volume (which is the difference of the absolute volumes of banks' long and short positions) to create the high swap user dummy, we find that as a response to domestic monetary expansion, all (rather than only high swap user) banks decrease their lending in the foreign currency. The results across the two measures are reconciled when using the proper specification that also accounts for the role of bank capitalization by the inclusion of a quadruple interaction term (Models 7 to 8 in Table VIII).

to monetary policy changes when the forward premium is high. The result echoes the finding of Bräuning and Ivashina (2020) that the FX market forward premium is a crucial determinant of the impact of domestic monetary changes on banks' lending in foreign currencies.

To provide explicit evidence for the role of financial market frictions in generating our results, in Models 7 and 8 in Table VIII we account for the impact of both bank capital and high swap usage ratio, using a quadruple interaction term of the interest rate differential, bank capital, foreign currency denomination, and the high swap usage dummy variables.

The estimated coefficients on the triple interaction term of the interest rate differential, currency dummy and bank capital ratio are positive and highly significant confirming our earlier finding that, following expansionary monetary policy changes, banks' differential responses concerning the change in the volume of FX lending are larger for banks with low capitalization. Furthermore, the significant negative estimates of the quadruple interaction terms indicate that a high level of capital *does not alleviate* the negative effect of a decrease in the domestic interest rate on foreign currency lending when the bank uses the FX swap market to fund its lending in foreign currencies to a large extent. Therefore, banks' differential responses across the two currencies depends on whether the bank uses a high quantity of foreign currency swaps.

In particular, we find that, for banks with below median swap ratio, following a 25 bps decrease in the Hungarian interest rate, the differential impact between low and high capitalization banks is *higher* by 34-35 percent when credit is granted in the foreign rather than the domestic currency. In contrast, for banks with an above median swap ratio, the same decrease in the domestic interest rate generates a differential impact between the two types of banks, 26-28 percent *lower* when credit is granted in the foreign rather than the domestic currency. Our findings thus indicate, with regards to banks' currency lending responses following domestic monetary policy

shocks, that bank capitalization does not “cure” the negative consequence of banks’ exposure to the cost of using the foreign currency swap market.

In light of the above results, the positive impact of domestic monetary policy shocks on banks’ lending responses in foreign currencies (i.e., the cross-currency effect identified in Table III), must arise from the fact that our sample includes banks that lend in foreign currencies but have little exposure to the international FX swap market. This hypothesis is confirmed by the large economic effect of monetary expansion on banks’ foreign currency lending in the group of low swap user banks.

Finally, to delineate the role of equity capital and FX market frictions in generating compositional supply effects, we rerun Models 1 and 2 using a subsample of banks that are not (or less) exposed to FX market frictions. Specifically, in Models 9 and 10 we include into our sample the subset of firms taking loans from banks with a swap to assets ratio below the 33.3th percentile of the distribution and compare our findings to results estimated for the full sample.

As expected, we find that in the subsample of firms borrowing from banks with low swap to asset ratios, the coefficient on the triple interaction of the interest rate differential, bank capital, and foreign currency denomination dummy is insignificant, indicating that for this subset of firms, even banks with low capital ratios do not systematically alter the currency composition of their loan supply following monetary policy shocks. The result holds for the differential interest rate relative to both foreign currencies and suggests that low equity ratios, without frictions in financial markets, do not generate compositional effects, at least not along the loan currency dimension, which is the compositional dimension in the focus of this paper.

6. Domestic versus Euro and Swiss Franc Credit

We continue analysing the effect of domestic monetary policy on banks' loan supply decisions now distinguishing between Euro and Swiss Franc loans. Again, we focus on the extensive margin of lending and analyse banks' first-time credit granting decisions.

Table IX presents our estimates. Models 1 to 7 in Table IX are equivalent to the similarly numbered models in Table III, except that in the specifications of Table IX, the dummy variable "*Credit is Granted in Foreign Currency*" is decomposed into two distinctive dummy variables, "*Credit is Granted in Euro*" and "*Credit is Granted in Swiss Franc*". This decomposition allows us to investigate whether the impact of monetary policy on the supply of credit depends on a specific foreign currency denomination or not.

[Insert Table IX here]

The results confirm the evidence presented in Table III. The estimates of Model 2 in Table IX for example again imply that a 25 basis point decrease in the domestic interest rate generates a statistically significant and an economically relevant difference (of 8 percent) between lowly and highly capitalized banks in the likelihood of initiating credit, confirming our earlier evidence of the existence of a domestic bank-lending channel.

Furthermore, the coefficients of Models 4 to 7 again indicate that an interest rate decrease affects credit initiation by banks to a greater extent when credit is granted in the domestic currency than when lending occurs in Euro or Swiss Franc. According to Model 5 that incorporates both firm and time fixed effects, a 25 basis point decrease in the domestic interest rate results in a 0.03 percentage points higher likelihood of credit initiation by lowly than by highly capitalized banks

when credit is granted in the domestic currency. The economic impact accounts for 19 percent of unconditional probability of credit initiation in the sample. When credit is granted in Euro or Swiss Franc, the equivalent differential effects are 4 and 5 percent, respectively, again suggesting a difference in the impact of domestic monetary policy on bank lending in the domestic and foreign currencies, but not between the two foreign currencies considered. The magnitudes of the estimated differential effects implied by the coefficients of Models 6 and 7, presented in the bottom panel of Table IX, confirm this conjecture. Overall, Models 4 to 7 in Table IX confirm our evidence of a currency compositional effect of domestic monetary policy on bank loan supply for this extensive margin of lending.

7. Other Margins of Lending

So far we have focused on the positive extensive margin of lending by analysing banks' first-time credit granting decisions. To check our results concerning the compositional effects of monetary policy on banks' loan supply decisions, in this section, we consider other margins of lending. In particular, we consider the likelihood of banks' ending credit (negative extensive margin) and the increase in the amount of credit (intensive margin) in the domestic and foreign currencies.

[Insert Table X here]

The regressions of Models 1 to 4 in Table X focus on the impact of monetary policy on banks' decisions to end credit to borrowing firms. In Model 1, we include firm fixed effects in the regressions to control for firm heterogeneity in loan demand. Model 2 incorporates both firm and time fixed effects, while Models 3 and 4 represent our most saturated specification which includes firm-time (year:month) fixed effects. The sign of the triple interactions of the variables *Interest*

Rate Change, Bank Capital Ratio, and Credit is Granted in Euro (or Credit is Granted in Swiss Franc) shows that the currency compositional supply effect is present along the negative extensive margin as well. A loosening in domestic monetary conditions decreases the likelihood of banks' ending credit, but only when credit is granted in the local currency (Hungarian Forint). The economic significance of the impact of monetary loosening on ending credit in Euro or Swiss Franc is negligible, as shown by the numbers at the bottom of Table X. These estimates overall provide evidence for the presence of a compositional effect along this particular extensive margin although the effect is statistically weaker (maybe because banks dither to cut firms off credit).

Models 5 to 8 in Table X examine the impact of monetary conditions on the increase in the amount of credit granted to the borrowers.⁶⁷ We find a strong compositional effect of monetary policy on bank loan supply along this intensive margin of lending as well. According to Model 6, when credit is granted in Hungarian Forint following a 25 basis point decrease in the domestic interest rate the difference in the response between banks with low and high capital ratios is 11 percent of the unconditional probability of increasing credit amount. In contrast, when credit is granted in Euro or Swiss Franc this differential impact does not exceed 4 or 1 percent, respectively, of the unconditional probability of increasing credit amount in the sample. The strong significance of the triple interaction terms in Models 7 and 8 indicates that this compositional effect is robust to saturation with firm-time fixed effects.

⁶⁷ The dependent variable is the logarithm of the increase in the amount of credit in Hungarian Forint / Euro / Swiss Franc. Using loan amounts requires the conversion of foreign currency denominated debt to domestic currency and thus exchange rate fluctuations mechanically affect our results. In order to alleviate the mechanical effect of the exchange rate fluctuations on the amount of loan, we include only the pre-Lehman period when exchange rates were quite stable and use the average exchange rates during the period to convert foreign currency loans to domestic currency, moreover we horserace the interest rate with the exchange rate as well. Since in these regressions the sample is already restricted (only firms with loans in the pre-Lehman period are included) we use the entire population instead of the 10 percent random sample.

Overall, our evidence suggests that, besides affecting banks' first-time credit granting decisions, monetary policy has an impact on the currency composition of loan supply along the negative extensive margin and the (positive) intensive margin as well.

B. Compositional Effect of Domestic versus Foreign Monetary Policy

Besides analysing the effect of domestic monetary policy on banks' local lending decisions in the domestic and foreign currencies, we also consider the effects of monetary policy set by the central banks abroad issuing the foreign currency. Hence, in Table XI we extend our basic specification by including the annual change in the Euro and Swiss Franc interest rates,⁶⁸ as well as the corresponding interactions between interest rates, bank capitalization, and currency denomination. Among the macroeconomic variables the change in the nominal effective exchange rate, i.e., Δ *Exchange Rate*, is replaced by two exchange rates, i.e., Δ *Exchange Rate Hungarian Forint to Euro* and Δ *Exchange Rate Hungarian Forint to CHF*.

Models 1 and 2 in Table XI present our results concerning the impact of changes in the Euro interest rate while Models 3 and 4 show our results on the impact of the Swiss Franc interest rate on banks' loan supply decisions. Every model in Table XI includes firm-month fixed effects to control for time-varying heterogeneity in credit demand and thus builds on our (earlier used) most saturated specification.

[Insert Table XI here]

⁶⁸ In unreported regressions, instead of the changes in the three interest rates we include changes in the Hungarian - Euro area and the Hungarian - Swiss interest rate spreads. Results of the currency compositional effects of domestic and foreign monetary policies are unchanged.

We present several results concerning the impact of monetary policy on bank loan supply along the extensive margin of lending. First, our earlier findings concerning the effect of *domestic* monetary policy on the composition of domestic loan supply are confirmed by all models.⁶⁹ Following a 25 basis point decrease in the domestic interest rate, the estimated semi-elasticities of the differences, between lowly and highly capitalized banks, in credit initiation in Euro and Swiss Franc are 9 to 15 percent lower than the estimated semi-elasticities of the differences in credit initiation in Hungarian Forint. Therefore, the results confirm the existence of differential supply effects across the three currencies: Domestic monetary loosening positively affects credit supply in Hungarian Forint but has a negligible effect on the supply of credit in Euro and Swiss Franc.

Second, we present evidence that monetary changes in the Euro area and Switzerland influence the currency composition of the local supply of credit in Hungary. In Models 1 to 2 of Table XI, the significance of the coefficients on the triple interaction of the variables *Interest Rate Change in Euro Area*, *Bank Capital Ratio*, and *Credit is Granted in Euro* (or *Credit is Granted in Swiss Franc*) indicate that changes in the Euro area interest rate have differential effects on the local supply of credit in the domestic and foreign currencies. According to Model 1, following a 25 basis point decrease in the Euro interest rate, the differential likelihood of credit initiation, between lowly and highly capitalized banks, is 0.058 (0.042) percentage points higher when credit is granted in Euro (Swiss Franc) than the differential likelihood when credit is granted in Hungarian Forint. This differential effect between the domestic currency and the Euro (Swiss

⁶⁹ The mandate of the Central Bank of Hungary is to target domestic inflation and its policy could have reacted to interest rates set by other relevant central banks. By including changes in Euro and Swiss interest rates we in effect also account for these additional elements that may be present in an open economy monetary policy rule. However, our findings suggest that at least with respect to the transmission through bank lending, foreign interest rates do not play a significant role in the observed policy reaction function. We think it is also rather unlikely that the European Central Bank or the Swiss National Bank would react directly to policy rate changes in Hungary.

Franc) amounts to 36 (26) percent of the unconditional likelihood of first-time credit granting in the sample.

Furthermore, Models 3 and 4 indicate that changes in the Swiss interest rate also have a significant impact on the currency composition of domestic credit supply. According to Model 3, following a 25 basis point decrease in the Swiss Franc interest rate, the estimated differences in the likelihood of credit initiation between lowly and highly capitalized banks are 0.129 (0.109) percentage point higher when credit is granted in Euro (Swiss Franc) than when credit is granted in Hungarian Forint. The differential effects of changes in the Swiss interest rate on credit granting in the different currencies are also economically significant.⁷⁰

Overall, our results in Table XI show that the differential responses of highly and lowly capitalized banks, to changes in the Euro and Swiss interest rates, differ across the domestic and foreign currencies. Since the economic effects – of a monetary loosening in the Euro area and Switzerland – are negative and more so for the domestic currency,⁷¹ the results indicate that monetary loosening in the Euro area and Switzerland cause a relative contraction in credit supply in Forint and a relative expansion in the supply of Euro and especially Swiss Franc credit. Therefore, for the local supply of credit not only the domestic monetary policy matters, but also the monetary conditions set by the central bank abroad issuing the foreign currency. This indicates the existence of an international (or global) bank lending channel that transmits the impact of

⁷⁰ The significant impact of changes in the Euro area interest rate disappears once we include both foreign interest rates as well as the relevant double and triple interaction terms in the regressions. This is a straightforward consequence of the multicollinearity problem arising from the high correlation between the two foreign interest rates.

⁷¹ In unreported regressions we find that changes in the Euro and Swiss interest rates result in significantly lower likelihood of credit granting by lowly capitalized banks than by highly capitalized banks and that this differential negative effect is higher when credit is granted in the domestic currency.

foreign monetary conditions to the local economy through changing the currency composition of banks' loan supply.

VI. Conclusion

We analyze the differential impact of domestic and foreign monetary policy on the local supply of bank credit in domestic and foreign currencies. We analyze a novel, supervisory dataset from Hungary that records all bank lending to firms including its currency denomination. This paper therefore takes the next obvious step in the empirical literature that identifies – with micro-data – the impact of monetary policy on the provision of credit.

Accounting for time-varying firm-specific heterogeneity in loan demand, we find that a lower domestic interest rate expands the supply of credit in the domestic but not in the foreign currency. A lower foreign interest rate on the other hand expands lending by lowly versus highly capitalized banks relatively more in the foreign than in the domestic currency.

The implications of our findings for monetary policy making are straightforward but salient. Local bank lending in foreign currencies limits the flow of the transmission of domestic monetary policy through a bank lending channel in the domestic currency only. Lending in foreign currencies is seemingly mostly unaffected by domestic monetary policy. On the other hand, monetary policies pursued by central banks abroad may affect local bank lending in these foreign currencies. Changes in foreign monetary policy, therefore, also seems to transmit to local lending, through an international bank-lending channel that changes the currency composition of the local bank loan supply. Overall, these findings suggest that calls for global monetary policy coordination even during normal times are well-founded (though difficult and unlikely given current institutional mandates).

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Figure 1. Net Position of Banks' Swap Volumes by Currency, 2005-2011

Figure 2. Three-month Interbank Interest Rates, in Hungarian Forint (HUF), Euro (EUR) and Swiss Francs (CHF), and Effective Exchange Rate

TABLE I
PROPORTION OF FOREIGN CURRENCY LOANS WITHIN TOTAL NUMBER OF LOANS IN GIVEN CATEGORY (EXTENSIVE MARGIN)

		Bank Capital Ratio		Bank Total Assets		Foreign Owned Bank	
		Low	High	Low	High	No	Yes
Ln(Firm Total Assets)	Low	0.1494	0.1268	0.1821	0.1318	0.2701	0.1265
	High	0.2682	0.2304	0.2315	0.2549	0.3354	0.2491
Firm ROA	Low	0.265	0.2161	0.2191	0.248	0.3569	0.2397
	High	0.2389	0.1976	0.2198	0.2229	0.3109	0.2176
Exporting Firm Dummy	No	0.2133	0.1697	0.1789	0.1965	0.2942	0.1901
	Yes	0.3377	0.3166	0.3636	0.3302	0.409	0.3253
Firm's Number of Banks	Multiple	0.2796	0.2579	0.29	0.2712	0.3203	0.2678
	One	0.2072	0.1415	0.1797	0.1817	0.3367	0.1748

TABLE II
SUMMARY STATISTICS

Variable	Units	Definition	Mean	Std	Min	Median	Max
Dependent variables							
Euro and Swiss Franc Exposures Aggregated							
New Granting of Credit _{ikt}	0/1	=1 if firm i receives credit in currency k in month t, conditional on having received no credit in currency k in month t-1, =0 otherwise	0.0023	0.0481	0	0	1
Ending Credit _{ikt}	0/1	=1 if firm i receives no more credit in currency k in month t, conditional on having received some credit in currency k in month t-1, =0 otherwise	0.0018	0.0422	0	0	1
Increase in the Amount of Credit _{ikt}	-	Logarithm of the increase in the nominal amount of credit firm i holds in currency k in month t	0.1571	1.6058	0	0	25.57
Euro and Swiss Franc Exposures Disaggregated							
New Granting of Credit _{ikt}	0/1	=1 if firm i receives credit in currency k in month t, conditional on having received no credit in currency k in month t-1, =0 otherwise	0.0016	0.0399	0	0	1
Ending Credit _{ikt}	0/1	=1 if firm i receives no more credit in currency k in month t, conditional on having received some credit in currency k in month t-1, =0 otherwise	0.0012	0.0351	0	0	1
Increase in the Amount of Credit _{ikt}	-	Logarithm of the increase in the nominal amount of credit firm i holds in currency k in month t	0.1050	1.3148	0	0	25.57
Independent variables							
Macroeconomic variables							
Δ Interest Rate _{t-1m}	-	Annual change in the Hungarian 3-month government bond rate	-0.007	0.024	-0.053	0.001	0.043
Δ Interest Rate in Euro Area _{t-1m}	-	Annual change in the Euro area 3-month generic government bond rate	-0.002	0.013	-0.039	0.001	0.013
Δ Interest Rate in Switzerland _{t-1m}	-	Annual change in the Swiss 3-month LIBOR interest rate	0.000	0.010	-0.027	0.001	0.012
Δ Interbank Interest Rate _{t-1m}	-	Annual change in the Hungarian 3-month interbank rate	-0.008	0.024	-0.051	-0.002	0.041
Δ Interbank Interest Rate in Euro Area _{t-1m}	-	Annual change in the Euro area 3-month interbank rate	-0.001	0.015	-0.044	0.004	0.014
Δ Taylor Rule Residuals Government Bonds _{t-1}	-	Annual change in the residuals of a regression of the Hungarian 3-month government bond rate on GDP growth and the inflation rate	-0.006	0.024	-0.060	-0.005	0.055
Δ Taylor Rule Residuals Interbank _{t-1m}	-	Annual change of in the residuals of a regression of the Hungarian 3-month interbank rate on GDP growth and the inflation rate	-0.006	0.024	-0.053	-0.006	0.054
Δ GDP _{t-1q}	-	Annual growth rate in Hungarian gross domestic product	0.008	0.036	-0.080	0.017	0.047
Δ CPI _{t-1m}	-	Annual change in the Hungarian consumer price index	-0.004	0.027	-0.041	-0.010	0.067
Δ Exchange Rate _{t-1m}	-	Annual change in the nominal effective exchange rate index of the Forint	0.017	0.067	-0.115	0.018	0.158
Δ Exchange Rate Hungarian Forint to Euro _{t-1m}	-	Annual change in the HUF/EUR exchange rate	0.017	0.070	-0.128	0.017	0.173
Δ Exchange Rate Hungarian Forint to CHF _{t-1m}	-	Annual change in the HUF/CHF exchange rate	0.052	0.104	-0.158	0.042	0.249
Δ Foreign Direct Investment _{t-1m}	-	Annual change in the stock of Hungarian foreign direct investment	0.218	0.210	-0.047	0.162	0.758
Δ Credit Default Swap Spread _{t-1q}	-	Annual change in the Hungarian 5-year sovereign CDS spreads	0.516	1.424	-3.532	0.187	4.189
Δ Yield Curve _{t-1m}	-	Annual change in the difference between 10-year and 1-year government bond	0.000	0.010	-0.009	-0.004	0.027

Bank characteristics

Bank Capital Ratio _{it-1m}	-	Ratio of bank equity to total bank assets	0.13	0.15	-0.25	0.09	1.00
Bank Total Assets _{it-1m}	000,000 Forint	Total bank assets	735,640	1,192,191	173	210,224	7,010,201
Ln(Bank Total Asset) _{it-1m}	-	Natural logarithm of total bank assets	12.18	1.81	5.15	12.26	15.76
Bank Liquidity Ratio _{it-1m}	-	Ratio of liquid assets to total bank assets	0.19	0.17	0.00	0.14	0.99
Bank Return On Assets _{it-1m}	-	Ratio of pretax profits to total bank assets	0.00	0.05	-2.29	0.00	0.29
Doubtful Loan Ratio _{it-1m}	-	Bank doubtful loan ratio	0.06	0.05	0.00	0.06	0.09
Above Median Gross Swap Ratio _{itm}	-	=1 if bank has above median ratio of gross swap volume to total assets, =0 otherwise	0.51	0.46	0	0.50	1
Foreign Owned Bank _{it-1m}	0/1	=1 if bank is at least 50% foreign owned, =0 otherwise	0.93	0.25	0	1	1
Firm characteristics							
Firm Capital Ratio _{it-1y}	-	Ratio of firm equity to total firm assets	0.40	0.35	0.00	0.34	1.00
Firm Total Assets _{it-1y}	000 Forint	Total assets of the firm	122,737	587,597	18	9,593	7,275,757
Ln(Firm Total Assets) _{it-1y}	-	Natural logarithm of firm total assets	9.17	2.30	2.89	9.17	15.80
Firm Liquidity Ratio _{it-1y}	-	Ratio of current assets to total firm assets	0.72	0.30	0.00	0.83	1.00
Firm ROA _{it-1y}	-	Ratio of net income to total firm assets	-0.28	1.31	-9.41	0.00	0.92
Firm Export Sales Ratio _{it-1y}	-	Ratio of export sales over total firm sales	0.05	0.18	0.00	0.00	1.00

NOTE. -- The number of observations in the sample equals 43,724,229. Regressions in Tables III-XI are run employing a 10 percent random sample. The sample period is January 2005 to December 2011. Summary statistics for banks (firms) are based on the average values of the bank (firm) characteristics over the sample period. Summary statistics for the variable Increase in the Amount of Credit_{ikt} are calculated for the pre-crisis period January 2005-August 2008. The variable Above Median Gross Swap Ratio_{itm} is defined based on banks' average gross swap ratio during the pre-crisis period January 2005-August 2008. The time index on each variable indicates the timing of the variable in the main regressions with *t-1* indicating a one-period lag of a month (*m*), quarter (*q*) or year (*y*), respectively. In the regressions the bank characteristics refer to the average characteristic of the banks the firm has an account with, i.e. are firm specific and thus indexed by the firm index (*i*). Given the frequency of reporting for GDP and CDS the values of the preceding quarter and for firm characteristics the values of the preceding year are used. The number of banks in our sample is 39. The number of firms in our sample is 318,411.

TABLE III

THE GRANTING OF CREDIT IN DOMESTIC OR FOREIGN CURRENCY TO BORROWERS CURRENTLY WITHOUT CREDIT IN DOMESTIC OR FOREIGN CURRENCY (EXTENSIVE MARGIN)

	Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Sample	All Firms	All Firms	All Firms	All Firms	All Firms	All Firms	Single-Bank Firms
Δ Interest Rate		-0.0101*** (-3.37)	-0.0343*** (-6.64)	-0.0134*** (-3.62)	-0.0506*** (-6.43)			
Δ Interest Rate * Bank Capital Ratio			0.2554*** (6.13)		0.3914*** (5.58)	0.4411*** (6.25)		
Δ Interest Rate * Credit Is Granted in Foreign Currency				0.0067** (2.36)	0.0327*** (4.24)	0.0327*** (4.24)	0.0284*** (4.36)	0.0135** (2.14)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Foreign Currency					-0.2721*** (-3.80)	-0.2721*** (-3.80)	-0.2361*** (-3.95)	-0.1370** (-2.37)
Controls (as Reported in Table A.III)		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects		Yes	Yes	Yes	Yes	Yes	--	--
Time Fixed Effects		No	No	No	No	Yes	--	--
Firm - Time Fixed Effects		No	No	No	No	No	Yes	Yes
Number of Observations		2,075,500	2,075,500	2,075,500	2,075,500	2,075,500	2,385,314	1,762,190
<i>Percentage Point Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations)</i>								
in Hungarian Forint or in Foreign Currency		-	0.0189	-	-	-	-	-
in Hungarian Forint		-	-	-	0.0290	0.0326	-	-
in Foreign Currency		-	-	-	0.0088	0.0125	-	-
<i>Difference in Impact Between Foreign Currency and Hungarian Forint</i>		-	-	-	-0.0201	-0.0201	-0.0175	-0.0101
<i>Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.23%)</i>								
in Hungarian Forint or in Foreign Currency		-	8%	-	-	-	-	-
in Hungarian Forint		-	-	-	13%	14%	-	-
in Foreign Currency		-	-	-	4%	5%	-	-
<i>Difference in Impact Between Foreign Currency and Hungarian Forint</i>		-	-	-	-9%	-9%	-8%	-4%
<i>Aggregate Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit (in Percentage Points)</i>								
in Hungarian Forint or in Foreign Currency		0.0025	0.0035	-	-	-	-	-
in Hungarian Forint		-	-	0.0034	0.0021	-	-	-
in Foreign Currency		-	-	-0.0017	0.0013	-	-	-

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in domestic (foreign) currency in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. "No" indicates that the set of fixed effects is not included. "--" indicates that the indicated set of fixed effects are comprised in the wider included set of fixed effects. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE IV
THE GRANTING OF CREDIT IN DOMESTIC OR FOREIGN CURRENCY TO BORROWERS CURRENTLY WITHOUT CREDIT IN DOMESTIC OR FOREIGN CURRENCY (EXTENSIVE MARGIN), INTERACTIONS WITH MACROECONOMIC VARIABLES

	Model	(1)	(2)
		Additional Macroeconomic Variables in Interactions	
	Sample	All Firms	Single-Bank Firms
Δ Interest Rate * Credit Is Granted in Foreign Currency		0.0500*** (4.00)	0.0258** (2.26)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Foreign Currency		-0.4010*** (-3.40)	-0.1675 (-1.62)
Δ GDP * Credit Is Granted in Foreign Currency		-0.0372*** (-5.29)	-0.0288*** (-4.48)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Foreign Currency		0.1138* (1.68)	0.1452** (2.44)
Δ CPI * Credit Is Granted in Foreign Currency		-0.0033 (-0.39)	-0.0097 (-1.31)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Foreign Currency		-0.0787 (-1.08)	0.0218 (0.35)
Δ Exchange Rate * Credit Is Granted in Foreign Currency		0.0102** (2.50)	0.0111*** (3.02)
Δ Exchange Rate * Bank Capital Ratio * Credit Is Granted in Foreign Currency		-0.0675* (-1.74)	-0.1081*** (-3.15)
Δ FDI * Credit Is Granted in Foreign Currency		-0.0028* (-1.74)	-0.0029** (-2.02)
Δ FDI * Bank Capital Ratio * Credit Is Granted in Foreign Currency		0.0081 (0.53)	0.0293** (2.20)
Δ Credit Default Swap Spread * Credit Is Granted in Foreign Currency		-0.0009*** (-3.90)	-0.0007*** (-3.45)
Δ Credit Default Swap Spread * Bank Capital Ratio * Credit Is Granted in Foreign Currenc		0.0053** (2.47)	0.0051*** (2.62)
Credit Is Granted in Foreign Currency		-0.0017*** (-4.74)	-0.0011*** (-3.10)
Bank Bank Capital Ratio * Credit Is Granted in Foreign Currency		-0.0007 (-0.21)	-0.0055* (-1.76)
Firm - Time Fixed Effects		Yes	Yes
Number of Observations		2,385,314	1,762,190
Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Larger/Higher Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.23%)			
Difference in Impact Between Foreign Currency and Hungarian Forint due to			
	Bank Capital Ratio	-13%	-5%

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in domestic (foreign) currency in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all other variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE V
THE GRANTING OF CREDIT IN DOMESTIC OR FOREIGN CURRENCY TO BORROWERS CURRENTLY WITHOUT CREDIT IN DOMESTIC OR FOREIGN CURRENCY (EXTENSIVE MARGIN), INTERACTIONS WITH BANK REGULATORY CAPITAL, SIZE AND LIQUIDITY, AND FOREIGN OWNERSHIP

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Other Bank Characteristic</i>	<i>Bank Regulatory Capital Ratio</i>	<i>Bank Total Assets</i>				<i>Bank Liquidity Ratio</i>				<i>Foreign Owned Bank</i>		
<i>Sample</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>
Δ Interest Rate * Credit Is Granted in Foreign Currency	0.0300*** (4.94)	0.0153*** (2.85)	-0.0156 (-0.49)	-0.0486* (-1.70)	0.0120 (0.36)	-0.0348 (-1.17)	0.0275*** (4.54)	0.0062 (1.11)	0.0578*** (6.03)	0.0252*** (2.72)	0.0482*** (2.83)	0.0068 (0.43)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Foreign Currency					-0.2408*** (-4.02)	-0.1435** (-2.49)			-0.3125*** (-4.94)	-0.1858*** (-3.01)	-0.2291*** (-3.83)	-0.1439** (-2.47)
Δ Interest Rate * <i>Bank Characteristic</i> * Credit Is Granted in Foreign Currency	-0.0164*** (-4.88)	-0.0099*** (-3.49)	0.0014 (0.65)	0.0034* (1.72)	0.0011 (0.50)	0.0034* (1.73)	-0.1254*** (-3.97)	-0.0257 (-0.86)	-0.1236*** (-3.72)	-0.0301 (-0.95)	-0.0210 (-1.27)	0.0075 (0.48)
Δ GDP * Credit Is Granted in Foreign Currency	-0.0210*** (-7.35)	-0.0143*** (-5.94)	-0.0630*** (-3.58)	-0.0253* (-1.66)	-0.0704*** (-3.90)	-0.0301* (-1.91)	-0.0256*** (-7.60)	-0.0178*** (-5.69)	-0.0299*** (-5.54)	-0.0222*** (-4.56)	-0.0269*** (-2.86)	-0.0193** (-2.13)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Foreign Currency					0.0751** (2.04)	0.0616* (1.86)			0.0595 (1.57)	0.0526 (1.55)	0.0765** (2.07)	0.0633* (1.88)
Δ GDP * <i>Bank Characteristic</i> * Credit Is Granted in Foreign Currency	0.0024* (1.66)	0.0013 (1.15)	0.0031*** (2.59)	0.0008 (0.79)	0.0031*** (2.60)	0.0008 (0.73)	0.0624*** (3.87)	0.0396*** (2.62)	0.0546*** (3.31)	0.0373** (2.42)	0.0004 (0.04)	-0.0003 (-0.03)
Δ CPI * Credit Is Granted in Foreign Currency	0.0039 (0.87)	-0.0019 (-0.52)	-0.0008 (-0.03)	0.0134 (0.60)	0.0244 (0.89)	0.0211 (0.89)	0.0020 (0.35)	-0.0054 (-1.05)	0.0139* (1.94)	0.0001 (0.02)	0.0658*** (4.45)	0.0205 (1.36)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Foreign Currency					-0.1794*** (-3.71)	-0.0614 (-1.53)			-0.1802*** (-3.67)	-0.0821* (-1.95)	-0.1627*** (-3.37)	-0.0558 (-1.40)
Δ CPI * <i>Bank Characteristic</i> * Credit Is Granted in Foreign Currency	-0.0024 (-0.95)	0.0001 (0.06)	0.0002 (0.09)	-0.0009 (-0.60)	-0.0004 (-0.22)	-0.0011 (-0.67)	-0.0206 (-0.62)	0.0251 (0.86)	0.0123 (0.36)	0.0398 (1.28)	-0.0503*** (-3.39)	-0.0160 (-1.06)
Credit Is Granted in Foreign Currency	-0.0029*** (-24.82)	-0.0021*** (-20.31)	-0.0061*** (-7.40)	-0.0033*** (-4.07)	-0.0064*** (-7.52)	-0.0034*** (-4.12)	-0.0032*** (-24.44)	-0.0026*** (-20.69)	-0.0038*** (-20.11)	-0.0029*** (-16.20)	-0.0015*** (-4.44)	-0.0007** (-2.01)
Bank Bank Capital Ratio * Credit Is Granted in Foreign Currency					0.0040*** (3.11)	0.0021* (1.78)			0.0047*** (3.66)	0.0030** (2.45)	0.0045*** (3.57)	0.0027** (2.37)
Bank Characteristic * Credit Is Granted in Foreign Currency	0.0003*** (5.30)	0.0002*** (4.83)	0.0003*** (4.62)	0.0001* (1.87)	0.0003*** (4.45)	0.0001* (1.77)	0.0051*** (7.83)	0.0048*** (8.05)	0.0059*** (8.66)	0.0051*** (8.33)	-0.0013*** (-3.91)	-0.0014*** (-4.21)
Firm - Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	2,303,752	1,697,084	2,385,314	1,762,190	2,385,314	1,762,190	2,385,314	1,762,190	2,385,314	1,762,190	2,385,314	1,762,190

Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Larger/Higher Regulatory Capitalized, Sized, Liquid, Foreign-Owned and/or Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.23%)

Difference in Impact Between Foreign Currency and Hungarian Forint due to

<i>Bank Capital Ratio</i>	-	-	-	-	-8%	-5%	-	-	-10%	-6%	-7%	-5%
<i>Regulatory Bank Capital Ratio</i>	-7%	-4%	-	-	-	-	-	-	-	-	-	-
<i>Bank Total Assets</i>	-	-	1%	1%	0%	1%	-	-	-	-	-	-
<i>Bank Liquidity Ratio</i>	-	-	-	-	-	-	-5%	-1%	-4%	-1%	-	-
<i>Foreign Owned Bank</i>	-	-	-	-	-	-	-	-	-	-	-1%	0%

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in domestic (foreign) currency in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Bank Regulatory Capital is the ratio of regulatory capital over risk-weighted assets. Table II lists the definition of all other variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE VI
THE GRANTING OF CREDIT IN DOMESTIC OR FOREIGN CURRENCY TO BORROWERS CURRENTLY WITHOUT CREDIT IN DOMESTIC OR FOREIGN CURRENCY (EXTENSIVE MARGIN), BY SAMPLE

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Overall Sample</i>	<i>Only Foreign Owned Banks</i>		<i>2005:01-2008:09</i>		<i>Non-Exporter Firms</i>		<i>Only Firms > Median in Total Assets</i>	
<i>Sample</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>
Δ Interest Rate * Credit Is Granted in Foreign Currency	0.0276*** (3.87)	0.0231*** (3.30)	0.1029*** (6.10)	0.0763*** (4.52)	0.0330*** (4.18)	0.0147* (1.93)	0.0368*** (3.69)	0.0182* (1.72)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Foreign Currency	-0.2194*** (-3.50)	-0.2091*** (-3.38)	-0.7400*** (-4.94)	-0.6309*** (-4.21)	-0.2978*** (-4.12)	-0.1733** (-2.50)	-0.2932*** (-3.17)	-0.1827* (-1.90)
Δ GDP * Credit Is Granted in Foreign Currency	-0.0258*** (-6.46)	-0.0182*** (-4.81)	0.0124 (0.81)	0.0221 (1.55)	-0.0283*** (-6.29)	-0.0198*** (-4.84)	-0.0340*** (-5.76)	-0.0279*** (-4.75)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Foreign Currency	0.1126*** (3.05)	0.0708** (2.00)	-0.1921 (-1.39)	-0.1110 (-0.94)	0.0804* (1.83)	0.0514 (1.30)	0.0667 (1.14)	0.0557 (0.98)
Δ CPI * Credit Is Granted in Foreign Currency	0.0215*** (4.05)	0.0136** (2.55)	-0.0057 (-0.57)	-0.0122 (-1.29)	0.0177*** (2.66)	0.0044 (0.74)	0.0192** (2.55)	0.0048 (0.65)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Foreign Currency	-0.1617*** (-3.69)	-0.1192*** (-2.64)	-0.0421 (-0.48)	0.1102 (1.36)	-0.1797*** (-2.92)	-0.0563 (-1.09)	-0.1984*** (-2.94)	-0.0647 (-1.08)
Credit Is Granted in Foreign Currency	-0.0026*** (-17.75)	-0.0019*** (-13.01)	-0.0041*** (-9.93)	-0.0035*** (-8.29)	-0.0032*** (-18.19)	-0.0023*** (-14.39)	-0.0039*** (-18.39)	-0.0032*** (-14.67)
Bank Bank Capital Ratio * Credit Is Granted in Foreign Currency	0.0054*** (4.34)	0.0026** (2.09)	0.0116*** (3.58)	0.0082** (2.42)	0.0051*** (3.15)	0.0031** (2.16)	0.0062*** (3.29)	0.0047** (2.48)
Firm - Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	1,615,640	1,336,152	1,160,416	845,040	1,770,922	1,337,626	1,408,422	919,230
<i>Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.23%)</i>								
<i>Difference in Impact Between Foreign Currency and Hungarian Forint</i>	<i>-7%</i>	<i>-7%</i>	<i>-24%</i>	<i>-20%</i>	<i>-6%</i>	<i>-6%</i>	<i>-9%</i>	<i>-6%</i>

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in domestic (foreign) currency in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE VII
THE GRANTING OF CREDIT IN DOMESTIC OR FOREIGN CURRENCY TO BORROWERS CURRENTLY WITHOUT CREDIT IN DOMESTIC OR FOREIGN CURRENCY (EXTENSIVE MARGIN),
SPECIFICATIONS INCLUDING ADDITIONAL FIXED EFFECTS

	Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Sample	All Firms	All Firms	Single-Bank Firms	Single-Bank Firms	Single-Bank Firms	Single-Bank Firms	Single-Bank Firms
Δ Interest Rate		-0.0526*** (-6.33)				-0.0435*** (-5.51)		
Δ Interest Rate * Bank Capital Ratio		0.4012*** (5.38)	0.4776*** (6.32)	0.3198*** (4.39)		0.3783*** (5.49)	0.3826*** (5.56)	
Δ Interest Rate * Credit Is Granted in Foreign Currency		0.0367*** (4.30)				0.0230*** (2.91)	0.0230*** (2.91)	0.0210** (2.28)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Foreign Currency		-0.2918*** (-3.66)	-0.3451*** (-4.28)	-0.2037*** (-2.61)	-0.1966*** (-2.61)	-0.2500*** (-3.43)	-0.2500*** (-3.43)	-0.2205*** (-2.61)
Δ GDP		0.0228*** (3.84)				0.0036 (0.65)		
Δ GDP * Bank Capital Ratio		-0.0892** (-1.99)	-0.0546 (-1.21)	0.0050 (0.12)		-0.0567 (-1.54)	-0.0409 (-1.10)	
Δ GDP * Credit Granted in Foreign Currency		-0.0265*** (-5.36)				-0.0241*** (-5.89)	-0.0241*** (-5.89)	-0.0199*** (-4.12)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Foreign Currency		0.0150 (0.31)	0.0457 (0.93)	0.0012 (0.03)	0.0008 (0.02)	0.0907** (2.30)	0.0907** (2.30)	0.0690 (1.48)
Δ CPI		-0.0205*** (-2.92)				-0.0161** (-2.38)		
Δ CPI * Bank Capital Ratio		0.2383*** (3.67)	0.2335*** (3.56)	0.1174* (1.90)		0.1810*** (3.04)	0.1386** (2.31)	
Δ CPI * Credit Is Granted in Foreign Currency		0.0259*** (3.50)				0.0137** (1.98)	0.0137** (1.98)	0.0096 (1.35)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Foreign Currency		-0.2494*** (-3.53)	-0.2411*** (-3.38)	-0.1389** (-2.04)	-0.1043* (-1.88)	-0.1567** (-2.44)	-0.1567** (-2.44)	-0.1067* (-1.71)
Credit Is Granted in Foreign Currency						-0.0115*** (-6.12)	0.0046** (2.06)	-0.0006** (-2.50)
Bank Capital Ratio * Credit Is Granted in Foreign Currency		0.0018 (0.48)	-0.0002 (-0.04)	-0.0003 (-0.06)	0.0000 (0.01)	0.0033 (0.83)	0.0033 (0.83)	0.0039 (1.14)
Macroeconomic Variables		Yes	No	No	No	Yes	No	No
Bank Characteristics		Yes	Yes	Yes	No	Yes	Yes	No
Firm Characteristics		Yes	Yes	Yes	Yes	Yes	Yes	No
Firm - Currency Fixed Effects		Yes	Yes	Yes	Yes	No	No	No
Month - Currency Fixed Effects		No	Yes	Yes	Yes	No	No	No
Bank - Month Fixed Effects		No	No	No	Yes	No	No	--
Bank - Currency FE		--	--	--	--	Yes	Yes	Yes
Firm Fixed Effects		--	--	--	--	Yes	Yes	--
Month Fixed Effects		--	--	--	--	No	Yes	--
Firm - Month Fixed Effects		No	No	No	No	No	No	Yes
Number of Observations		2,075,500	2,075,500	1,504,192	1,504,504	1,504,192	1,504,192	1,762,190

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in domestic (foreign) currency in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. "No" indicates that the set of fixed effects is not included. "--" indicates that the indicated set of fixed effects are comprised in the wider included set of fixed effects. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE VIII
THE GRANTING OF CREDIT IN DOMESTIC OR FOREIGN CURRENCY TO BORROWERS CURRENTLY WITHOUT CREDIT IN DOMESTIC OR FOREIGN CURRENCY (EXTENSIVE MARGIN), INTEREST RATE DIFFERENTIAL AS KEY INDEPENDENT VARIABLE

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<i>Bank Capital</i>		<i>High Swap Ratio Dummy</i>		<i>High Swap Ratio in High Forward Premium Months</i>		<i>Bank Capital and High Swap Ratio Dummy</i>		<i>Bank Capital</i>	
	<i>Sample</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>Firms w Banks w Swap Ratio Below 33.3 pctl</i>	<i>Firms w Banks w Swap Ratio Below 33.3 pctl</i>
Δ EUR-HUF Interest Rate Differential * Credit Is Granted in Euro		-0.0377*** (-5.64)		-0.0027 (-0.75)		-0.0078 (-1.55)		-0.0830*** (-5.56)	-0.0062 (-0.44)	
Δ EUR-HUF Interest Rate Differential * Credit Is Granted in Swiss Franc		-0.0357*** (-5.39)		-0.0024 (-0.68)		-0.0045 (-0.92)		-0.0817*** (-5.58)	-0.0087 (-0.63)	
Δ EUR-HUF Interest Rate Differential * Credit Is Granted in Euro * Bank Capital Ratio		0.3138*** (5.11)						0.7303*** (6.25)	0.1139 (1.07)	
Δ EUR-HUF Interest Rate Differential * Credit Is Granted in Swiss Franc * Bank Capital Ratio		0.3017*** (4.95)						0.7203*** (6.27)	0.1263 (1.21)	
Δ EUR-HUF Interest Rate Differential * Credit Is Granted in Euro * Above Median Gross Swap Ratio				-0.0124** (-2.40)		-0.0487*** (-6.00)		0.0751*** (4.34)		
Δ EUR-HUF Interest Rate Differential * Credit Is Granted in Swiss Franc * Above Median Gross Swap Ratio				-0.0106** (-2.08)		-0.0466*** (-5.80)		0.0762*** (4.46)		
Δ EUR-HUF Interest Rate Differential * Credit Is Granted in Euro * Bank Capital Ratio * Above Median Gross Swap Ratio								-0.8112*** (-4.98)		
Δ EUR-HUF Interest Rate Differential * Credit Is Granted in Swiss Franc * Bank Capital Ratio * Above Median Gross Swap Ratio								-0.7968*** (-4.89)		
Δ CHF-HUF Interest Rate Differential * Credit Is Granted in Euro		-0.0439*** (-6.68)			-0.0053 (-1.51)		-0.0090* (-1.77)	-0.0867*** (-5.94)		-0.0086 (-0.64)
Δ CHF-HUF Interest Rate Differential * Credit Is Granted in Swiss Franc		-0.0409*** (-6.27)			-0.0040 (-1.16)		-0.0055 (-1.10)	-0.0839*** (-5.87)		-0.0103 (-0.77)
Δ CHF-HUF Interest Rate Differential * Credit Is Granted in Euro * Bank Capital Ratio		0.3402*** (5.65)						0.7490*** (6.55)	0.1268 (1.23)	
Δ CHF-HUF Interest Rate Differential * Credit Is Granted in Swiss Franc * Bank Capital Ratio		0.3266*** (5.47)						0.7333*** (6.53)	0.1352 (1.34)	
Δ CHF-HUF Interest Rate Differential * Credit Is Granted in Euro * Above Median Gross Swap Ratio					-0.0147*** (-2.93)		-0.0535*** (-6.49)	0.0715*** (4.20)		
Δ CHF-HUF Interest Rate Differential * Credit Is Granted in Swiss Franc * Above Median Gross Swap Ratio					-0.0129*** (-2.61)		-0.0512*** (-6.25)	0.0717*** (4.26)		
Δ CHF-HUF Interest Rate Differential * Credit Is Granted in Euro * Bank Capital Ratio * Above Median Gross Swap Ratio								-0.7965*** (-4.94)		
Δ CHF-HUF Interest Rate Differential * Credit Is Granted in Swiss Franc * Bank Capital Ratio * Above Median Gross Swap Ratio								-0.7719*** (-4.79)		
Controls (as Reported in Table A.VIII)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm - Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	3,577,971	3,577,971	3,541,428	3,541,428	1,466,622	1,466,622	3,541,428	3,541,428	800,724	800,724
<i>Difference in Impact of a Decrease in Interest Rate Differential by 25 bps on the Likelihood of Granting First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) As Percent of Unconditional Probability of Granting First-Time Credit (=0.16%) in Sample</i>										
<i>Difference in Impact Between Euro and Hungarian Forint</i>		15%	16%						5%	6%
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>		14%	15%						6%	6%
<i>Percentage Point Difference in Impact of a Decrease in Interest Rate Differential by 25 bps on the Likelihood of Granting First-Time Credit by Below versus Above Median Swap Ratio Banks (Δ=2 Standard Deviations)</i>										
<i>Difference in Impact Between Euro and Hungarian Forint</i>				-2%	-2%	-8%	-8%			
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>				-2%	-2%	-7%	-8%			
<i>Difference in Impact of a Decrease in Interest Rate Differential by 25 bps on the Likelihood of Granting First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) As Percent of Unconditional Probability of Granting First-Time Credit (=0.16%) in Sample</i>										
<i>Banks with Below Median Gross Swap Ratio</i>										
<i>Difference in Impact Between Euro and Hungarian Forint</i>								34%	35%	
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>								34%	34%	
<i>Banks with Above Median Gross Swap Ratio</i>										
<i>Difference in Impact Between Euro and Hungarian Forint</i>								-28%	-28%	
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>								-27%	-26%	

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in domestic (foreign) currency in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. The variable Bank with Above Median Gross Swap Ratio is a dummy which equals one if the gross swap ratio of the bank (i.e., the ratio of gross HUF short open swap volume to total bank assets) is above the median gross swap ratio. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE IX
THE GRANTING OF CREDIT IN HUNGARIAN FORINT, EURO, OR SWISS FRANC TO BORROWERS CURRENTLY WITHOUT CREDIT IN THOSE CURRENCIES (EXTENSIVE MARGIN)

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Sample</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>Single-Bank Firms</i>
Δ Interest Rate	-0.0059*** (-2.92)	-0.0216*** (-6.19)	-0.0104*** (-3.27)	-0.0461*** (-6.15)			
Δ Interest Rate * Bank Capital Ratio		0.1657*** (5.90)		0.3752*** (5.45)	0.4099*** (5.94)		
Δ Interest Rate * Credit Is Granted in Euro			0.0066** (2.40)	0.0369*** (4.92)	0.0369*** (4.92)	0.0322*** (5.08)	0.0153** (2.45)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Euro				-0.3176*** (-4.53)	-0.3176*** (-4.53)	-0.2763*** (-4.74)	-0.1614*** (-2.81)
Δ Interest Rate * Credit Is Granted in Swiss Franc			0.0068** (2.50)	0.0365*** (4.92)	0.0365*** (4.92)	0.0321*** (5.11)	0.0180*** (2.95)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Swiss Franc				-0.3108*** (-4.47)	-0.3108*** (-4.47)	-0.2734*** (-4.72)	-0.1814*** (-3.21)
Controls (as Reported in Table A.IX)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macroeconomic Variables	Yes	Yes	Yes	Yes	No	No	No
Bank Characteristics	Yes	Yes	Yes	Yes	Yes	No	No
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	No	No
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	--	--
Time Fixed Effects	No	No	No	No	Yes	--	--
Firm - Time Fixed Effects	No	No	No	No	No	Yes	Yes
Number of Observations	3,113,250	3,113,250	3,113,250	3,113,250	3,113,250	3,577,971	2,643,285
<i>Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in The Sample (= 0.16%)</i>							
<i>in Hungarian Forint or in Foreign Currency</i>		8%	-	-	-	-	-
<i>in Hungarian Forint</i>	-	-	-	17%	19%	-	-
<i>In Euro</i>	-	-	-	3%	4%	-	-
<i>in Swiss Franc</i>	-	-	-	3%	5%	-	-
<i>Difference in Impact Between Euro and Hungarian Forint</i>	-	-	-	-15%	-15%	-13%	-8%
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>				-14%	-14%	-13%	-8%

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in Hungarian Forint / Euro / Swiss Franc in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. "No" indicates that the set of fixed effects is not included. "--" indicates that the indicated set of fixed effects are comprised in the wider included set of fixed effects. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE X
THE REPAYMENT OF CREDIT BY BORROWERS WITH CREDIT IN HUNGARIAN FORINT, EURO, AND SWISS FRANC (NEGATIVE EXTENSIVE MARGIN) AND THE INCREASE IN THE AMOUNT OF CREDIT BORROWERS HOLD IN HUNGARIAN FORINT, EURO, OR SWISS FRANC (INTENSIVE MARGIN)

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	ENDING CREDIT (NEGATIVE EXTENSIVE MARGIN)				INCREASE IN THE AMOUNT OF CREDIT (INTENSIVE MARGIN)			
Sample	All Firm	All Firm	All Firm	Single-Bank Firms	All Firms with Debt	All Firms with Debt	All Firms with Debt	Single-Bank Firms with Debt
Δ Interest Rate	0.0409** (2.03)				-7.6748*** (-9.68)			
Δ Interest Rate * Bank Capital Ratio	-0.3213 (-1.62)	-0.3179 (-1.61)			52.0331*** (6.39)	54.7108*** (6.72)		
Δ Interest Rate * Credit Is Granted in Euro	-0.0456** (-2.17)	-0.0456** (-2.17)	-0.0454** (-2.21)	-0.0663** (-2.57)	5.6628*** (6.49)	5.6628*** (6.49)	5.0372*** (5.11)	6.3453*** (4.76)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Euro	0.4262** (2.00)	0.4262** (2.00)	0.4192** (2.01)	0.5779** (2.32)	-37.9215*** (-4.08)	-37.9215*** (-4.08)	-30.4082*** (-2.91)	-46.5860*** (-3.31)
Δ Interest Rate * Credit Is Granted in Swiss Franc	-0.0318 (-1.49)	-0.0318 (-1.49)	-0.0311 (-1.49)	-0.0346 (-1.31)	6.9379*** (8.28)	6.9379*** (8.28)	6.2875*** (6.52)	6.7539*** (5.16)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Swiss Franc	0.2994 (1.39)	0.2994 (1.39)	0.2953 (1.41)	0.2792 (1.11)	-48.1026*** (-5.42)	-48.1026*** (-5.42)	-40.0153*** (-3.93)	-47.6465*** (-3.44)
Controls (as Reported in Table A.X)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Macroeconomic Variables	Yes	No	No	No	Yes	No	No	No
Bank Characteristics	Yes	Yes	No	No	Yes	Yes	No	No
Firm Characteristics	Yes	Yes	No	No	Yes	Yes	No	No
Firm Fixed Effects	Yes	Yes	--	--	Yes	Yes	--	--
Time Fixed Effects	No	Yes	--	--	No	Yes	--	--
Firm - Time Fixed Effects	No	No	Yes	Yes	No	No	Yes	Yes
Number of Observations	1,117,353	1,117,353	1,160,565	617,775	3,690,021	3,690,021	3,766,593	1,754,097
<i>Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Ending Credit and Increasing the Amount of Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) As Percent of Unconditional Probability of Ending Credit (=0.12%) and ogarithm of the Increase in The Amount of Credit (=0.35) in Sample</i>								
<i>in Hungarian Forint</i>	-19%	-19%	-	-	11%	11%	-	-
<i>in Euro</i>	6%	7%	-	-	3%	4%	-	-
<i>in Swiss Franc</i>	-1%	-1%	-	-	1%	1%	-	-
<i>Difference in Impact Between Euro and Hungarian Forint</i>	26%	26%	25%	35%	8%	8%	4%	10%
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	18%	18%	18%	17%	10%	10%	8%	10%

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable Ending Credit is a dummy that equals one if the firm has no more credit in Hungarian Forint / Euro / Swiss Franc in a particular year:month conditional on having had credit in this currency in the month before and equals zero otherwise. The dependent variable Increase in the Amount of Credit is the logarithm of the increase in the amount of credit in Hungarian Forint / Euro / Swiss Franc (loans denominated in foreign currency are converted to Hungarian Forint by using the average exchange rate during the 2005:01-2008:08 period). Regression in Columns 1 to 4 are based on the 10% random sample and covers the 2005:01-2011:12 period, regression in column 5 to 8 are based on the entire sample and covers the 2005:01-2008:08 period. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. "No" indicates that the set of fixed effects is not included. "--" indicates that the indicated set of fixed effects are comprised in the wider included set of fixed effects. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE XI

THE GRANTING OF CREDIT IN HUNGARIAN FORINT, EURO, AND SWISS FRANC TO BORROWERS CURRENTLY WITHOUT CREDIT IN THOSE CURRENCIES (EXTENSIVE MARGIN),
EFFECTS OF EURO AND SWISS FRANC INTEREST RATES

	Model Sample	(1) All Firms	(2) Single-Bank Firms	(3) All Firms	(4) Single-Bank Firms
Δ Interest Rate * Credit Is Granted in Euro		0.0393*** (5.81)	0.0226*** (3.44)	0.0427*** (6.50)	0.0249*** (3.85)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Euro		-0.3157*** (-5.12)	-0.1973*** (-3.35)	-0.3237*** (-5.39)	-0.2083*** (-3.55)
Δ Interest Rate * Credit Is Granted in Swiss Franc		0.0364*** (5.44)	0.0230*** (3.55)	0.0397*** (6.11)	0.0256*** (4.04)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Swiss Franc		-0.3037*** (-4.96)	-0.2065*** (-3.56)	-0.3126*** (-5.25)	-0.2212*** (-3.82)
Δ Interest Rate in Euro Area * Credit Is Granted in Euro		-0.1256*** (-4.17)	-0.1224*** (-4.35)		
Δ Interest Rate in Euro Area * Bank Capital Ratio * Credit Is Granted in Euro		0.7838*** (3.03)	0.6848*** (2.96)		
Δ Interest Rate in Euro Area * Credit Is Granted in Swiss Franc		-0.0761** (-2.52)	-0.0827*** (-2.92)		
Δ Interest Rate in Euro Area * Bank Capital Ratio * Credit Is Granted in Swiss Franc		0.5637** (2.21)	0.4735** (2.06)		
Δ Interest Rate in Switzerland * Credit Is Granted in Euro				-0.3554*** (-10.63)	-0.3304*** (-9.84)
Δ Interest Rate in Switzerland * Bank Capital Ratio * Credit Is Granted in Euro				1.7480*** (6.18)	1.7152*** (6.14)
Δ Interest Rate in Switzerland * Credit Is Granted in Swiss Franc				-0.2632*** (-7.76)	-0.2634*** (-7.63)
Δ Interest Rate in Switzerland * Bank Capital Ratio * Credit Is Granted in Swiss Franc				1.4674*** (5.24)	1.4626*** (5.17)
Controls (as Reported in Table A.XI)	Yes	Yes	Yes	Yes	Yes
Firm - Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Number of Observations	3,577,971	2,643,285	3,577,971	2,643,285	
<i>Percentage Point Difference in Impact of a Decrease in Forint Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations)</i>					
Difference in Impact Between Euro and Hungarian Forint		-0.0234	-0.0146	-0.0239	-0.0154
Difference in Impact Between Swiss Franc and Hungarian Forint		-0.0225	-0.0153	-0.0231	-0.0164
<i>Percentage Point Difference in Impact of a Decrease in Forint Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.16%)</i>					
Difference in Impact Between Euro and Hungarian Forint		-15%	-9%	-15%	-10%
Difference in Impact Between Swiss Franc and Hungarian Forint		-14%	-10%	-15%	-10%
<i>Percentage Point Difference in Impact of a Decrease in Euro Area Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations)</i>					
Difference in Impact Between Euro and Hungarian Forint		0.058	0.051	-	-
Difference in Impact Between Swiss Franc and Hungarian Forint		0.042	0.035	-	-
Difference in Impact Between Hungarian Forint and Swiss Franc		-0.042	-0.035	-	-
Difference in Impact Between Euro and Swiss Franc		-0.016	-0.016	-	-
<i>Difference in Impact of a Decrease in Euro Area Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.16%)</i>					
Difference in Impact Between Euro and Hungarian Forint		36%	32%	-	-
Difference in Impact Between Swiss Franc and Hungarian Forint		26%	22%	-	-
Difference in Impact Between Hungarian Forint and Swiss Franc		-26%	-22%	-	-
Difference in Impact Between Euro and Swiss Franc		-10%	-10%	-	-
<i>Percentage Point Difference in Impact of a Decrease in Swiss Franc Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations)</i>					
Difference in Impact Between Euro and Hungarian Forint		-	-	0.129	0.127
Difference in Impact Between Swiss Franc and Hungarian Forint		-	-	0.109	0.108
Difference in Impact Between Hungarian Forint and Swiss Franc		-	-	-0.109	-0.108
Difference in Impact Between Euro and Swiss Franc		-	-	-0.021	-0.019
<i>Difference in Impact of a Decrease in Swiss Franc Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.16%)</i>					
Difference in Impact Between Euro and Hungarian Forint		-	-	81%	80%
Difference in Impact Between Swiss Franc and Hungarian Forint		-	-	68%	68%
Difference in Impact Between Hungarian Forint and Swiss Franc		-	-	-68%	-68%
Difference in Impact Between Euro and Swiss Franc		-	-	-13%	-12%

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in Hungarian Forint / Euro / Swiss Franc in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. "No" indicates that the set of fixed effects is not included. "--" indicates that the indicated set of fixed effects are comprised in the wider included set of fixed effects. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

Internet Appendix

Appendix: Foreign Currency Lending in Hungary

Hungary's transition from a centrally planned to a market economy started at the end of the 1980s and was accompanied by a major inflow of foreign bank capital into the financial sector. By the end of the 1990s the majority of the banks in the country were foreign owned. Since capital markets were still underdeveloped, during the transition period, bank loans provided the major funding source for economic growth.

In early 2000s, a credit expansion started fueled by an intense competition in the banking sector. In parallel, the share of foreign currency denominated loans increased significantly both in the household and the corporate sector. While the most popular denominations were the Euro and the Swiss Franc (see Figures A.1 and A.2), other currencies like the US Dollar and even the Japanese Yen were also not uncommon for corporations.

The most cited reason for the expansion of foreign currency lending in Hungary was the large difference between domestic and foreign interest rates (see Figure A.3).¹ A high level of government debt, lenient fiscal policy, and high inflation, all played a role in generating the difference in nominal interest rates. At the same time, differential interest rates did not affect borrowers' expectations and awareness of exchange rate risk. In addition to demand side effects, the intense credit market competition and banks' consequent willingness to provide loans to riskier clients also contributed to the currency lending boom. Finally, the lack of prudential regulation

¹ For example, in the period between January 2005 and December 2011, the average annualized monthly interest rates on corporate loans in Hungarian Forint were on average 4.9 percentage points higher than the average rates on corporate loans in Euro (authors' own calculation based on data from the Central Bank of Hungary). We have no exact data on the interest rates on corporate loans in Swiss Franc; however, its level was even smaller than that of the loans in Euro.

and appropriate supervisory policies limiting banks' risk taking when lending in foreign currencies further contributed to the expansion of the supply of credit.²

From 2004 onwards, with the disappearance of state-subsidized domestic currency mortgages, foreign currency loans became a major product in both household and corporate lending. By the end of 2007, 56 percent of total outstanding loans to non-bank clients were denominated in foreign currency (Brown et al. (2009)).³

[Insert Figures A.1 and A.2 here]

In particular, large corporations with revenues in Euro started to borrow in Euro to hedge their exchange rate exposures. The popularity of Swiss Franc loans is attributed to even lower interest rates and low Euro/Swiss Franc exchange rate volatility during the period.

[Insert Figure A.3 here]

When the financial crisis hit Hungary in the Fall of 2008, the Hungarian Forint depreciated significantly against the major currencies. The unprecedented collapse of USD liquidity and the drying up of foreign exchange swap markets curbed Hungarian banks' possibilities to continue lending in Euro and Swiss Franc without foreign currency open positions on their balance sheets. In subsequent years, therefore, the share of foreign currency lending substantially decreased. Swiss

² The prospect of the introduction of the Euro as the national currency may also have been a contributing factor to the assessment of the foreign exchange risks involved (Fidrmuc et al. (2013)).

³ Note that while the lending boom can be characterized by the spread of foreign currency loans both in the household and corporate sectors, Figures A.1 and A.2 show the amount and number of loans given to non-financial corporations since the population of these corporations constitutes our sample.

Franc lending essentially vanished, but lending in Euro preserved its importance both in the household and corporate sectors.

Appendix References

- Brown, M., Peter, M., Wehrmüller, S., 2009. Swiss Franc Lending in Europe, Swiss National Bank, Zurich, Mimeo.
- Fidrmuc, J., Hake, M., Stix, H., 2013. Households' Foreign Currency Borrowing in Central and Eastern Europe. *Journal of Banking and Finance* 37, 1880-1897.

Figure A.1. Annual Amount of New Lending to Corporations in Hungary by Currency, 2005-2011
(billion Forints)

Figure A.2. Quarterly Number of New Loans to Corporations in Hungary by Currency, 2005-2011

Figure A.3. Average Annualized Interest Rates, Weighted by Loan Amount, on Variable Rate Corporate Loans to Non-Financial Corporations, in Hungarian Forint (HUF) and Euro (EUR)

TABLE A.I
AMOUNT AND YIELD OF HUF SWAPS

	EUR-HUF (EUR million bought)	USD-HUF (USD million bought)	CHF-HUF (CHF million bought)	GBP-HUF (GBP million bought)
Mean amount of currency bought (net)	58.31	39.13	130.44	0.1908
Mean amount of currency bought for short term (million, maturity < 1 year)	50.43	10.35	86.40	0.1898
Mean amount of currency bought for long term (million, maturity > 1 year)	70.14	98.60	242.23	0.1956
Average yield (average ratio of implied forward and spot exchange rates)	0.9683	0.9875	1.0388	1.0092
Average yield for short term deals (maturity < 1 year)	0.9355	0.9906	1.0201	1.0120
Average yield for long term deals (maturity > 1 year)	1.0223	0.9576	1.1471	0.9913

NOTE. - The table shows the average monthly (net) amounts of banks' foreign currency swap positions in the four major currencies (EUR, USD, CHF, GBP) which banks exchange for Hungarian Forint. For each currency the amounts are indicated in millions of the foreign currency. Average yield for each currency is calculated as the ratio of the average forward and spot exchange rates implied by the amounts of foreign currency bought and domestic currency sold by each bank in each month. Both the amounts and average yields are calculated separately for the short term deals and for the deals over 1 year maturity. The sample period is January 2005 – December 2011. At the end of the sample period: 1,000 HUF = 3.2 EUR = 4.1 USD = 3.8 CHF = 2.7 GBP.

TABLE A.III
THE GRANTING OF CREDIT IN DOMESTIC OR FOREIGN CURRENCY TO BORROWERS CURRENTLY WITHOUT CREDIT IN DOMESTIC OR FOREIGN CURRENCY (EXTENSIVE MARGIN)

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sample	All Firms	All Firms	All Firms	All Firms	All Firms	All Firms	Single-Bank Firms
Δ Interest Rate	-0.0101*** (-3.37)	-0.0343*** (-6.64)	-0.0134*** (-3.62)	-0.0506*** (-6.43)			
Δ Interest Rate * Bank Capital Ratio		0.2554*** (6.13)		0.3914*** (5.58)	0.4411*** (6.25)		
Δ Interest Rate * Credit Is Granted in Foreign Currency			0.0067** (2.36)	0.0327*** (4.24)	0.0327*** (4.24)	0.0284*** (4.36)	0.0135** (2.14)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Foreign Currency				-0.2721*** (-3.80)	-0.2721*** (-3.80)	-0.2361*** (-3.95)	-0.1370** (-2.37)
Δ GDP	0.0021 (0.53)	0.0095** (2.05)	0.0130*** (3.07)	0.0249*** (4.41)			
Δ GDP * Bank Capital Ratio		-0.0817*** (-3.19)		-0.1291*** (-3.11)	-0.0791* (-1.91)		
Δ GDP * Credit Granted in Foreign Currency			-0.0216*** (-13.07)	-0.0308*** (-7.02)	-0.0308*** (-7.02)	-0.0264*** (-7.04)	-0.0197*** (-5.73)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Foreign Currency				0.0948** (2.19)	0.0948** (2.19)	0.0767** (2.08)	0.0650* (1.95)
Δ CPI	0.0031 (1.26)	-0.0075* (-1.74)	0.0024 (0.76)	-0.0203*** (-2.99)			
Δ CPI * Bank Capital Ratio		0.1136*** (3.23)		0.2421*** (3.85)	0.2414*** (3.81)		
Δ CPI * Credit Is Granted in Foreign Currency			0.0015 (0.56)	0.0255*** (3.64)	0.0255*** (3.64)	0.0192*** (3.65)	0.0058 (1.24)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Foreign Currency				-0.2569*** (-3.80)	-0.2569*** (-3.80)	-0.1855*** (-3.85)	-0.0650 (-1.63)
Δ Exchange Rate	-0.0007 (-0.63)	-0.0008 (-0.76)	-0.0007 (-0.63)	-0.0008 (-0.76)			
Δ Foreign Direct Investment	-0.0012*** (-2.87)	-0.0012*** (-2.75)	-0.0012*** (-2.87)	-0.0012*** (-2.75)			
Δ Credit Default Swap Spread	0.0001** (2.30)	0.0002*** (2.59)	0.0001** (2.30)	0.0002*** (2.59)			
Δ Yield Curve	-0.0093 (-0.81)	-0.0098 (-0.85)	-0.0093 (-0.81)	-0.0098 (-0.85)			
Bank Capital Ratio	-0.0022 (-1.13)	-0.0005 (-0.25)	-0.0022 (-1.13)	-0.0026 (-1.15)	-0.0087*** (-3.73)		
Bank Total Assets	-0.0010*** (-6.93)	-0.0009*** (-6.74)	-0.0010*** (-6.93)	-0.0009*** (-6.74)	-0.0001 (-0.44)		
Bank Liquidity Ratio	-0.0079*** (-10.36)	-0.0078*** (-10.16)	-0.0079*** (-10.36)	-0.0078*** (-10.16)	-0.0027*** (-3.11)		
Bank Return On Assets	0.0009 (0.47)	0.0021 (1.07)	0.0009 (0.47)	0.0021 (1.07)	0.0030 (1.48)		
Bank Doubtful Loan Ratio	-0.0174*** (-10.12)	-0.0178*** (-10.02)	-0.0174*** (-10.12)	-0.0178*** (-10.02)	0.0148*** (5.98)		
Credit Granted in Foreign Currency	-0.0029*** (-41.80)	-0.0029*** (-41.80)	-0.0027*** (-37.49)	-0.0031*** (-17.15)	-0.0031*** (-17.15)	-0.0027*** (-19.43)	-0.0020*** (-15.06)
Bank Capital Ratio * Credit Is Granted in Foreign Currency				0.0043*** (2.59)	0.0043*** (2.59)	0.0041*** (3.21)	0.0022* (1.90)
Firm Capital Ratio	0.0022*** (10.09)	0.0022*** (10.13)	0.0022*** (10.09)	0.0022*** (10.13)	0.0024*** (10.68)		
Firm Total Assets	-0.0003*** (-3.97)	-0.0003*** (-3.97)	-0.0003*** (-3.97)	-0.0003*** (-3.97)	-0.0002** (-2.18)		
Firm Liquidity Ratio	0.0012*** (4.43)	0.0012*** (4.41)	0.0012*** (4.43)	0.0012*** (4.41)	0.0012*** (4.37)		
Firm Return On Assets	0.0002*** (8.45)	0.0002*** (8.43)	0.0002*** (8.45)	0.0002*** (8.43)	0.0002*** (6.20)		
Firm Export Sales Ratio	-0.0005 (-1.20)	-0.0005 (-1.15)	-0.0005 (-1.20)	-0.0005 (-1.15)	-0.0004 (-0.96)		
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	--	--
Time Fixed Effects	No	No	No	No	Yes	--	--
Firm - Time Fixed Effects	No	No	No	No	No	Yes	Yes
Number of Observations	2,075,500	2,075,500	2,075,500	2,075,500	2,075,500	2,385,314	1,762,190
Percentage Point Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations)							
in Hungarian Forint or in Foreign Currency	-	0.0189	-	-	-	-	-
in Hungarian Forint	-	-	-	0.0290	0.0326	-	-
in Foreign Currency	-	-	-	0.0088	0.0125	-	-
Difference in Impact Between Foreign Currency and Hungarian Forint	-	-	-	-0.0201	-0.0201	-0.0175	-0.0101
Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.23%)							
in Hungarian Forint or in Foreign Currency	-	8%	-	-	-	-	-
in Hungarian Forint	-	-	-	13%	14%	-	-
in Foreign Currency	-	-	-	4%	5%	-	-
Difference in Impact Between Foreign Currency and Hungarian Forint	-	-	-	-9%	-9%	-8%	-4%
Aggregate Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit (in Percentage Points)							
in Hungarian Forint or in Foreign Currency	0.0025	0.0035	-	-	-	-	-
in Hungarian Forint	-	-	0.0034	0.0021	-	-	-
in Foreign Currency	-	-	-0.0017	0.0013	-	-	-

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in domestic (foreign) currency in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. "No" indicates that the set of fixed effects is not included. "--" indicates that the indicated set of fixed effects are comprised in the wider included set of fixed effects. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE A.VIII
THE GRANTING OF CREDIT IN DOMESTIC OR FOREIGN CURRENCY TO BORROWERS CURRENTLY WITHOUT CREDIT IN DOMESTIC OR FOREIGN CURRENCY (EXTENSIVE MARGIN), INTEREST RATE DIFFERENTIAL AS KEY INDEPENDENT VARIABLE

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<i>Bank Capital</i>		<i>High Swap Ratio Dummy</i>		<i>High Swap Ratio, In High Forward Premium Months</i>		<i>Bank Capital and High Swap Ratio Dummy</i>		<i>Bank Capital</i>	
<i>Sample</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>All Firms</i>	<i>Firms w Banks w Swap Ratio Below 33.3 pctl</i>	<i>Firms w Banks w Swap Ratio Below 33.3 pctl</i>
Δ EUR-HUF IR Diff * Credit Is Granted in Euro	-0.0377*** (-5.64)		-0.0027 (-0.75)		-0.0078 (-1.55)		-0.0830*** (-5.56)		-0.0062 (-0.44)	
Δ EUR-HUF IR Diff * Credit Is Granted in Swiss Franc	-0.0357*** (-5.39)		-0.0024 (-0.68)		-0.0045 (-0.92)		-0.0817*** (-5.58)		-0.0087 (-0.63)	
Δ EUR-HUF IR Diff *Credit Is Granted in Euro * Bank Capital Ratio	0.3138*** (5.11)						0.7303*** (6.25)		0.1139 (1.07)	
Δ EUR-HUF IR Diff * Credit Is Granted in Swiss Franc * Bank Capital Ratio	0.3017*** (4.95)						0.7203*** (6.27)		0.1263 (1.21)	
Δ EUR-HUF IR Diff *Credit Is Granted in Euro * Above Median Gross Swap Ratio			-0.0124** (-2.40)		-0.0487*** (-6.00)		0.0751*** (4.34)			
Δ EUR-HUF IR Diff * Credit Is Granted in Swiss Franc * Above Median Gross Swap Ratio			-0.0106** (-2.08)		-0.0466*** (-5.80)		0.0762*** (4.46)			
Δ EUR-HUF Interest Rate Diff *Credit Is Granted in Euro * Bank Capital Ratio * Above Median Gross Swap Ratio							-0.8112*** (-4.98)			
Δ EUR-HUF Interest Rate Diff * Credit Is Granted in Swiss Franc * Bank Capital Ratio * Above Median Gross Swap Ratio							-0.7968*** (-4.89)			
Δ CHF-HUF Interest Rate Diff * Credit Is Granted in Euro		-0.0439*** (-6.68)		-0.0053 (-1.51)		-0.0090* (-1.77)		-0.0867*** (-5.94)		-0.0086 (-0.64)
Δ CHF-HUF Interest Rate Diff * Credit Is Granted in Swiss Franc		-0.0409*** (-6.27)		-0.0040 (-1.16)		-0.0055 (-1.10)		-0.0839*** (-5.87)		-0.0103 (-0.77)
Δ CHF-HUF Interest Rate Diff * Credit Is Granted in Euro * Bank Capital Ratio		0.3402*** (5.65)						0.7490*** (6.55)		0.1268 (1.23)
Δ CHF-HUF Interest Rate Diff * Credit Is Granted in Swiss Franc * Bank Capital Ratio		0.3266*** (5.47)						0.7333*** (6.53)		0.1352 (1.34)
Δ CHF-HUF Interest Rate Diff *Credit Is Granted in Euro * Above Median Gross Swap Ratio				-0.0147*** (-2.93)		-0.0535*** (-6.49)		0.0715*** (4.20)		
Δ CHF-HUF Interest Rate Diff * Credit Is Granted in Swiss Franc * Above Median Gross Swap Ratio				-0.0129*** (-2.61)		-0.0512*** (-6.25)		0.0717*** (4.26)		
Δ CHF-HUF Interest Rate Diff *Credit Is Granted in Euro * Bank Capital Ratio * Above Median Gross Swap Ratio								-0.7965*** (-4.94)		
Δ CHF-HUF Interest Rate Diff * Credit Is Granted in Swiss Franc * Bank Capital Ratio * Above Median Gross Swap Ratio								-0.7719*** (-4.79)		
Δ GDP * Credit Is Granted in Euro	-0.0303*** (-7.21)	-0.0312*** (-8.00)	-0.0246*** (-9.88)	-0.0239*** (-10.37)	-0.0215*** (-7.08)	-0.0216*** (-7.59)	-0.0421*** (-4.63)	-0.0472*** (-5.62)	-0.0219** (-2.31)	-0.0218** (-2.50)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Euro	0.0492 (1.20)	0.0647* (1.69)					0.1696** (2.43)	0.2214*** (3.43)	0.0505 (0.73)	0.0574 (0.91)
Δ GDP * Bank with above median gross swap ratio * Credit Is Granted in Euro			-0.0014 (-0.40)	-0.0018 (-0.56)	0.0016 (0.38)	-0.0011 (-0.27)	0.0309*** (2.80)	0.0382*** (3.68)		
Δ GDP * Bank capital ratio * Credit Is Granted in Euro * Above Median Gross Swap Ratio							-0.3839***	0.0245**		

Δ GDP * Credit Is Granted in Swiss Franc	-0.0153*** (-3.69)	-0.0164*** (-4.27)	-0.0173*** (-7.03)	-0.0169*** (-7.45)	-0.0165*** (-5.59)	-0.0164*** (-5.94)	(-3.28) -0.0218** (-2.41)	(2.39) -0.0276*** (-3.31)	-0.0168* (-1.71)	-0.0172* (-1.91)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Swiss Franc	-0.0174 (-0.43)	-0.0021 (-0.05)					0.0523 (0.75)	-0.4617*** (-4.08)	0.0355 (0.50)	0.0451 (0.69)
Δ GDP * Bank with above median gross swap ratio * Credit Is Granted in Swiss Franc			0.0019 (0.57)	0.0017 (0.55)	0.0045 (1.12)	0.0020 (0.53)	0.0166 (1.53)	0.1068* (1.67)		
Δ GDP *Credit Is Granted in Swiss Franc * Bank capital ratio * Above Median Gross Swap Ratio							-0.1984* (-1.73)	-0.2785** (-2.52)		
Δ CPI * Credit Is Granted in Euro	0.0215*** (3.98)	0.0208*** (3.91)	-0.0021 (-0.70)	-0.0023 (-0.79)	0.0110 (1.60)	0.0106 (1.58)	0.0565*** (5.43)	0.0536*** (5.22)	0.0093 (0.82)	0.0091 (0.81)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Euro	-0.2339*** (-4.73)	-0.2286*** (-4.67)					-0.5383*** (-6.37)	-0.5152*** (-6.18)	-0.1316 (-1.42)	-0.1286 (-1.40)
Δ CPI * Bank with above median gross swap ratio * Credit Is Granted in Euro			0.0032 (0.70)	0.0034 (0.74)	0.0593*** (5.54)	0.0591*** (5.61)	-0.0511*** (-4.13)	-0.0471*** (-3.84)		
Δ CPI * Bank capital ratio * Credit Is Granted in Euro * Above Median Gross Swap Ratio							0.4525*** (3.91)	0.4141*** (3.59)		
Δ CPI * Credit Is Granted in Swiss Franc	0.0260*** (4.76)	0.0253*** (4.69)	0.0050 (1.61)	0.0049 (1.57)	0.0121* (1.77)	0.0119* (1.77)	0.0750*** (7.14)	0.0723*** (6.98)	0.0130 (1.23)	0.0129 (1.24)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Swiss Franc	-0.2364*** (-4.77)	-0.2303*** (-4.70)					-0.6410*** (-7.60)	-0.6197*** (-7.44)	-0.1362 (-1.60)	-0.1343 (-1.59)
Δ CPI * Bank with above median gross swap ratio * Credit Is Granted in Swiss Franc			-0.0022 (-0.47)	-0.0021 (-0.46)	0.0558*** (5.23)	0.0555*** (5.29)	-0.0711*** (-5.72)	-0.0676*** (-5.50)		
Δ CPI *Credit Is Granted in Swiss Franc * Bank capital ratio * Above Median Gross Swap Ratio							0.6011*** (5.26)	0.5691*** (5.00)		
Credit Granted in Euro	-0.0035*** (-25.47)	-0.0035*** (-24.95)	-0.0029*** (-35.91)	-0.0028*** (-35.21)	-0.0027*** (-17.92)	-0.0027*** (-17.59)	-0.0060*** (-21.90)	-0.0059*** (-21.38)	-0.0018*** (-20.04)	-0.0018*** (-19.84)
Credit Granted in Euro * Bank capital ratio	0.0074*** (5.95)	0.0070*** (5.57)					0.0276*** (13.17)	0.0266*** (12.70)		
Credit Granted in Euro * Above Median Gross Swap Ratio			0.0000 (0.31)	0.0001 (0.55)	0.0005** (2.30)	0.0006*** (2.76)	0.0037*** (10.64)	0.0036*** (10.28)		
Credit Granted in Euro * Bank capital ratio * Above Median Gross Swap Ratio							-0.0337*** (-9.64)	-0.0321*** (-9.18)		
Credit Granted in Swiss Franc	-0.0035*** (-25.81)	-0.0034*** (-25.32)	-0.0027*** (-34.28)	-0.0027*** (-33.65)	-0.0027*** (-18.42)	-0.0027*** (-18.08)	-0.0056*** (-20.79)	-0.0055*** (-20.27)	-0.0017*** (-18.73)	-0.0017*** (-18.56)
Credit Granted in Swiss Franc * Bank capital ratio	0.0073*** (5.98)	0.0069*** (5.59)					0.0257*** (12.39)	0.0247*** (11.91)		
Credit Granted in Swiss Franc * Bank with above median gross swap ratio			-0.0001 (-1.19)	-0.0001 (-0.96)	0.0003 (1.40)	0.0004* (1.85)	0.0035*** (10.14)	0.0034*** (9.79)		
Credit Granted in Swiss Franc * Bank capital ratio * Bank with above median gross swap ratio							-0.0347*** (-10.06)	-0.0333*** (-9.63)		
Firm - Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	3,577,971	3,577,971	3,541,428	3,541,428	1,466,622	1,466,622	3,541,428	3,541,428	800724	800724
Difference in Impact of a Decrease in Interest Rate Differential by 25 bps on the Likelihood of Granting First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) As Percent of Unconditional Probability of Granting First-Time Credit (=0.16%) in Sample										
<i>Difference in Impact Between Euro and Hungarian Forint</i>	0.0232	0.0252							0.0084	0.0094
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	0.0223	0.0242							0.0093	0.0100
Difference in Impact of a Decrease in Interest Rate Differential by 25 bps on the Likelihood of Granting First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) As Percent of Unconditional Probability of Granting First-Time Credit (=0.16%) in Sample										
<i>Difference in Impact Between Euro and Hungarian Forint</i>	15%	16%							5%	6%

<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	14%	15%		6%	6%
Difference in Impact of a Decrease in Interest Rate Differential by 25 bps on the Likelihood of Granting First-Time Credit by Below and Above Median Gross Swap Ratio Banks As Percent of Unconditional Probability of Granting First-Time Credit (=0.16%) in Sample					
<i>Difference in Impact Between Euro and Hungarian Forint</i>	-0.0031	-0.0037	-0.0122	-0.0134	
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	-0.0027	-0.0032	-0.0117	-0.0128	
Percentage Point Difference in Impact of a Decrease in Interest Rate Differential by 25 bps on the Likelihood of Granting First-Time Credit by Below versus Above Median Swap Ratio Banks (Δ =2 Standard Deviations)					
<i>Difference in Impact Between Euro and Hungarian Forint</i>	-2%	-2%	-8%	-8%	
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	-2%	-2%	-7%	-8%	
Percentage Point Difference in Impact of a Decrease in Interest Rate Differential by 25 bps on the Likelihood of Granting First-Time Credit by Below versus Above Median Swap Ratio Banks (Δ =2 Standard Deviations)					
<i>Banks with Below Median Gross Swap Ratio</i>					
<i>Difference in Impact Between Euro and Hungarian Forint</i>			0.0540	0.0554	
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>			0.0533	0.0543	
<i>Banks with Above Median Gross Swap Ratio</i>					
<i>Difference in Impact Between Euro and Hungarian Forint</i>			-0.0438	-0.0441	
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>			-0.0425	-0.0419	
Difference in Impact of a Decrease in Interest Rate Differential by 25 bps on the Likelihood of Granting First-Time Credit by Lower versus Higher Capitalized Banks (Δ =2 Standard Deviations) As Percent of Unconditional Probability of Granting First-Time Credit (=0.16%) in Sample					
<i>Banks with Below Median Gross Swap Ratio</i>					
<i>Difference in Impact Between Euro and Hungarian Forint</i>			34%	35%	
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>			34%	34%	
<i>Banks with Above Median Gross Swap Ratio</i>					
<i>Difference in Impact Between Euro and Hungarian Forint</i>			-28%	-28%	
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>			-27%	-26%	

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in domestic (foreign) currency in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. The variable Bank with Above Median Gross Swap Ratio is a dummy which equals one if the gross swap ratio of the bank (i.e., the ratio of gross HUF short open swap volume to total bank assets) is above the median gross swap ratio. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE A.IX
THE GRANTING OF CREDIT IN HUNGARIAN FORINT, EURO, OR SWISS FRANC TO BORROWERS CURRENTLY WITHOUT CREDIT IN THOSE CURRENCIES (EXTENSIVE MARGIN)

	Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Sample	All Firms	All Firms	All Firms	All Firms	All Firms	All Firms	Single-Bank Firms
Δ Interest Rate		-0.0059*** (-2.92)	-0.0216*** (-6.19)	-0.0104*** (-3.27)	-0.0461*** (-6.15)			
Δ Interest Rate * Bank Capital Ratio			0.1657*** (5.90)		0.3752*** (5.45)	0.4099*** (5.94)		
Δ Interest Rate * Credit Is Granted in Euro				0.0066** (2.40)	0.0369*** (4.92)	0.0369*** (4.92)	0.0322*** (5.08)	0.0153** (2.45)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Euro					-0.3176*** (-4.53)	-0.3176*** (-4.53)	-0.2763*** (-4.74)	-0.1614*** (-2.81)
Δ Interest Rate * Credit Is Granted in Swiss Franc				0.0068** (2.50)	0.0365*** (4.92)	0.0365*** (4.92)	0.0321*** (5.11)	0.0180*** (2.95)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Swiss Franc					-0.3108*** (-4.47)	-0.3108*** (-4.47)	-0.2734*** (-4.72)	-0.1814*** (-3.21)
Δ GDP		0.0016 (0.59)	0.0059* (1.85)	0.0195*** (6.33)	0.0325*** (6.76)			
Δ GDP * Bank Capital Ratio			-0.0473*** (-2.69)		-0.1391*** (-3.43)	-0.1061*** (-2.63)		
Δ GDP * Credit Is Granted in Euro				-0.0323*** (-19.92)	-0.0493*** (-11.49)	-0.0493*** (-11.49)	-0.0430*** (-11.71)	-0.0290*** (-8.52)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Euro					0.1811*** (4.27)	0.1811*** (4.27)	0.1530*** (4.24)	0.1142*** (3.46)
Δ GDP * Credit Is Granted in Swiss Franc				-0.0215*** (-13.80)	-0.0308*** (-7.33)	-0.0308*** (-7.33)	-0.0271*** (-7.55)	-0.0211*** (-6.39)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Swiss Franc					0.0943** (2.26)	0.0943** (2.26)	0.0812** (2.29)	0.0746** (2.32)
Δ CPI		0.0025 (1.47)	-0.0053* (-1.80)	0.0026 (0.95)	-0.0203*** (-3.08)			
Δ CPI * Bank Capital Ratio			0.0825*** (3.48)		0.2436*** (3.88)	0.2414*** (3.82)		
Δ CPI * Credit Is Granted in Euro				-0.0028 (-1.13)	0.0197*** (2.91)	0.0197*** (2.91)	0.0150*** (2.97)	0.0037 (0.83)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Euro					-0.2382*** (-3.61)	-0.2382*** (-3.61)	-0.1789*** (-3.81)	-0.0642* (-1.68)
Δ CPI * Credit Is Granted in Swiss Franc				0.0024 (0.94)	0.0253*** (3.73)	0.0253*** (3.73)	0.0198*** (3.89)	0.0064 (1.42)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Swiss Franc					-0.2451*** (-3.73)	-0.2451*** (-3.73)	-0.1833*** (-3.93)	-0.0628 (-1.62)
Credit Granted in Euro		-0.0034*** (-50.65)	-0.0034*** (-50.65)	-0.0031*** (-45.26)	-0.0038*** (-21.65)	-0.0038*** (-21.65)	-0.0034*** (-24.66)	-0.0024*** (-18.79)
Bank Capital Ratio * Credit Is Granted in Euro					0.0072*** (4.38)	0.0072*** (4.38)	0.0066*** (5.27)	0.0039*** (3.43)
Credit Granted in Swiss Franc		-0.0033*** (-50.79)	-0.0033*** (-50.79)	-0.0031*** (-46.17)	-0.0038*** (-21.99)	-0.0038*** (-21.99)	-0.0034*** (-24.96)	-0.0023*** (-18.50)
Bank Capital Ratio * Credit Is Granted in Swiss Franc					0.0072*** (4.43)	0.0072*** (4.43)	0.0065*** (5.32)	0.0038*** (3.39)
Macroeconomic Variables	Yes	Yes	Yes	Yes	Yes	No	No	No
Bank Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	--	--
Time Fixed Effects	No	No	No	No	No	Yes	--	--
Firm - Time Fixed Effects	No	No	No	No	No	No	Yes	Yes
Number of Observations		3,113,250	3,113,250	3,113,250	3,113,250	3,113,250	3,577,971	2,643,285
<i>Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in The Sample (= 0.16%)</i>								
<i>in Hungarian Forint or in Foreign Currency</i>			8%	-	-	-	-	-
<i>in Hungarian Forint</i>	-	-	-	-	17%	19%	-	-
<i>In Euro</i>	-	-	-	-	3%	4%	-	-
<i>in Swiss Franc</i>	-	-	-	-	3%	5%	-	-
<i>Difference in Impact Between Euro and Hungarian Forint</i>	-	-	-	-	-15%	-15%	-13%	-8%
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	-	-	-	-	-14%	-14%	-13%	-8%

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in Hungarian Forint / Euro / Swiss Franc in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. "No" indicates that the set of fixed effects is not included. "--" indicates that the indicated set of fixed effects are comprised in the wider included set of fixed effects. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE A.X
THE REPAYMENT OF CREDIT BY BORROWERS WITH CREDIT IN HUNGARIAN FORINT, EURO, AND SWISS FRANC (NEGATIVE EXTENSIVE MARGIN) AND THE INCREASE IN THE AMOUNT OF CREDIT BORROWERS HOLD IN HUNGARIAN FORINT, EURO, OR SWISS FRANC (INTENSIVE MARGIN)

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	ENDING CREDIT (NEGATIVE EXTENSIVE MARGIN)				INCREASE IN THE AMOUNT OF CREDIT (INTENSIVE MARGIN)			
Sample	All Firms	All Firms	All Firms	Single-Bank Firms	All Firms with Debt	All Firms with Debt	All Firms with Debt	Single-Bank Firms with Debt
Δ Interest Rate	0.0409** (2.03)				-7.6748*** (-9.68)			
Δ Interest Rate * Bank Capital Ratio	-0.3213 (-1.62)	-0.3179 (-1.61)			52.0331*** (6.39)	54.7108*** (6.72)		
Δ Interest Rate * Credit Is Granted in Euro	-0.0456** (-2.17)	-0.0456** (-2.17)	-0.0454** (-2.21)	-0.0663** (-2.57)	5.6628*** (6.49)	5.6628*** (6.49)	5.0372*** (5.11)	6.3453*** (4.76)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Euro	0.4262** (2.00)	0.4262** (2.00)	0.4192** (2.01)	0.5779** (2.32)	-37.9215*** (-4.08)	-37.9215*** (-4.08)	-30.4082*** (-2.91)	-46.5860*** (-3.31)
Δ Interest Rate * Credit Is Granted in Swiss Franc	-0.0318 (-1.49)	-0.0318 (-1.49)	-0.0311 (-1.49)	-0.0346 (-1.31)	6.9379*** (8.28)	6.9379*** (8.28)	6.2875*** (6.52)	6.7539*** (5.16)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Swiss Franc	0.2994 (1.39)	0.2994 (1.39)	0.2953 (1.41)	0.2792 (1.11)	-48.1026*** (-5.42)	-48.1026*** (-5.42)	-40.0153*** (-3.93)	-47.6465*** (-3.44)
Δ GDP	0.0317** (2.07)				-1.7459* (-1.93)			
Δ GDP * Bank Capital Ratio	-0.1373 (-0.94)	-0.1845 (-1.26)			5.6942 (0.62)	2.0540 (0.22)		
Δ GDP * Credit Is Granted in Euro	-0.0266* (-1.79)	-0.0266* (-1.79)	-0.0244* (-1.70)	-0.0220 (-1.25)	0.3187 (0.33)	0.3187 (0.33)	0.7018 (0.69)	0.8548 (0.69)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Euro	0.2063 (1.33)	0.2063 (1.33)	0.1770 (1.19)	0.1836 (1.07)	-8.8237 (-0.85)	-8.8237 (-0.85)	-13.4830 (-1.26)	-10.2533 (-0.79)
Δ GDP * Credit Is Granted in Swiss Franc	-0.0429*** (-2.81)	-0.0429*** (-2.81)	-0.0427*** (-2.91)	-0.0308* (-1.69)	-2.0034** (-2.16)	-2.0034** (-2.16)	-1.5089 (-1.53)	-1.0546 (-0.82)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Swiss Franc	0.2228 (1.39)	0.2228 (1.39)	0.2165 (1.41)	0.1869 (1.04)	5.0334 (0.51)	5.0334 (0.51)	-0.9593 (-0.09)	0.9694 (0.07)
Δ CPI	-0.0868*** (-4.48)				0.5803 (1.23)			
Δ CPI * Bank Capital Ratio	0.8733*** (4.22)	0.8453*** (4.09)			-6.6477 (-1.40)	-8.2849* (-1.75)		
Δ CPI * Credit Is Granted in Euro	0.1006*** (4.82)	0.1006*** (4.82)	0.0943*** (4.97)	0.0547*** (2.82)	-1.0919** (-2.05)	-1.0919** (-2.05)	-1.0937* (-1.96)	-0.7045 (-0.91)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Euro	-0.8884*** (-3.93)	-0.8884*** (-3.93)	-0.8250*** (-4.04)	-0.4437** (-2.40)	4.9790 (0.88)	4.9790 (0.88)	4.4662 (0.77)	5.4877 (0.68)
Δ CPI * Credit Is Granted in Swiss Franc	0.0876*** (4.35)	0.0876*** (4.35)	0.0792*** (4.27)	0.0257 (1.31)	-1.8246*** (-3.68)	-1.8246*** (-3.68)	-1.7538*** (-3.32)	-1.1070 (-1.45)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Swiss Franc	-0.9010*** (-4.17)	-0.9010*** (-4.17)	-0.8134*** (-4.11)	-0.2406 (-1.29)	11.4883** (2.20)	11.4883** (2.20)	10.0056* (1.83)	6.9756 (0.87)
Δ Exchange Rate					-0.5508** (-2.09)			
Δ Exchange Rate * Bank Capital Ratio					8.2266*** (2.90)	7.3598*** (2.60)		
Δ Exchange Rate * Credit Is Granted in Euro					0.7712*** (2.70)	0.7712*** (2.70)	0.8187*** (2.63)	0.6742* (1.74)
Δ Exchange Rate * Bank Capital Ratio * Credit Is Granted in Euro					-9.5901*** (-3.12)	-9.5901*** (-3.12)	-10.1566*** (-3.07)	-10.6347*** (-2.58)
Δ Exchange Rate * Credit Is Granted in Swiss Franc					0.9366*** (3.41)	0.9366*** (3.41)	0.9661*** (3.21)	0.9504** (2.43)
Δ Exchange Rate * Bank Capital Ratio * Credit Is Granted in Swiss Franc					-10.8045*** (-3.67)	-10.8045*** (-3.67)	-11.1798*** (-3.51)	-13.0164*** (-3.13)
Credit Granted in Euro	-0.0084*** (-15.74)	-0.0084*** (-15.74)	-0.0084*** (-17.32)	-0.0094*** (-16.09)	-0.5320*** (-18.75)	-0.5320*** (-18.75)	-0.5607*** (-18.13)	-0.2304*** (-4.07)
Bank Capital Ratio * Credit Is Granted in Euro	0.0168*** (3.05)	0.0168*** (3.05)	0.0163*** (3.32)	0.0258*** (4.64)	-1.9260*** (-6.27)	-1.9260*** (-6.27)	-1.4926*** (-4.50)	-3.3657*** (-5.37)
Credit Granted in Swiss Franc	-0.0082*** (-15.70)	-0.0082*** (-15.70)	-0.0081*** (-17.09)	-0.0087*** (-15.03)	-0.4638*** (-17.01)	-0.4638*** (-17.01)	-0.4966*** (-16.19)	-0.1804*** (-3.11)
Bank Capital Ratio * Credit Is Granted in Swiss Franc	0.0161*** (2.98)	0.0161*** (2.98)	0.0156*** (3.20)	0.0226*** (4.09)	-2.3382*** (-7.98)	-2.3382*** (-7.98)	-1.8564*** (-5.67)	-3.5469*** (-5.53)
Macroeconomic Variables	Yes	No	No	No	Yes	No	No	No
Bank Characteristics	Yes	Yes	No	No	Yes	Yes	No	No
Firm Characteristics	Yes	Yes	No	No	Yes	Yes	No	No
Firm Fixed Effects	Yes	Yes	--	--	Yes	Yes	--	--
Time Fixed Effects	No	Yes	--	--	No	Yes	--	--
Firm - Time Fixed Effects	No	No	Yes	Yes	No	No	Yes	Yes
Number of Observations	1,117,353	1,117,353	1,160,565	617,775	3,690,021	3,690,021	3,766,593	1,754,097
<i>Difference in Impact of a Decrease in Interest Rate by 25 bps on the Likelihood of Ending Credit and Increasing the Amount of Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations) As Percent of Unconditional Probability of Ending Credit (=0.12%) and Logarithm of the Increase in The Amount of Credit (=0.35) in Sample</i>								
in Hungarian Forint	-19%	-19%	-	-	11%	11%	-	-
in Euro	6%	7%	-	-	3%	4%	-	-
in Swiss Franc	-1%	-1%	-	-	1%	1%	-	-
<i>Difference in Impact Between Euro and Hungarian Forint</i>	26%	26%	25%	35%	8%	8%	4%	10%
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	18%	18%	18%	17%	10%	10%	8%	10%

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable Ending Credit is a dummy that equals one if the firm has no more credit in Hungarian Forint / Euro / Swiss Franc in a particular year:month conditional on having had credit in this currency in the month before and equals zero otherwise. The dependent variable Increase in the Amount of Credit is the logarithm of the increase in the amount of credit in Hungarian Forint / Euro / Swiss Franc (loans denominated in foreign currency are converted to Hungarian Forint by using the average exchange rate during the 2005:01-2008:08 period). Regression in Columns 1 to 4 are based on the 10% random sample and covers the 2005:01-2011:12 period, regression in column 5 to 8 are based on the entire sample and covers the 2005:01-2008:08 period. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. "No" indicates that the set of fixed effects is not included. "--" indicates that the indicated set of fixed effects are comprised in the wider included set of fixed effects. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

TABLE A.XI

THE GRANTING OF CREDIT IN HUNGARIAN FORINT, EURO, AND SWISS FRANC TO BORROWERS CURRENTLY WITHOUT CREDIT IN THOSE CURRENCIES
(EXTENSIVE MARGIN), EFFECTS OF EURO AND SWISS FRANC INTEREST RATES

	Model <i>Sample</i>	(1) <i>All Firms</i>	(2) <i>Single-Bank</i>	(3) <i>All Firms</i>	(4) <i>Single-Bank</i>
Δ Interest Rate * Credit Is Granted in Euro		0.0393*** (5.81)	0.0226*** (3.44)	0.0427*** (6.50)	0.0249*** (3.85)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Euro		-0.3157*** (-5.12)	-0.1973*** (-3.35)	-0.3237*** (-5.39)	-0.2083*** (-3.55)
Δ Interest Rate * Credit Is Granted in Swiss Franc		0.0364*** (5.44)	0.0230*** (3.55)	0.0397*** (6.11)	0.0256*** (4.04)
Δ Interest Rate * Bank Capital Ratio * Credit Is Granted in Swiss Franc		-0.3037*** (-4.96)	-0.2065*** (-3.56)	-0.3126*** (-5.25)	-0.2212*** (-3.82)
Δ Interest Rate in Euro Area * Credit Is Granted in Euro		-0.1256*** (-4.17)	-0.1224*** (-4.35)		
Δ Interest Rate in Euro Area * Bank Capital Ratio * Credit Is Granted in Euro		0.7838*** (3.03)	0.6848*** (2.96)		
Δ Interest Rate in Euro Area * Credit Is Granted in Swiss Franc		-0.0761** (-2.52)	-0.0827*** (-2.92)		
Δ Interest Rate in Euro Area * Bank Capital Ratio * Credit Is Granted in Swiss Franc		0.5637** (2.21)	0.4735** (2.06)		
Δ Interest Rate in Switzerland * Credit Is Granted in Euro				-0.3554*** (-10.63)	-0.3304*** (-9.84)
Δ Interest Rate in Switzerland * Bank Capital Ratio * Credit Is Granted in Euro				1.7480*** (6.18)	1.7152*** (6.14)
Δ Interest Rate in Switzerland * Credit Is Granted in Swiss Franc				-0.2632*** (-7.76)	-0.2634*** (-7.63)
Δ Interest Rate in Switzerland * Bank Capital Ratio * Credit Is Granted in Swiss Franc				1.4674*** (5.24)	1.4626*** (5.17)
Δ GDP * Credit Is Granted in Euro		-0.0019 (-0.17)	0.0113 (1.10)	0.0437*** (4.85)	0.0516*** (5.88)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Euro		-0.1013 (-1.02)	-0.1111 (-1.27)	-0.2705*** (-3.39)	-0.3030*** (-4.00)
Δ GDP * Credit Is Granted in Swiss Franc		-0.0023 (-0.21)	0.0062 (0.59)	0.0369*** (3.99)	0.0431*** (4.78)
Δ GDP * Bank Capital Ratio * Credit Is Granted in Swiss Franc		-0.1011 (-1.02)	-0.0811 (-0.93)	-0.2726*** (-3.41)	-0.2804*** (-3.66)
Δ CPI * Credit Is Granted in Euro		0.0378*** (5.19)	0.0257*** (3.97)	0.0701*** (9.32)	0.0549*** (7.65)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Euro		-0.3231*** (-4.83)	-0.1889*** (-3.44)	-0.4566*** (-6.73)	-0.3352*** (-5.51)
Δ CPI * Credit Is Granted in Swiss Franc		0.0335*** (4.62)	0.0213*** (3.29)	0.0606*** (8.04)	0.0472*** (6.48)
Δ CPI * Bank Capital Ratio * Credit Is Granted in Swiss Franc		-0.2859*** (-4.34)	-0.1488*** (-2.71)	-0.4153*** (-6.20)	-0.2932*** (-4.74)
Credit Granted in Euro		-0.0038*** (-23.56)	-0.0028*** (-18.21)	-0.0039*** (-25.97)	-0.0029*** (-19.90)
Bank Capital Ratio * Credit Is Granted in Euro		0.0089*** (6.56)	0.0060*** (4.71)	0.0088*** (6.72)	0.0063*** (5.07)
Credit Granted in Swiss Franc		-0.0036*** (-22.74)	-0.0026*** (-17.02)	-0.0038*** (-25.27)	-0.0027*** (-18.83)
Bank Capital Ratio * Credit Is Granted in Swiss Franc		0.0081*** (6.16)	0.0052*** (4.21)	0.0083*** (6.52)	0.0058*** (4.79)
Firm - Time Fixed Effects		Yes	Yes	Yes	Yes
Number of Observations		3,577,971	2,643,285	3,577,971	2,643,285
<i>Percentage Point Difference in Impact of a Decrease in Forint Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks (Δ=2 Standard Deviations)</i>					
<i>Difference in Impact Between Euro and Hungarian Forint</i>		-0.0234	-0.0146	-0.0239	-0.0154
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>		-0.0225	-0.0153	-0.0231	-0.0164

Percentage Point Difference in Impact of a Decrease in Forint Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks ($\Delta=2$ Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.16%)

<i>Difference in Impact Between Euro and Hungarian Forint</i>	-15%	-9%	-15%	-10%
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	-14%	-10%	-15%	-10%

Percentage Point Difference in Impact of a Decrease in Euro Area Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks ($\Delta=2$ Standard Deviations)

<i>Difference in Impact Between Euro and Hungarian Forint</i>	0.058	0.051	-	-
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	0.042	0.035	-	-
<i>Difference in Impact Between Hungarian Forint and Swiss Franc</i>	-0.042	-0.035	-	-
<i>Difference in Impact Between Euro and Swiss Franc</i>	-0.016	-0.016	-	-

Difference in Impact of a Decrease in Euro Area Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks ($\Delta=2$ Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.16%)

<i>Difference in Impact Between Euro and Hungarian Forint</i>	36%	32%	-	-
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	26%	22%	-	-
<i>Difference in Impact Between Hungarian Forint and Swiss Franc</i>	-26%	-22%	-	-
<i>Difference in Impact Between Euro and Swiss Franc</i>	-10%	-10%	-	-

Percentage Point Difference in Impact of a Decrease in Swiss Franc Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks ($\Delta=2$ Standard Deviations)

<i>Difference in Impact Between Euro and Hungarian Forint</i>	-	-	0.129	0.127
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	-	-	0.109	0.108
<i>Difference in Impact Between Hungarian Forint and Swiss Franc</i>	-	-	-0.109	-0.108
<i>Difference in Impact Between Euro and Swiss Franc</i>	-	-	-0.021	-0.019

Difference in Impact of a Decrease in Swiss Franc Interest Rate by 25 bps on the Likelihood of Granting of First-Time Credit by Lower versus Higher Capitalized Banks ($\Delta=2$ Standard Deviations) as Percent of Unconditional Probability of Granting First-Time Credit in Sample (= 0.16%)

<i>Difference in Impact Between Euro and Hungarian Forint</i>	-	-	81%	80%
<i>Difference in Impact Between Swiss Franc and Hungarian Forint</i>	-	-	68%	68%
<i>Difference in Impact Between Hungarian Forint and Swiss Franc</i>	-	-	-68%	-68%
<i>Difference in Impact Between Euro and Swiss Franc</i>	-	-	-13%	-12%

NOTE. -- The table reports estimates from ordinary least squares regressions. The dependent variable is a dummy that equals one if the firm is granted credit in Hungarian Forint / Euro / Swiss Franc in a particular year:month conditional on having received no credit in this currency in the month before and equals zero otherwise. All independent variables are either lagged one month or calculated over the preceding month. Table II lists the definition of all variables. Coefficients are listed in the first row, t-statistics based on robust standard errors clustered at the firm level are reported in the row below in parentheses, and the corresponding significance levels are in the adjacent column. "Yes" indicates that the set of fixed effects is included. "No" indicates that the set of fixed effects is not included. "--" indicates that the indicated set of fixed effects are comprised in the wider included set of fixed effects. Time Fixed Effects include an effect for every year:month. *** Significant at 1%, ** significant at 5%, * significant at 10%.

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