

# Lending by Example': Direct and Indirect Effects of Foreign Banks in Emerging Markets

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## Abstract

Using a novel dataset that allows us to trace the bank relationships of a sample of mostly unlisted firms, we explore which borrowers are able to benefit from foreign bank presence in emerging markets. Our results suggest that the limits to financial integration are less tight than the static picture of firm-bank relationships implies. Even though foreign banks are more likely to engage large and foreign-owned firms, after an acquisition, a bank is 20 percent less likely to terminate a relationship with a firm if the acquirer is foreign rather than domestic. Most importantly, within a credit market, firms appear to have the same access to financial loans and ability to invest whether they borrow from a foreign bank or not, while foreign banks benefit all firms by indirectly enhancing credit access.

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Keywords: foreign bank lending, emerging markets, competition, lending relationships

JEL Classifications: F3, G21, L11, L14

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# **“Lending by Example”: Direct and Indirect Effects of Foreign Banks in Emerging Markets \***

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## **Abstract**

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## 1. Introduction

Capital inflows and entry of foreign financial intermediaries can play an important role in the development of a country's financial system by contributing both investment funds and financial expertise. However, the literature has raised concerns about the limits to financial integration. For instance, only large and visible firms appear to enjoy a reduction in the cost of capital after equity market liberalizations (Chari and Henry (2004)). In environments with high levels of asymmetric information and weak investor protection, agency problems may hamper not only the possibility of issuing equity to foreign investors, but also the banks' ability to lend even in the presence of large amounts of funds (Khwaja, Mian and Zia (2010)).

Foreign banks may be even more reluctant than domestic financial intermediaries to lend to opaque borrowers. Warnings about the threat that foreign banks may pose for the domestic banking system have been issued in academic and policy circles alike (Stiglitz (2002)). Foreign banks could poach depositors and safe borrowers from domestic banks while remaining unwilling to lend to local entrepreneurial firms. In addition, foreign acquisitions could disperse the "soft" information local lenders have accumulated.

These concerns are not mitigated by empirical evidence showing that foreign banks are more inclined to lend to large firms with foreign owners. However, firms do not need to directly access foreign banks to benefit from financial integration, because foreign entry can provoke changes in the host countries' credit market that potentially affect all firms positively. By poaching more creditworthy and transparent borrowers, foreign banks may induce domestic banks to increase lending to opaque firms (Dell'Ariccia and Marquez (2004)). Additionally, competition may force domestic banks to reduce costs in order to maintain market share (Claessens, Demirgüç-Kunt and Huizinga (2001)). Domestic banks may also be spurred to select borrowers more judiciously, if the intensification of competition prevents them from earning rents from creditworthy firms to subsidize connected borrowers. More in general, the removal of restrictions to foreign banks sharpens the threat of takeovers for domestic banks. This threat may discipline managers to improve their lending policies.

In this paper, we take a fresh look at these crucial issues by studying a novel dataset that reveals the bank relationships for a representative sample of mostly unlisted firms

located in a set of emerging markets in which foreign bank presence substantially changed during the sample period. Hence, we are able to uncover which firms establish relationships with foreign banks and whether relationships are terminated after a foreign acquisition. Crucially, we can also explore to what extent direct access to foreign lending affects firm financing and performance.

We find that large and foreign-owned firms are indeed more likely to establish relationships with foreign banks. This is consistent with the notion that foreign banks "cherry-pick" their customers and that large sectors of the economy remain excluded from foreign lending. However, relationships with foreign banks are less likely to be terminated than relationships with other banks, even during the first three years after the acquisition of a domestic bank when restructuring of the loan portfolio is likely to take place. Then an acquired bank is 20 percent less likely to terminate a relationship with a firm if the acquirer is foreign rather than domestic.

More importantly, our results suggest that the limits to financial integration are less tight than studies of only (direct) firm-bank relationships may suggest. Even though foreign banks do not directly expand access to the banking system by establishing relationships with previously unbanked firms, a one-standard deviation increase in the percentage of foreign lending is associated with a more than 10 percent increase in the number of bank relationships in 2005 reported by previously unbanked firms. Firms appear to have the same access to financial loans and ability to invest whether or not they borrow from a foreign bank: Following a one-standard-deviation increment in the increase in foreign loans (half of the increase in foreign loans experienced, for instance, by Estonia during the sample period), an average firm is able to increase its leverage by 20 percent. Firms appear to use their higher leverage to invest as a similar increase in foreign loans results in nearly 40 percent higher investment. Not only foreign loans indirectly benefit all firms, but, if anything, the effects are larger for firms with domestic banks, the ones that our results suggest to have obtained recent access to the banking system.

The remainder of this paper is organized as follows. Section 2 relates our paper to the literature and explains our empirical approach. Section 3 describes the data. Section 4 studies firm-bank relationships, while Section 5 and Section 6 explore, respectively, the

direct and indirect effects of foreign bank entry on firm financing and performance. Section 7 concludes.

## **2. Detecting direct and indirect effects of foreign bank presence**

### *2.1. Existing literature*

In countries with underdeveloped banking systems, foreign financial intermediaries should increase the supply of finance. Existing theories however cast doubts on the ability of foreign banks to achieve this goal. Foreign banks are often large and centralized and may therefore lack the organizational dexterity to successfully engage small and young firms, which are considered to be particularly opaque (Stein (2002), Berger, Miller, Petersen, Rajan and Stein (2005)).

Empirical evidence showing that credit to the private sector may contract in countries following widespread foreign bank entry (Beck and Martinez Peria (2008), Detragiache, Tressel and Gupta (2008)) and that foreign banks establish relationships with large and visible firms is consistent with the above theories (Mian (2006a), Berger, Klapper, Martinez Peria and Zaidi (2008) and Berger, Klapper and Udell (2001)).

However, a contraction of bank loans could also be explained by a lack of investment opportunities and a reduction in crony lending. It is also unclear to what extent foreign banks discriminate against small firms: Clarke, Cull, Martinez Peria and Sanchez (2005) for example show that some foreign banks make more loans to small businesses than domestic banks. Having no access to borrower financial information, these papers are unable to evaluate whether bank lending policies negatively affect firm performance or are the result of a more efficient allocation of credit. Even those papers that describe the characteristics of foreign banks' clients are unable to go beyond a static picture, either because foreign bank presence is stable or because only cross-sectional data is available.

Recent papers relate changes in foreign bank presence across countries (or across states within a country) to firm performance and credit access. But while Giannetti and Ongena (2009a) and Bruno and Hauswald (2008) find that foreign bank presence benefit the real economy, Gormley (2010) finds negative effects of foreign bank entry. These mixed results may depend on the fact that changes in foreign bank presence are often accompanied by reforms that affect firm growth and that vary across samples and time

periods. Most importantly, these papers do not help to shed light on *how* firms may benefit from foreign bank presence.

The empirical approach we outline below is mostly based on within-country comparisons of firms that have relationships with foreign banks and firms that only engage domestic banks or that do not have any bank relationships. Our approach is thus less subject than the previous literature to the confounding effects of concurrent reforms. Most importantly, it sheds light on the mechanisms through which foreign banks affect the real economy.

## 2.2. *Hypothesis development*

To empirically separate direct and indirect effects of foreign bank presence is a challenging task. One would like to observe how bank relationships change when foreign bank presence varies, and investigate the effects of bank relationships and their changes on firm credit access, investment behavior, and performance.

The dataset we assemble for this paper is a first step in addressing these challenges. We reconstruct bank relationships at the beginning and the end of a time period during which the local credit markets experienced both domestic consolidation and foreign bank entry through acquisitions and greenfield investments. In this context, foreign banks would decrease access to the banking system for some borrowers if relations were more likely to be terminated after a foreign acquisition. If this is not the case, the fact that foreign banks merely engage large and visible borrowers may be more indicative of the low state of development of the banking system that allows only the most creditworthy borrowers to be reached and not of those banks' active decisions to focus their portfolios on a limited set of borrowers. If in addition foreign banks were to terminate relationships with their clients less often than other banks, this would suggest that foreign banks stabilize firm access to the financial system.

The new relationships established by foreign banks may also shed light on the extent to which foreign banks expand access to credit. Foreign banks would increase credit access directly if they established relationships with previously unbanked firms or indirectly if higher foreign bank presence induced domestic banks to initiate relationships with these borrowers. Even if the direct benefits are limited, all firms may

indirectly take advantage of foreign bank presence to the extent that they are able to access credit at similar terms from domestic banks or other informal sources.

Finally, we evaluate whether having a relationship with a domestic or a foreign bank makes a difference for a firm's ability to use financial loans and performance. Not detecting any differential effects would imply that it is irrelevant which firms are actually engaged by foreign banks. Although no difference in performance between the clients of domestic and foreign banks may suggest that the indirect effects of foreign bank presence are as strong as the direct effects, this finding is also consistent with foreign banks being irrelevant or even hurting firm performance. For this reason, we explore to what extent an increase in foreign lending benefits firms without foreign bank relationships and firms with domestic and foreign bank relationships. The presence of indirect benefits from foreign bank entry would imply that firms benefitted from foreign bank lending whether they have foreign bank relationships or not.

### **3. Data and sample characteristics**

#### *3.1. Data sources and sample construction*

The most important data source is a directory of firms distributed by *Kompass*. Kompass provides directories for over two million firms in 70 countries including firm address, executive names, industry, profits, turnover, date of incorporation, and, crucially for our purposes, the firm-bank relationships. Kompass collects data using information provided by chambers of commerce and firm registries, but also conducts phone interviews with firm representatives. Firms are also able to voluntarily register with Kompass. Kompass directories are mostly sold to companies searching for customers and suppliers and are updated at least every two years.

We obtain the firm directories for thirteen emerging economies (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, and Ukraine) for the years 2000 and 2005. The directories contain 45,961 and 35,953 complete firm records in the years 2000 and 2005, respectively.<sup>1</sup> The

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<sup>1</sup> It thus appears that the number of firms reported in Kompass drops between 2000 and 2005. This is probably due to the fact that the 2000 edition of the survey reports firms that were no longer active. These

identity of the registered firms' banks is reported for 30 and 24 percent of the firms in 2000 and 2005, respectively.

The way we identify bank relationships is similar to Ongena and Smith (2001), Karceski, Ongena and Smith (2005), and Ongena and Smith (2000) who obtain information on bank relationships reported from a Norwegian firm register and a European survey. Firms in these datasets use their banks for both short-term and long-term borrowing and may also obtain deposit, cash management, and foreign exchange services from their banks.

A possible objection to the use of Kompass as a source of information on bank relationships is that firms over-report or hide the identity of their banks for strategic reasons, for example to obtain better conditions from other financiers (Diamond (1991)) or to avoid arousing domestic product market competitors (Yosha (1995)). We find such reporting biases unlikely, mostly because countries in our sample have credit registries to which extensive credit information about the firm must be reported (Brown, Jappelli and Pagano (2009)). Kompass itself can have access to this information and strategic reporting or omissions of bank relationships is pointless if the registry information can be verified by others. Also, the information on bank relationships from Kompass is broadly consistent with evidence provided by independent surveys, such as the EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS), further mitigating any concerns.

We concentrate on the thirteen Eastern European economies for several reasons. First, to be able to thoroughly control for firm characteristics and explore the effect of foreign bank lending on firm performance, we match Kompass with *Amadeus*, a dataset distributed by Bureau Van Dijk that contains financial information for all limited liabilities companies in Europe. Since unlisted firms are more dependent on bank loans, we believe that it is crucial to include them in the sample along with listed companies. The need for information on the performance and capital structure of unlisted firms restricts us to *Amadeus* and therefore to Europe. Second, while *Amadeus* also includes firms in Western European countries, most of these countries do not have a substantial

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firms drop from our sample because *Amadeus*, the source of financial information to which we match the Kompass firms, drops inactive firms after five years.

foreign bank presence nor did they experience foreign bank entry during the sample period (Berger (2007)). Since our main objective is to explore the dynamic effects of banking system integration in countries with underdeveloped financial system, we focus on the Eastern European economies, which experienced a substantial increase in foreign bank presence.

We believe that our sample can provide insights that go well beyond the Eastern Europe. Even though these countries had a peculiar experience of transition from a Socialist system, our sample begins more than ten years after the start of this process, a time when it was basically completed and the countries had become comparable in their economic and institutional development to other emerging markets (Shleifer and Treisman (2005)).<sup>2</sup>

We have access to the 2006 edition of Amadeus. We extract consolidated financial statements and other firm-specific information for all companies in the thirteen emerging economies listed above. Amadeus contains more than one million firms for these countries during the period 1997-2006. While the much larger number of firms reported in Amadeus may suggest that Kompass can provide only an incomplete view of the firms accessing bank services in a country, half of the firms in Amadeus are actually mere legal entities showing little sign of any economic activity by reporting neither sales, nor assets, nor employees. Less than 20 percent of the firms in the initial sample report more than 100,000 dollars in sales and assets, and more than 10 employees. Thus, Kompass allows us to observe roughly 25 percent of the active and economically relevant firms in 2000 and 2005, respectively. More importantly, the distribution of the firms in Kompass appears to be similar to the distribution of the firms available from Amadeus: The median company in Kompass has approximately one million dollar in turnover, similar to the economically relevant companies in Amadeus.

Since Kompass does not report firm identification numbers, we match firms in Amadeus and Kompass using firm name, address, city, and telephone. Given the recurrent different spellings, we use the following set of matching criteria. Records are considered a match if the following conditions are jointly satisfied: (a) the first thirteen

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<sup>2</sup> Nor can one argue that domestic banks in these countries were different for instance because they did not have the time to accumulate "soft" information on their borrowers. Cole (1998) for example argues that banks acquire soft information on firms in the first one to three years after engaging a client.

letters of the names in both databases contain an equal string of six consecutive characters; (b) the first fifteen letters of the addresses in both databases contain an equal string of eight consecutive characters; (c) the first six letters of the city in both databases contain an equal string of three consecutive characters, and (d) the last six numbers of the telephone number in both databases contain an equal string of five consecutive numbers (in case of multiple phone numbers and in case of fax numbers all possible combinations are checked). If records are missing (which for these four fields is very unlikely), the respective criterion is dropped.

Back-testing suggests that this procedure delivers quite well.<sup>3</sup> We also check a few hundred matches for consistency and find no errors. At the end of this procedure, we are left with 8,569 unique firm matches in 2000, and 10,154 firms in 2005, of which 4,430 (52%) and 6,795 (67%), respectively, report their bank connections.<sup>4</sup>

We also obtain information on bank characteristics from the 2006 version of *Bankscope*, also distributed by Bureau Van Dijk. Bankscope only provides information on current ownership; to determine when domestic banks were acquired by foreign banks or other foreign investors, we turn to previous editions of Bankscope, to *SDC Platinum* (distributed by Thomson Financial), and to *Zephyr* (distributed by Bureau Van Dijk). The latter two databases provide information on domestic and foreign acquisitions of Eastern European banks. We then manually match the bank names of the matched records with the names of the banks in *Bankscope*. We are able to identify 280 banks (and 4,159 and 6,121 firms that, respectively, in 2000 and 2005 report banks that are also present in Bankscope). For 271 and 674 firm matches in 2000 and 2005, involving 146 and 307 different bank names, respectively, we establish bank ownership by searching websites; unsurprisingly, these cases concern small local banks.

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<sup>3</sup> In a number of cases, the procedure identifies multiple records in both Kompass and Amadeus, but in most cases these records identify companies with the same phone numbers, addresses and similar names, which probably refer to the different legal entities of the same business. In a second step, these multiple matches are identified, and the record with the larger amount of assets is hand-selected. Any excess matches are removed.

<sup>4</sup> Due to missing observations in Amadeus for some firm level controls, we are unable to include all firms for which we observe bank relationships in many specifications.

Finally, we complement our main dataset with country GDP statistics from the *World Development Indicators* and indexes capturing the strength of the institutional environment from the International Country Risk Guide (ICRG).

### 3.2. *Descriptive statistics*

We observe firm-bank relationships in 2000 and 2005. We describe the relationships in these two years and how they are associated with predetermined firm characteristics (i.e., in 1999 and 2004, respectively). We also investigate firm performance and access to financial loans in the two years subsequent to the ones in which we record bank relationships.

Table I provides the definitions and summary statistics of the main variables. A bank is defined as foreign if foreign individuals, corporations, financial institutions or governments combined own more than 50 percent of the bank. This cutoff is similar to the one used in the previous literature (Mian (2006b) and Giannetti and Ongena (2009a)), and reflects common majority voting rules. As the distribution of foreign ownership is highly bimodal, changing the cutoff hardly affects the results.

Having defined the foreign versus domestic affiliation of all banks, we can characterize firm-bank relationships. *Foreign Bank* is a dummy variable that equals one if at least one bank a firm employs is foreign, and equals zero if all reported banks are domestic; 24 percent of the firms report to employ at least one foreign bank. Interestingly, the percentage of firms that have a relationship with a foreign bank is smaller than the percentage of loans granted by foreign banks (which is over 40 percent for the sample firms) suggesting that foreign banks grant large loans to a minority of borrowers.

We also construct variables that capture changes in the firm-bank relationships: + *1<sup>st</sup> Bank* is a dummy variable that equals one if a previously unbanked firm establishes its first bank relationship(s) and equals zero if the firm reported bank relationships already in 2000; + *Bank* is a dummy variable that equal one if a firm's relationship with a given bank is first reported in 2005, and equals zero if the relationship was already reported in 2000; finally, - *Bank* is a dummy variable that equals one if a relationship reported in 2000 has been dropped in 2005, and equals zero if the relationship is still reported in 2005. While for the previous variables our unit of observation is the firm or the firm-

year, the unit of observation for the latter two is the specific bank relationship of a given firm in 2000 or 2005. More than 40 per cent of the relationships are established during the sample period, while nearly 80 percent of the relationships observed in 2000 are terminated by 2005. This suggests that firms may have decreased the number of bank relationships.

We explore firm-bank relationships in association to some salient firm characteristics. Firm ownership may be related to the type of bank a firm maintains relationships with. We define three firm ownership dummies, *Foreign Firm*, *State-Owned Firm*, and *Bank-Owned Firm* that equal one if foreigners, the state or a bank own the firm, respectively, and equal zero otherwise. Foreign firms are generally more likely to engage home country banks because these are better able to provide the services that they need (Berger, Dai, Ongena and Smith (2003) and Kindleberger (1983)).

Firm size, proxied by the number of *Employees* or by total *Assets*, and firm *Age*, measured as the number of years since registration, are related to firm opaqueness. The median firm in our dataset is less than 20 years old and has slightly more than 500 employees. Foreign banks may be more selective in financing firms. To capture this, we consider *Firm Efficiency*, which is defined as the difference between firm and median return on assets in the industry that year and also the firm's lagged growth of sales, as a proxy of previous performance.

While the median firm has one bank, some firms report up to ten banks. The *Number of Banks* a firm reports is potentially an endogenous choice yet one that is often considered to precede actual bank selection (Detragiache, Garella and Guiso (2000), Ongena and Smith (2000)) and is used as a control when exploring other aspects of bank relationships (see, for instance, Mian (2006a), Petersen and Rajan (1994), Ongena and Smith (2000)). This control is particularly useful in our context because our data do not allow us to observe the proportion of debt financed by each individual bank, a commonly used proxy for the strength of bank relationships (Elsas (2005), Degryse and Ongena (2007)). Since the number of banks is inversely related to the concentration of the sources of bank loans, it can give us an idea of the strength of the relationships with different types of banks.

Table II shows that the credit markets in our sample were undertaking a process of consolidation, as the number of banks slightly decreases between 2000 and 2005. On the

other hand, the percentage of foreign banks increases more dramatically indicating the many banks entered during the sample period. These changes in the number of banks are associated with an increase in the country's supply of bank loans and in the percentage of foreign loans that steadily increases over the sample period, from 45 percent in 2000 to 61 percent in 2005, surpassing 50 percent in nine of the sample countries. In countries with a higher percentage of foreign loans, financial development is also higher, but the correlation between the two is relatively low (the correlation coefficients are 26% and 22% in 2000 and 2005 respectively). The sample banks and the firms for which we observe a bank and firms with foreign bank relationships appear roughly equally distributed across credit markets, but countries are represented differently in the sample. For this reason, in our empirical analysis we do not only compare firms within the same country, but also consecutively drop countries to make sure that our results are not influenced by the observations of any particular country. The results of these exercises are always qualitatively equivalent to the ones we present.

### *3.3. Sample selection*

Our dataset allows us to make a significant step forward in studying the dynamic effects of foreign bank entry. However, the fact that starting from basically the population of limited liabilities companies in Amadeus, we are able to obtain observations about bank relationships only for a minority of firms raises concerns about sample selection and the suitability of our relationships data. We need to explore these issues to be able to interpret our results.

First, we consider how representative our matched sample is of the overall population, which we observe from Amadeus. For this reason, starting from the Amadeus sample, we study the characteristics of the firms that we are able to match with Kompass. In Table III (Models 1 and 2), we explore the determinants of the probability of finding a match in Kompass for any of the Amadeus firms in 2000 and 2005 in a multivariate analysis. We find a match for larger and less profitable firms. Thus, our matched sample is not biased towards the best performing firms. Most importantly, financial leverage appears unrelated to the probability that we find a match, suggesting

that any sample selection bias should not be systematically related to the firm's ability to access financial loans.<sup>5</sup>

Second, we explore the suitability of our relationship variables in the subsample of firms in Amadeus and Kompass that we are able to match. To validate whether it is legitimate to consider firms that do not report relationships in Kompass as unbanked, we compare our dataset with the 2005 BEEPS. We find that 72 percent of the firms surveyed in BEEPS for our sample countries report not to borrow from banks, a proportion which is strikingly similar to the 76 percent of Kompass firms that report to have no bank relationships.

Since banks dominate formal financial markets in Eastern Europe (Bonin and Wachtel (2003)), a firm's leverage provides a good proxy for the firm's access to external finance. Thus, we compare the leverage of firms that report bank relationships in Kompass with the ones that do not. While very few firms report zero leverage (approximately, 1 percent do), none of the firms reporting bank relationships has zero leverage. That firms without access to the banking system have (some) debt on their balance sheets should not be considered surprising. In fact, 31 percent of the firms in BEEPS borrow from family and friends, money lenders, or other informal sources, and from suppliers or customers, credit cards, leasing arrangements, government other than state-owned banks, and other unspecified sources that are not banks. More importantly, firms with bank relationships have a leverage ratio that is more than 30 percent higher than the firms we classify as unbanked (firms with bank relationships have a financial leverage of 54 percent compared to 40 percent for unbanked firms), and firms with multiple bank relationships have a leverage which is 20 percent higher than firms with only one bank. Overall, this suggests that the bank relationships in Kompass are lending relationships.

To further validate our relationship data, we explore the determinants of the probability that a firm in the matched sample reports a bank in Kompass in 2000 and 2005 in a multivariate setting (Model 3 of Table III). Firms that do not report a bank are smaller and more profitable. Their higher profitability suggests their marginal

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<sup>5</sup> In unreported results, we further explore to what extent sample selection problems may bias our results by analyzing the full Kompass sample and the limited amount of information on firm characteristics provided by Kompass. The estimates are fully consistent with the results we report hereafter.

investment has a relatively high return. Most importantly, also in the multivariate analysis, it appears that not reporting a bank in Kompas conveys useful information regarding a firm's financial structure.

#### 4. Firm-bank relationships

##### 4.1. Statics

We explore the characteristics of firms engaging different types of banks. Using observations for the years 2000 and 2005 of firms that report banks in Kompas and that we are able to match with Amadeus, we estimate the following linear probability model:<sup>6</sup>

$$\begin{aligned}
 F_{it} = & \alpha + \beta_{1-3} \text{FirmOwner}_i + \beta_5 \ln(\text{FirmAssets})_{it-1} + \beta_4 \ln(\text{FirmAge})_{it-1} + \\
 & + \beta_6 \text{FirmEfficiency}_{it-1} + \beta_7 \Delta \text{FirmSales}_{it-1} + \beta_8 \text{NumberofBanks}_{it} + \\
 & + \beta_{9-34} \text{Country} * \text{Year} + \varepsilon_{it}
 \end{aligned} \tag{1}$$

Here,  $F_{it}$  is a binary variable that equals one if at date  $t$  firm  $i$  reports a relationship with a foreign bank and zero otherwise. Only firms for which we observe bank relationships are included in the sample. All independent variables are defined in Table I, with the exception of  $\text{FirmOwner}_i$ , which denotes a set of three dummies indicating whether the firm has a foreign owner, is owned by a bank, or by the state, and  $\text{Country} * \text{Year}$ , which is a set of interactions of country and year dummies. The inclusion of the latter allows us to control for different domestic credit markets and business conditions across countries and over time. Thus, we ask whether firms with certain characteristics are more likely to have relationships with certain banks within a given credit market in a given year.

Results are reported in Table IV. In Model 1, we include a minimum set of controls for which we have observations for all firms that report relationships and that can be matched with Amadeus. The number of observations decreases as we add more controls, due to missing observations for several variables in Amadeus. We consistently find that firms that have a foreign investor among their major shareholders and large firms appear

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<sup>6</sup> We use a linear probability model instead of a probit model because the large number of dummies we include causes problems with maximum likelihood estimation.

more likely to maintain a relation with a foreign bank. These effects are not only statistically significant, but also economically large. Foreign-owned firms are 2 percentage points more likely than domestically held firms to employ a foreign bank. Similarly, a one-standard-deviation increase in the logarithm of total assets increases the probability of engaging a foreign bank by more than 3 percentage points. This is a large effect since the unconditional probability of having a foreign bank in the sample is 24 percent.<sup>7</sup> This static picture of firm-bank relationships is broadly consistent with the findings of the existing literature and increases our confidence that any results challenging the received wisdom are more likely derived from the richness of our dataset rather than from the specific institutional context or from a sample selection bias.

The remaining independent variables also provide interesting information. Firm efficiency and past firm performance, measured by the growth of sales, are positively related to the likelihood of engaging a foreign bank. Thus, foreign banks appear to engage not only the most visible, but also the highest quality borrowers, possibly contributing to an improvement in capital allocation. Also, firms with a domestic bank as a shareholder are somewhat less likely to have a relationship with foreign banks (the coefficient is not always significant at conventional levels), suggesting that connected firms are less likely to seek or obtain access to foreign banks.

Finally, firms that maintain multiple bank relationships are more likely to engage a foreign bank. This association may depend on the fact that firms consider foreign banks fickle lenders and try to insure their access to the banking system entertaining multiple bank relationships, as firms appear to do when they are afraid that their banks may experience liquidity problems (Detragiache, Garella and Guiso (2000)). It is also possible, however, that firms with greater demand for banking services prefer to engage foreign banks and for the same reason find it optimal to entertain more bank relationships. Since the number of bank relationships and having relationships with foreign banks are potentially endogenous choices, concerns may arise that the simultaneity of these decisions may bias our results. Model 3, however, shows that our estimates are unvaried if we exclude the number of bank relationships from the equation.

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<sup>7</sup> The propensity of foreign banks to establish a relationship with foreign-owned and larger firms does not appear to decrease with the time elapsed since their entry (results unreported).

In Model 4, we include other firm variables that help to characterize the firm-bank relationships. The proportion of tangible assets of a firm captures its ability to provide collateral. Foreign banks appear more inclined than other banks to engage firms that are unable to provide collateral suggesting that they are willing to evaluate the borrower's future prospects and not only its balance sheets. We also consider borrowers that have financial expenses at least 10 percent larger than the interest expenses to take advantage of their bank services beyond loans and deposits. Given our sample of mostly unlisted firms, the demand for services other than bank loans is likely to be relatively small. It is therefore not surprising that the dummy proxying for the use of other services is not statistically significant.<sup>8</sup>

#### 4.2. Dynamics

We exploit initiations and terminations of firm-bank relationships to gauge whether foreign banks expand or reduce credit access. Since in different specifications we select the sample on the basis of some characteristics of firms and their bank relationships (i.e., firms that report relationships in 2000 when we study the probability that bank relationships are terminated; firms that report relationships in 2005 when we study the characteristics of relationships that have been established after 2000 in comparison to the ones that have been established before that), the concern arises that there exists a selection bias in the observable sample. In order to address this issue, we estimate probit models with sample selection (Heckman (1979)). In practice, we explore whether the status of relationship  $r$  of firm  $i$ , which we capture with a binary variable,  $y_{ir}$ , depends on firm and relationship specific characteristics ( $X_{ir}$ ) as follows:

$$y_{ir} = \alpha + \beta_{1-3} FirmOwner_i + \beta_5 \ln(FirmAssets)_i + \beta_4 \ln(FirmAge)_i + \beta_6 FirmEfficiency_i + \beta_7 \Delta FirmSales(t-1)_i + \beta_{9-21} Country + \delta X_{ir} + u_{ir}^1, \quad (2)$$

taking into consideration that the status of the relationship is observed only if firm characteristics,  $z_i$ , are such that:  $z_i \gamma + u_i^2 > 0$ . Under the assumption that the errors,  $u_{ir}^1$

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<sup>8</sup> In specifications that we do not report for brevity, we explore the characteristics of the clients of large domestic banks and domestic government owned banks. Overall, foreign banks do not appear to be like other large or privately owned banks. Their status as outsiders may be more important in shaping their lending policies than the fact that they are large and privately owned.

and  $u_i^2$ , are jointly normally distributed, equation (2) can be estimated using a two-stage Heckman selection model. This involves adding the inverse Mills ratio, obtained from the first stage estimation of the probability of observing bank relationships for firm  $i$  using a probit model, to the second stage estimation of equation (2). The probit model we estimate at the first stage is similar to the one we present in Model 3 of Table III.

Since it is desirable not to rely only on the functional form for identification, but also to have some exogenous variation, we follow an approach similar to the one suggested by Akerberg and Botticini (2002) and pursued in a context similar to ours by Bottazzi, Da Rin and Hellmann (2008). We surmise that whether we observe bank relationships for a firm in 2000 (or 2005) depends on the distribution of firm characteristics in different credit markets. As we show in Table III, we are more likely to match large firms with Kompass mainly because they report phone numbers and addresses more consistently. Yet, the way in which firm size translates in a possible match may differ across credit markets, for example because ambiguities in spelling depend on the local language and because of the differential complexity and alterations to the country's system of street names and phone numbers. We thus interact firm size with country dummies to obtain exogenous variation in the first stage. These interaction terms are jointly highly statistically significant in the first stage (omitted for brevity).

Our identifying assumption is that the effect of firm size on the probability that a relationship is terminated or recently initiated does not vary across countries. We show evidence below that our instruments satisfy the exclusion restrictions. Ultimately, however, since we have multiple relationships for the same firm, an unambiguous statistical test that unobserved firm heterogeneity does not drive our results can be provided by including firm fixed effects.

A couple of remarks are in order here. First, our unit of analysis is the firm-bank relationship. Since we have multiple relationships for the same firm, we use White standard errors, corrected for heteroskedasticity and clustered at the firm level. Second, we observe a cross-section of changes (initiations and terminations) of firm-bank relationships between 2000 and 2005. Thus, unless otherwise noted, we account for differences in business environment (including average firm access to the financial system across credit markets) by controlling for country fixed effects.

#### 4.2.1. Relationship terminations

Foreign banks would impair access to credit if they were more likely to terminate relationships with their clients than other banks. We explore how the likelihood that the bank relationships reported in 2000 have been dropped by 2005 depends on bank ownership. Model 1 in Panel A of Table V shows that foreign banks are less likely than other banks to terminate relationships with their clients. A possible concern with the estimates is that our two-stage selection model does not fully account for firm unobserved heterogeneity, because the exclusion restrictions that we have imposed on our instruments are not valid. In Model 2, we perform a test of over-identifying restrictions as follows. We include one of the interaction terms that we use as instruments also in the second stage and test whether its coefficient is significantly different from zero. Since this is not the case, the over-identifying restrictions cannot be rejected (this is the case also if instead of the interaction term that we include in Model 2, we include in the second stage any of the other interaction terms we use in the selection equation).<sup>9</sup>

So far, we have taken into account that we observe relation terminations only for firms that report relationships already in 2000. A more subtle selection problem may, however, arise if foreign banks have selected better clients in 2000. Thus, even if their lending policies do not differ from the ones of domestic banks, they appear less inclined to terminate relationships because their clients are better along some unobserved dimension. Another possibility is that relationships with foreign banks are terminated less often because these banks choose borrowers with a higher probability of survival. This would be a concern if our controls did not fully capture firm risk. We check whether differences in survival may drive our results and find that the probability that a firm that is in the dataset in 2000 is still in the dataset in 2005 is unrelated to whether the firm had any relationships with foreign banks or reported relationships in 2000. We

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<sup>9</sup> This methodology to test over-identifying restrictions is often used by labor economists, especially in the context of the Heckman selection model. See, for instance, Angrist (1990) and Joensen and Nielsen (2009). Furthermore, problems of identification in the Heckman selection model arise if the inverse Mills ratio is quasi-multicollinear with the remaining variables included in the second stage (Li and Prabhala (2007)). We verify that this is not the case by regressing the inverse Mills ratio on the remaining independent variables of the second stage. The  $R^2$  is approximately 50 percent suggesting that the inverse Mills ratio has independent variation further supporting the reliability of our estimates. Finally, the inverse Mills ratio is not statistically significant indicating that selection problems are marginal in our context.

further address concerns about firm heterogeneity by focusing on firms with multiple bank relationships. In Model 3, we include firm fixed effects (since we exclude the firm level controls that are now absorbed in the firm fixed effects, here we do not lose observations due to missing firm characteristics) and still find that relationships with foreign banks are less likely to be terminated.

We are aware that relation terminations are not necessarily initiated by banks.<sup>10</sup> In particular, firms may decide to terminate relationships with domestic banks more often, especially if they engage a foreign bank. We think that it is unlikely that our result depends (entirely) on this effect for the following reason. If we restrict the sample to firms that report only one bank (estimates not reported for brevity), we find that firms engaging a foreign bank are less likely to remain unbanked. We consider unlikely that firms would voluntarily terminate their unique bank relationship, without substituting it. Even if this were the case, our results suggest that *in equilibrium*, relationships with foreign banks are not more likely to be terminated.

This is the case also after acquisitions, when banks are more likely to restructure their portfolios and, therefore, initiate terminations. In Model 4, we contrast foreign and domestic banks' propensity to terminate relationships in the aftermath of the bank acquisitions. Foreign banks appear less likely to terminate relationships even after they have been acquired. This contrasts with the behavior of domestic banks that after a (domestic) acquisition are more likely to drop their clients as has been documented in previous literature (see, for instance, Sapienza (2002)) and is apparent from Model 4. The different behavior of foreign and domestic banks leads to sizable economic effects. A relationship with a foreign bank is on average 4 percentage points less likely to be terminated; if the foreign bank entered after 2000 by acquiring a domestic bank, the probability of a termination decreases by a further 12 percentage points. In contrast, if a domestic bank has been acquired by another domestic bank, the probability of a termination increases by 7 percentage points. Thus, after an acquisition, the bank is over 20 percent less likely to terminate a relationship with a firm if the acquirer is foreign rather than domestic.

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<sup>10</sup> As in previous literature (see, for instance, Sapienza (2002)), we only observe whether relationships survive, but not the reasons for their terminations.

The different behavior of foreign and domestic banks does not appear to depend on the fact that foreign and domestic banks acquire banks with systematic differences. Descriptive statistics (not reported) reveal that the proportion of bad loans is similar for banks acquired by foreign and domestic financial institutions. Nor is the different behavior of foreign and domestic acquirers due to the fact that they face different competitive environments. In fact, the change in the Herfindahl-Hirschman index of loans for the median firm that in 2000 was client of a foreign and a domestic acquired bank is the same. Foreign banks appear less likely to drop their clients especially if they acquire banks with a high proportion of non-performing loans. Possibly, being able to infuse more capital than domestic banks, they are able to lend more and do not need to terminate relationships.

Other control variables also provide useful insights. Relationships with bank-owned firms are more likely to be terminated. To the extent that this variable captures connected borrowers, this suggests that connected lending becomes less pervasive during the sample period.<sup>11</sup> Firms with multiple banks in 2000 are also more likely to terminate a bank relationship suggesting that in this case the decision to terminate may have been initiated by firms with a low dependence on certain banks. This is also confirmed by the fact that firms that make extensive use of other bank services are less likely to terminate relationships (Model 5). Other firm characteristics (that in this case we measure in 1999) appear unrelated to the decision to terminate a relationship.

Finally, in Model 6, we present suggestive evidence on the way changes in financial development and, more importantly, foreign bank presence affect the probability that a relationship is terminated. We omit country fixed effects and control for banking system development by including the ratio of bank assets to GDP, bank competition, proxied by Herfindahl index of bank assets, and for investment opportunities and business environment by including an indicator of the country's investment profile in terms of macroeconomic performance and institutional quality. The changes in the financial system caused by foreign banks decrease the probability of relationship terminations, and the increase in foreign bank presence appears economically more relevant than the

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<sup>11</sup> This effect does not seem to depend on the extent of foreign bank presence or on whether the relationship entails a foreign bank.

increase in the supply of credit: A one-standard-deviation increase in the latter is associated with a one-percentage-point decrease in the probability of relationship terminations, while the effect is 5 times larger if foreign bank presence increases by a one standard deviation. Also, as is consistent with the prior literature, relationships are less likely to be terminated in more developed financial systems, less competitive environments and in countries with a lower risk of investment.

#### 4.2.2. New relationships

Panel B of Table V explores whether foreign banks may expand credit access either by directly initiating new relationships with firms, especially if these were previously unbanked, or, indirectly, by affecting the credit market in a way that firms become more likely to start new relationships with domestic banks. To achieve this goal, we investigate the characteristics of new firm-bank relationships (i.e., relationships that did not exist in 2000 but that we observe in the 2005 survey). Our control sample consists of relationships that already existed in 2000 (and still exist in 2005). In practice, we ask whether foreign banks are directly or indirectly associated with more new bank relations (by previously unbanked or also other firms, depending on the specification).<sup>12</sup>

In Model 1, our unit of analysis is the firm and we explore the characteristics of the firms that start reporting bank relationships for the first time in 2005 using firm characteristics in 2000. Unsurprisingly, the relationships of foreign and state-owned firms are more likely to have been established already in 2000, confirming that these firms have a preferential access to the banking system. More importantly, the relationships of previously unbanked firms are *ceteris paribus* less likely to be with foreign banks.

The latter result holds true also if we consider all the relationships that firms start reporting in 2005. In Model 2, our unit of analysis is each of the relationships reported in 2005. Not only do new relationships appear substantially less likely to be with foreign banks, but also small and young firms are less likely to report new relationships, suggesting that especially large and established firms have incentives to engage additional banks. We further explore which firms are more likely to seek multiple bank

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<sup>12</sup> Also in this case, we perform tests of over-identifying restrictions like in Panel A. While these tests fully support our identifying assumptions, we omit them for brevity.

relationships, by including firm characteristics, such as the asset tangibility and whether the firm makes larger use of services other than bank loans (Model 3). Unsurprisingly, the latter are more likely to start additional bank relationships.

A possible concern is that firms that did not engage foreign banks in 2000 are of a lower quality in some unobserved dimension and that for this reason these firms are less likely to engage foreign banks also in the future. However, even when firm heterogeneity is fully accounted by firm fixed effects (Model 4), we find that new relationships are less likely to involve foreign banks. Also, in unreported results, we show that foreign banks are not more prone than other banks to establish new relationships in the aftermath of their entry.

This empirical evidence suggests that foreign banks do not directly expand credit access; nevertheless, they may improve firm access to the banking system indirectly. In Model 5, we omit country fixed effects and investigate how some characteristics of the local credit market affect the likelihood that the relationships reported in 2005 are newly established. We include the same controls as in Model 6 of Panel A. The estimates show that an increase in foreign bank presence increases the probability that bank relationships observed in 2005 involve a previously unbanked firm; the effect is not only statistically significant but also economically large as a one-standard-deviation increase in the change of foreign lending boosts the probability that relationships observed in 2005 involve previously unbanked firms by over 10 percentage points. Thus, foreign banks appear to have a positive indirect effect on unbanked firm access to credit. Interestingly, foreign bank presence decreases the probability that firms that report bank relationships already in 2000 establish additional ones (Model 6). To the extent that firms seek multiple bank relationships to ensure their access to the banking system, this is consistent with the finding that foreign bank presence makes firm access to credit less volatile.

The previous estimates are admittedly only suggestive as an increase in foreign lending could be correlated with an improvement in the business environment, which is not captured by our controls.<sup>13</sup> It is interesting, however, that more bank relationships

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<sup>13</sup> We validate these correlations using the BEEPS 2005 data set. This data set includes over 30 Eastern European economies. We regress a bank dummy that equals one if a firm borrows from a bank and equals

with previously unbanked firms are reported in less competitive credit markets, as is consistent with the notion that less competition improves credit access for opaque firms (Petersen and Rajan (1995)). This effect is particularly large. The following approximation gives an idea of its economic magnitude in Model 5. Moving two standard deviations around the mean from a competitive (0.08) to a concentrated (0.24) market increases the probability of having a bank by almost 28 percentage points.

The probability that any relationship reported in 2005 was established by a previously unbanked firm is negatively related with banking system development in 2000 suggesting that firms already had better access to credit in developed financial systems. More surprisingly, an increase in domestic credit is negatively associated to the probability that the reported relationships are newly established. This may depend on the fact that domestic banks in our sample have predominantly engaged in consumer credit or lent more or less directly to governments (de Haas, Ferreira and Taci (2010)). It is also consistent with the conjecture that domestic banks are inclined to extend credit to connected borrowers (Giannetti and Ongena (2009a)).

To provide more convincing evidence on the indirect effects of foreign bank presence controlling for the business environment by including country fixed effects, we construct a proxy for foreign bank penetration that varies within countries. We surmise that if a higher proportion of large firms have relationships with foreign banks in 2000, domestic banks are more likely to shift their client portfolio towards relatively smaller firms. Thus, we divide firms in each country in 6 equally sized groups, depending on their total assets, and test whether the probability that any relationship is newly established in 2005 increases in the proportion of larger firms engaging foreign banks.<sup>14</sup> We find that this is indeed the case (Model 7): A one-standard-deviation increase in the proportion of larger firms engaging foreign banks translates in a 30 percentage point increase in the probability that a relationship in 2005 has been established after 2000. This increases our confidence that the results in Models 5 and 6 are not spurious.

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zero otherwise on four country variables: financial development, foreign loans, investment profile and HHI. Firm controls are: two size and eight legal form dummies, the log of age and the percentage sales in seven different industries. We employ a variety of probit specifications. The coefficient on foreign loans is always positive and statistically significant, in contrast to the coefficients on the other country variables.

<sup>14</sup> Clearly, in this test we cannot include observations that are related to the group of the largest firms.

## 5. Direct effects of foreign banks on firm performance

In this section, we investigate whether firms that do not maintain relationships with foreign banks fail to reap the benefits of their presence. If foreign banks relax financing constraints only for the companies they fund, the companies that maintain a relationship with a foreign bank should have easier access to financial loans and, *ceteris paribus*, better performance.

Since banks do not select their borrowers randomly (nor do borrowers select their banks randomly), to evaluate whether having a relationship with a foreign as opposed to a domestic bank has an effect on firm outcomes, it is important to carefully select a control group of firms. We rely on propensity score matching techniques, developed by Rosenbaum and Rubin (1983). Using a probit model, we estimate the propensity score as the probability that each firm in our sample has a foreign bank. This is similar to what we do in Table IV (more details are in the caption of Table VI). Then, for each country, two-digit industry and year, we match firms on the basis of the propensity scores. We eliminate those firms whose propensity scores do not belong to the intersection of the supports of the propensity scores of treated and control observations from the treated and the control samples.<sup>15</sup> After matching each treatment observation (i.e., firm with a foreign bank) with one or more control observations with similar propensity score, the average treatment effect is computed as the average difference in the outcomes of the treated observation and (the average of) the matched controls.

Propensity score estimators can provide a fair assessment of the average treatment effect, if the following two conditions are satisfied. First, given some firm observable characteristics, firms with foreign banks should have had the same expected performance of firms that rely only on domestic banks had they had no relationships with foreign banks.<sup>16</sup> Second, having a foreign bank should not be perfectly predictable

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<sup>15</sup> The algorithm we use is *pscore*, developed and described by Becker and Ichino (2002). In particular, the sample is split in 5 equally spaced intervals of the propensity score; within each interval it is tested whether the average propensity score of treated and control group differs. If the test fails in an interval, the interval is split in half and the hypothesis is tested again. If this procedure does not yield any matches the relevant observations are dropped. In addition, we also ensure that the covariates are balanced: observations are stratified so that there is no significant difference in the propensity score of treated and control firms within each stratum.

<sup>16</sup> This condition is not satisfied if bank selection is affected by firm unobserved characteristics. While we cannot provide definitive statistical evidence, in the working paper version (Giannetti and Ongena

on the basis of firm observable characteristics, but it should also be driven by random factors. The propensity score estimates support this condition. If we group firms according to their estimated propensity score (the algorithm we apply yields 8 groups on which treated and control sample have common support), the lowest group includes 51 percent of firms with at least one foreign bank. Similarly, in the highest group, roughly 60 percent of the observations refer to firms that engage a foreign bank. Thus, firms with similar propensities may or may not engage a foreign bank, probably due to random factors, such as costs from switching banks, chemistry with the loan officer etc.

We explore how performance varies between 2000 and 2005 for firms that start reporting a foreign bank in 2005 (and had only domestic banks in 2000) relative to those firms that maintain relationships with domestic banks both in 2000 and 2005. This leads us to use a difference-in-difference estimator of the treatment effect, which also eliminates any biases due to firm time-invariant unobserved heterogeneity.

In Table VI, we present results for four alternative propensity score estimators of the treatment effect (see Becker and Ichino (2002) and the table's caption for details). We find no significant differences in financial leverage, interest rate expenses, investment, and ROA between firm with at least one foreign bank and firms with domestic banks only. If foreign banks cherry picked firms on the basis of characteristics that we do not include in the estimation of the propensity score and that are positively related to future performance, our estimates of the treatment effect should, if anything, be biased upwards, making our results even more striking.

That firms with and without foreign bank relationships do not have differential access to the financial sector and, as a consequence, have similar levels of investment and ability to generate revenues has two possible interpretations. One interpretation is that foreign banks indirectly benefit all borrowers by affecting bank-lending policies. Such an interpretation is consistent with empirical evidence showing that the entry of foreign banks in developing countries precedes a decrease in the profitability for domestic

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(2009b)), we show, using alternative econometric techniques, that selection on unobservables is unlikely to be important. Furthermore, Heckman, Ichimura and Todd (1997) show that most of the bias in the estimation of treatment effects in observational studies derives from comparing subjects that differ in observable characteristics or in their economic environment. Selection on unobservables represents a surprisingly small fraction of the bias.

banks, suggesting that competition intensifies (Claessens, Demirgüç-Kunt and Huizinga (2001)). However, an alternative interpretation is that foreign bank presence affects the credit market in a way that leaves all borrowers unaffected or even hurts them.

## **6. Indirect effects of foreign banks on firm performance**

To provide unambiguous evidence that foreign bank presence indirectly benefits all firms, we ask whether an increase in foreign lending has a differential impact on firms that engage a foreign bank, firms that only engage domestic banks and firms that are unbanked. If there are indirect benefits to foreign bank presence, firms should benefit whether they engage a foreign or domestic bank. Even unbanked firms may benefit from an increase in foreign bank presence if they become more likely to gain access to the banking system, as implied by the evidence that in financial systems with more foreign lending a larger proportion of relationships involves previously unbanked firms. Furthermore, an increase in the supply of bank credit may lower not only the cost of the loans offered by domestic banks, but also the cost of informal finance on which many unbanked firms rely.

We start by exploring how changes in foreign bank presence as well as its level are related to changes in access to credit and performance for the firms that we observe in both 2000 and 2005.<sup>17</sup> Table VII shows that the indirect effects of foreign bank presence are substantial. In credit markets with a higher foreign bank presence and as foreign loans increase, all firms are able to increase their leverage (Model 1). The effect is economically large: If the change in foreign loans increases by a one standard deviation (half of the increase in foreign loans experienced, for instance, by Estonia during the sample period), a firm with leverage equal to the sample mean is able to increase its leverage by 20 percent. Firms appear to use their higher leverage to invest as a similar increase in foreign loans results in nearly 40 percent higher investment for a firm with investment equal to the sample mean. In credit markets with an initially higher foreign bank presence, all firms invest more, but the effect is largest for firms with domestic

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<sup>17</sup> In unreported specifications, we interact also the change in foreign lending with the unbanked and foreign bank dummies, respectively. However, we are unable to identify any significant effects and for brevity we do not report these specifications. This also strongly suggests that the indirect effects of foreign bank presence are substantial.

bank relationships indicating that these may have gained stable access to the banking system, while, for different reasons, firms with foreign bank relationships and unbanked firms did not improve as much their access to credit; also unbanked firms appear to have lower interest rate expenses (Model 2) and all firms appear to increase their profitability, although this effect is once again attenuated for firms without bank relationships. The effects of foreign bank presence are not only statistically significant but also economically large. For instance, a one-standard deviation increase in the percentage of foreign loans (similar to the difference between Poland and Lithuania in 2005), increases the ROA of firms with bank relationships by 2 percentage points; the impact is only one quarter smaller for firms without access to the banking system.

These effects we highlight resemble the asset pricing spillover mechanism that arises in partially integrated equity markets. It is well-known that equity markets are only partially integrated and that foreigners hold stocks only in the largest firms (Kang and Stulz (1997)). Nevertheless, all firms, even those without foreign shareholders, are expected to benefit from a lower cost of capital because investors' interest in some firms increases the aggregate supply of funding (Alexander, Eun and Janakiramanan (1987)).

In the same spirit, foreign banks affect the credit market in a way that all firms benefit. The effect does not seem to be driven by the quantity of credit as the ratio of credit to GDP is generally not statistically significant. This may be the case not only because domestic banks favor consumer credit and purchases of government debt, but also because foreign presence improves the quality of the credit market beyond its effect on the supply of loans.

A possible criticism to our interpretation of these results is that foreign bank presence may have increased in anticipation of good performance, instead of leading to it. To provide causal evidence on the direct and indirect effects of foreign bank presence, we adapt to our context techniques that have been widely used to show the causal effect of finance on growth. We consider a panel including our sample firms in 2000 and 2005 and explore how performance in the following two years is related to domestic and foreign financial development in 1999 and 2004, respectively.<sup>18</sup> We follow the

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<sup>18</sup> As is common in the literature on finance and growth (Levine (2005)), we consider the level of financial development at the beginning of the period instead of its changes.

identification strategy suggested by Rajan and Zingales (1998) and used in a similar context by, among others, Bertrand, Schoar and Thesmar (2007) and Giannetti and Ongena (2009a). We posit that firms belonging to industries that are more dependent on bank loans should be those that benefit more from foreign bank presence if the latter indeed improves credit access and allocation. In these specifications, we are able to include country and industry specific time effects. Even if average firm growth and foreign bank lending were correlated because of an omitted common factor (not captured by country and sector specific trends and by our extensive controls), it would be difficult to argue that such an omitted common factor affects the relation between foreign bank lending and firm growth in a systematic way for firms with different bank dependence.

Given our interest in the role that foreign banks play in firm financing, we measure bank dependence in an industry with the ratio of short-term loans and long-term debt to total liabilities.<sup>19</sup> We employ UK data, drawn from Amadeus, to ensure the exogeneity of our financial dependence proxy and to have a measure of the propensity to use bank loans in a financially developed country where financing constraints are less likely to be binding. We can thus test whether the impact of foreign bank lending is larger for firms in industries that are more bank-dependent by including an interaction variable between the proxy for bank dependence and foreign lending.

To disentangle the direct from the indirect effects, we also include two triple interactions of the bank dependence times the foreign lending proxies with dummy variables capturing, respectively, whether a firm has a relationship with a foreign bank and whether the firm has any bank relationship.

Estimates in Model 1 of Table VIII show that firms obtain more financial loans as foreign lending increases, independent of whether they have relationships with foreign or domestic banks. Firms without bank relationships do not appear to obtain larger loans (as the sum of the coefficients of *Foreign Financial Development \* Bank Dependence* and *Foreign Financial Development \* Bank Dependence \* Unbanked* is not statistically different from zero).

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<sup>19</sup> Bertrand, Schoar and Thesmar (2007) use a similar measure of bank dependence.

Interestingly, firms that engage only domestic banks and firms that are unbanked benefit more in terms of cheaper loans as foreign banks extend more credit (Model 2). This suggests that foreign banks may charge higher interest rates on their loans, but also that their clients (which as our previous results suggest had easier access to the financial system also before) benefit less from the changes brought about by foreign banks. Such an interpretation is also consistent with the finding that as foreign lending increases, firms with domestic banks benefit more in terms of increased investment and profitability (a firm with average bank dependence increases its investment by 15 percentage points and profitability by one percentage point as foreign lending increases by one standard deviation) than firms with foreign bank relationships. Not being able to increase their leverage as much, unbanked firms invest less (Model 3) and can boost profitability less than firms borrowing from domestic banks (Model 4). This is the case also for firms with foreign bank relationships, although probably for very different reasons: Having access to the financial system, these firms may have been already capable of profit-enhancing investment before our sample period. It thus appears that the propensity scores estimates and the correlations in Table VI lead us to overstate the direct benefits of engaging a foreign bank.

More surprisingly, and also in Table VIII, is our finding that an increase in domestic lending worsens access and cost of credit to bank dependent firms, once again indicating that domestic banks may direct more lending towards household and government related projects.

## **7. Conclusions**

Using a novel dataset that allows us to trace the bank relationships of a sample of mostly unlisted firms in Eastern Europe, we explore to what extent foreign banks enhance credit access. We show that firms appear to have the same access to financial loans and ability to invest whether they borrow from a domestic or a foreign bank, but foreign bank presence indirectly benefits all firms. This indicates that the limits to financial integration are less tight than what the previous literature based on a static picture of bank loan portfolios suggests and casts a positive light on the role of foreign banks in emerging markets.

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**Table I**  
**Variable Definitions**

The table reports the names, definitions, units, number of observations (# Obs.), mean, standard deviation (St. D.), and median for the main dependent and independent variables of the matched Amadeus-Kompass sample. The sample includes a maximum of 8,569 (10,154) firms in 2000 (2005) and the sample sizes vary according to the specifications in which the different variables are actually used; the maximum number of observations available is reported. The units used are: bivariate dummy (0/1), percentage (%), thousands of dollars (000\$) and year.

<b>Dependent Variables</b>	<b>Definition</b>	<b>Units</b>	<b># Obs.</b>	<b>Mean</b>	<b>St. D.</b>	<b>50th</b>
Foreign Bank	=1 if at least one bank a firm employs is foreign; =0 if all reported banks are domestic	0/1	11,225	0.24	0.43	0
+ 1 <sup>st</sup> Bank	=1 if a firm reports its first bank relationship in 2005; =0 if the firm already reported bank relationships in 2000	0/1	2,640	0.319	0.466	0
+ Bank	=1 if a given bank relationship reported in 2005 is new; =0 if the bank relationship already existed in 2000	0/1	3,745	0.434	0.495	0
- Bank	=1 if a bank relationship reported in 2000 is dropped in 2005; =0 if the bank relationship still exists in 2005	0/1	4,784	0.790	0.407	1
ΔLeverage	Change in firm leverage between 1999-2000 and 2004-2006	-	4,822	2.24	61.05	0.01
ΔInterest	Change in firm interest rate expenses between 1999-2000 and 2004-2006	-	1,479	0.05	1.21	0.01
ΔInvestment	Change in firm fixed assets over total assets at the end of the previous year	000\$	5,193	0.08	0.62	-0.01
ΔROA	Change in firm ROA between 1999-2000 and 2004-2006	-	5,090	0.39	27.92	0.00
<b>Independent Variables</b>	<b>Definition</b>	<b>Units</b>	<b># Obs.</b>	<b>Mean</b>	<b>St. D.</b>	<b>50th</b>
Unbanked Firm	=1 if the firm reports no bank relationships; =0 otherwise	0/1	18,723	0.40	0.48	0
Foreign Firm	=1 if the firm is owned by foreigners; =0 otherwise	0/1	12,194	0.25	0.43	0
State-Owned Firm	=1 if the firm is owned by the state; =0 otherwise	0/1	12,194	0.10	0.30	0
Bank-Owned Firm	=1 if the firm is owned by a bank; =0 otherwise	0/1	12,194	0.02	0.13	0
Firm Employees	The number of firm employees	-	9,948	578	2,162	219
Firm Assets	Firm total assets	000\$	12,194	35,756	288,059	5,302
Firm Age	The age of the firm	Year	7,518	16.49	21.95	9.53
Firm Efficiency	Difference between firm and median return on assets in the industry that year	-	12,000	-0.12	18.43	0.00
ΔFirm Sales(t-1)	Growth in firm sales in the previous year	-	8,685	0.00	0.65	0.04
Firm Tangible / Total Assets	Tangible to total assets of the firm	-	12,174	0.64	9.82	0.50
Number of Banks	The number of banks the firm employs	-	11,225	1.17	0.55	1
Services Other Than Loans	=1 if the firm has financial expenses that are at least 10 percent larger than its interest expenses; =0 otherwise	0/1	12,194	0.21	0.41	0
Greenfield	=1 if the bank entered as a greenfield; =0 otherwise	0/1	11,225	0.04	0.20	0
Foreign Bank Acquired the Bank	=1 if the firm employs at least one bank that was acquired by a foreign bank after 2000; =0 otherwise	0/1	4,784	0.50	0.08	0
Domestic Bank Acquired the Bank	=1 if the firm employs at least one bank that was acquired by a domestic bank after 2000; =0 otherwise	0/1	4,784	0.33	0.10	0
Financial Development	Bank assets to GDP	-	18,723	0.94	1.85	0.61
Foreign Loans	Foreign to total loans	-	18,723	0.42	0.30	0.28
ΔFinancial Development	Country increase in bank assets to GDP between 2000 and 2005	-	10,010	0.78	2.38	-0.02
ΔForeign Loans	Country increase in foreign to total loans between 2000 and 2005	-	10,010	0.16	0.31	0.08
Investment Profile	International Country Risk Guide indicator of the country's investment risk (increasing in the extent of risk)	-	18,723	9.07	2.74	9.13
HHI	Country Herfindahl-Hirschman index of bank loan shares	-	18,723	0.17	0.11	0.13

**Table II**  
**Foreign Banks in Eastern European Countries**

This table describes the different characteristics of the credit market in our sample. The table presents the number of banks by country included in our sample, the percentage of these banks that we classify as foreign, the number of bank relationships we observe and the percentage of these relationships that are with foreign banks both for 2000 and 2005. We also provide information on the main characteristics of these credit markets, such as the ratio of total bank loans to GDP, a proxy of the supply of credit, and the percentage of foreign bank loans.

<i>Year</i>	<i>Country</i>	<i>Number of Banks</i>	<i>Percentage Foreign Banks</i>	<i>Number of Bank Relationships</i>	<i>Percentage Foreign Bank Relationships</i>	<i>Total Bank Loans / GDP</i>	<i>Foreign Bank Loans / Total Bank Loans</i>
2000	Bulgaria	16	44	1,513	57	9	44
	Croatia	37	19	988	2	36	18
	Czech Rep.	13	62	417	46	25	53
	Estonia	4	50	97	97	46	94
	Hungary	21	76	1,104	38	49	61
	Latvia	19	47	241	57	19	72
	Lithuania	4	25	733	64	12	75
	Poland	35	40	4,445	21	29	61
	Romania	3	33	22	5	9	46
	Russia	31	19	1,760	1	10	15
	Slovakia	6	83	363	96	24	41
	Slovenia	0	0	0	0	36	2
	Ukraine	8	25	2,599	2	8	5
2005	Bulgaria	15	67	373	91	29	80
	Croatia	30	23	628	62	56	86
	Czech Rep.	11	82	779	90	22	85
	Estonia	3	100	213	100	132	99
	Hungary	25	72	1,295	66	111	49
	Latvia	14	29	323	93	72	62
	Lithuania	8	63	571	71	41	95
	Poland	33	45	949	70	20	71
	Romania	3	100	17	100	15	52
	Russia	60	10	1,759	1	13	2
	Slovakia	14	64	302	90	2	94
	Slovenia	12	25	948	34	53	18
	Ukraine	12	17	1,741	1	14	10

**Table III**  
**Sample Selection**

In Models 1 and 2 the dependent variable is the dummy variable Match which equals one if we are able to match the firm in Amadeus with Kompass, and equals zero if the firm in Amadeus is unmatched; the sample includes all firms in Amadeus in 2000 and 2005. In Model 3, the dependent variable is the dummy variable Observe Bank that equals one if the firm reports a bank in Kompass, and equals zero otherwise; the sample includes only Amadeus firms matched with Kompass in 2000 and 2005. The definition of the variables can be found in Table I. All models are probit models estimated by maximum likelihood. The table reports the marginal effects at the means (and the effect of a change from zero to one for dummy variables) and the standard errors in parentheses. Standard errors are corrected for heteroskedasticity and clustered at the firm level. \*, \*\*, and \*\*\* indicate significant at 10 percent, 5 percent and 1 percent level, two-tailed.

Model	1	2	3
Dependent Variable	Match	Match	Observe Bank
Sample	Amadeus	Amadeus	Matched
ln(Firm Employees)	0.00189*** (0.00006)	0.000785*** (0.00005)	1.6550 *** (0.6264)
ln(Firm Age)		-0.00003*** (0.00005)	-0.4335 (0.3275)
ROA	-0.000269*** (0.00007)	-0.000226*** (0.00004)	-11.1456 ** (5.0785)
Leverage	0.000002 (0.000003)	0.000001 (0.000002)	0.2094 * (0.1182)
Sector Dummies	Yes	Yes	No
Year and Country Dummies	Yes	Yes	Yes
Observations	570,249	422,682	6,372
Wald Chi2 Test Statistic (p-value)	12,969.71 (0.00)	19,777.59 (0.00)	1,624 (0.00)

**Table IV**  
**The Statics of Firm-Bank Relationships**

The dependent variables is Foreign Bank, a dummy that equals one if the firm employs at least one foreign bank and equals zero otherwise. All Amadeus firms for which we observe bank relationships in 2000 or 2005 are included. The definition of the variables is in Table I. All models include year\*country fixed effects. We estimate linear probability models by ordinary least squares. Standard errors are corrected for heteroskedasticity and clustered at the firm level. \*, \*\*, and \*\*\* indicate significant at 10 percent, 5 percent and 1 percent level, two-tailed.

Model	(1)	(2)	(3)	(4)
Dependent Variable	Foreign Bank	Foreign Bank	Foreign Bank	Foreign Bank
Foreign Firm	0.0237*** (0.00901)	0.0356*** (0.0118)	0.0383*** (0.0119)	0.0347*** (0.0118)
State-Owned Firm	0.0158 (0.0127)	0.0327 (0.0211)	0.0363* (0.0212)	0.0371* (0.0210)
Bank-Owned Firm	-0.0364 (0.0255)	-0.0555* (0.0300)	-0.0492* (0.0295)	-0.0533* (0.0301)
ln(Firm Assets)	0.0155*** (0.00210)	0.0187*** (0.00358)	0.0199*** (0.00359)	0.0207*** (0.00371)
ln(Firm Age)		-0.00388 (0.00662)	-0.00727 (0.00672)	-0.00227 (0.00662)
Firm Efficiency		0.00991*** (0.00119)	0.00986*** (0.00121)	0.0101*** (0.00116)
Δ Firm Sales(t-1)		0.0171** (0.00767)	0.0174** (0.00772)	0.0160** (0.00768)
Firm Tangible / Total Assets				-0.0652*** (0.0204)
Number of Banks	0.0908*** (0.00774)	0.0902*** (0.0105)		0.0896*** (0.0106)
Services Other Than Loans				0.0105 (0.0187)
Observations	11,225	5,924	5,924	5,923
R-squared	0.416	0.471	0.463	0.472

**Table V**  
**The Dynamics of Firm-Bank Relationships**

**Panel A. Relationship Terminations**

The dependent variable is - Bank, a dummy that equals one if a relationship that we observe in 2000 has been interrupted in 2005 and equals zero if the relationship continues in 2005. The definition of the variables is in Table I. All equations are estimated by maximum likelihood using probit models with selection with the exception of Model 3 which has been estimated by ordinary least squares. For probit models, instead of parameters, we report the marginal effects (and the effect of a change from zero to one for dummy variables), taking all independent variables at their means. Standard errors in parenthesis are corrected for heteroskedasticity and are clustered at the firm level. \*, \*\*, and \*\*\* indicate significant at 10 percent, 5 percent and 1 percent level, two-tailed.

Models	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	- Bank	- Bank	- Bank	- Bank	- Bank	- Bank
Foreign Firm	0.0132 (0.0178)	0.0129 (0.0178)		0.00892 (0.0176)	0.0145 (0.0178)	0.0282 (0.0187)
State-Owned Firms	-0.0326 (0.0243)	-0.0322 (0.0243)		-0.0365 (0.0240)	-0.0337 (0.0244)	-0.0209 (0.0260)
Bank-Owned Firm	0.0968** (0.0447)	0.0969** (0.0446)		0.112** (0.0442)	0.0955** (0.0446)	0.102** (0.0487)
ln(Firm Assets)	-0.0412*** (0.00529)	-0.0423*** (0.00538)		-0.0396*** (0.00524)	-0.0398*** (0.00555)	-0.0278*** (0.00515)
ln(Firm Assets)*Romania		0.0312 (0.0261)				
ln(Firm Age)	0.0138 (0.00859)	0.0137 (0.00859)		0.0159* (0.00850)	0.0135 (0.00859)	0.0560*** (0.00718)
Firm Efficiency	-0.0109*** (0.00373)	-0.0110*** (0.00373)		-0.0109*** (0.00369)	-0.0108*** (0.00373)	-0.00844** (0.00395)
Δ Firm Sales(t-1)	-0.0411*** (0.00905)	-0.0412*** (0.00905)		-0.0423*** (0.00895)	0.0124 (0.0334)	-0.0355*** (0.00984)
Firm Tangible/Total Assets					-0.0414*** (0.00906)	
Number of Banks	0.0635*** (0.0190)	0.0622*** (0.0190)		0.0544*** (0.0188)	0.0645*** (0.0190)	0.0848*** (0.0196)
Services Other Than Loans					-0.0369* (0.0200)	
Foreign Bank	-0.0372* (0.0191)	-0.0363* (0.0191)	-0.0830** (0.0333)	-0.0379** (0.0190)	-0.0354* (0.0191)	-0.0852*** (0.0181)
Foreign Bank Acquired the Bank				-0.116*** (0.0165)		
Domestic Bank Acquired the Bank				0.0706*** (0.0219)		
Financial Development						-0.218*** (0.0468)
Δ Financial Development						-0.0215** (0.0101)
Δ Foreign Loans						-0.660*** (0.0874)
Investment Profile						0.0206*** (0.00626)
HHI						-0.477*** (0.133)
Inverse Mills Ratio	0.0590 (0.1509)	0.007 (0.07)		0.0505 (0.1549)	0.023 (0.057)	0.3151*** (0.1049)
Country Fixed Effects	Yes	Yes	No	Yes	Yes	No
Firm Fixed Effects	No	No	Yes	No	No	No
Observations	2,744	2,744	4,784	2,744	2,744	2,744
Wald Chi2 Test Statistics (p-value); for Model 3, R-squared	706.77 (0.00)	709.09 (0.00)	0.973	784.77 (0.00)	711.96 (0.00)	458.65 (0.00)

### Panel B. New Relationships

The dependent variables are: + 1<sup>st</sup> Bank which is a dummy that equals one if a firm starts reporting bank relationships in 2005 and the firm was unbanked in 2000 and equals zero if the firm already had at least one bank relationship in 2000; + Bank which is a dummy that equals one if a given bank relationship is newly established in 2005 and equals zero if the relationship already existed in 2000. The definition of the variables can be found in Table I. All equations are estimated by maximum likelihood using probit models with selection with the exception of Model 4 which has been estimated by ordinary least squares. For probit models we report the marginal effects (and the effect of a change from zero to one for dummy variables), taking all independent variables at their means instead of parameter estimates. Standard errors in parenthesis are corrected for heteroskedasticity and are clustered at the firm level. \*, \*\*, and \*\*\* indicate significant at 10 percent, 5 percent and 1 percent level, two-tailed.

Dependent Variable	(1) + 1 <sup>st</sup> Bank	(2) + Bank	(3) + Bank	(4) + Bank	(5) + 1 <sup>st</sup> Bank	(6) + Bank	(7) + Bank
Foreign Firm	-0.0990** (0.0396)	0.131* (0.0723)	0.0224 (0.0199)		-0.0547* (0.0283)	0.0197 (0.0208)	(6) (0.0686)
State-Owned Firm	0.00869 (0.0710)	-0.0761 (0.103)	-0.0259 (0.0329)		-0.104** (0.0455)	-0.0276 (0.0341)	-0.00522 (0.110)
Bank-Owned Firm	-0.0531** (0.0251)	0.301 (0.195)	0.0140 (0.0516)		-0.0774 (0.0822)	0.0375 (0.0554)	0.198 (0.201)
ln(Firm Assets)	-0.00268 (0.00663)	-0.0646*** (0.0198)	-0.0165*** (0.00548)		2.34e-05 (0.00745)	-0.0110** (0.00555)	-0.0817*** (0.0214)
ln(Firm Age)	-0.00734 (0.0135)	-0.0920*** (0.0300)	-0.00750 (0.0112)		0.0331*** (0.0114)	0.00602 (0.00863)	0.0609* (0.0322)
Firm Efficiency	0.0627 (0.0490)	0.103** (0.0435)	0.0258 (0.0659)		0.0311 (0.0752)	-0.0110 (0.0567)	0.146 (0.208)
Δ Firm Sales(t-1)	-0.0215 (0.0177)	0.129** (0.0605)	-0.00805 (0.0203)		-0.0555** (0.0216)	-0.0261 (0.0169)	0.194*** (0.0682)
Firm Tangible/Total Assets			-0.000400 (0.000647)				
Number of Banks		0.784*** (0.0397)	0.182*** (0.00791)			0.218*** (0.0124)	0.735*** (0.0422)
Services Other Than Loans			0.0876* (0.0485)				
Foreign Bank	-0.0827*** (0.0251)	-0.423*** (0.0940)	-0.179*** (0.0258)	-0.549* (0.0313)	-0.189*** (0.0336)	-0.311*** (0.0299)	-0.449*** (0.0940)
Financial Development					-0.0334*** (0.0128)	-0.00423 (0.00951)	
Δ Financial Development					-0.0188*** (0.00557)	0.0115*** (0.00424)	
Δ Foreign Loans					0.356*** (0.0823)	-0.131*** (0.0437)	
Investment Profile					0.0137 (0.00947)	0.0105 (0.00660)	
HHI					1.768*** (0.172)	0.0770 (0.110)	
Proportion Larger Firms With at Least One Foreign Bank							1.220** (0.483)
Inverse Mills Ratio	-0.3633 (0.0572)***	-12.87 (12.79)	0.0035 (0.0662)		-0.3118 (0.0550)***	-0.0624 (0.0765)	-11.038 (24.318)
Country Fixed Effects	Yes	Yes	Yes	No	No	No	Yes
Firm Fixed Effects	No	No	No	Yes	No	No	No
Observations	1,925	2,740	2,740	3,745	1,925	2,740	2,280
Wald Chi2 Test Statistics (p-value); for Model 4, R-squared	994.51 (0.00)	9,794.11 (0.00)	1,674.91 (0.00)	0.94	189.14 (0.00)	931.72 (0.00)	3,301.66 (0.00)

**Table VI**

**Performance: Firms with Foreign versus Domestic Bank Relationships**

This table shows changes in leverage, interest expenses, investment, and ROA. We consider as treated only firms that start a relationship with a foreign bank during the sample period. The control group includes only firms that have relationships with domestic banks during the sample period. For each outcome ( $y$ ), the treatment effect of firm  $i$  is defined as the difference between  $y$  in 2005 minus  $y$  in 2000 for treated observations and  $y$  in 2005 minus  $y$  in 2000 for the matched control. Thus, each treated firm enters only once in the computation of the average treatment effect. In the propensity score estimation, we use firm characteristics in 1999. Treated firms are matched with firms with only domestic banks within the same country, year and two-digit SIC code using the propensity score. We exclude all firms whose characteristics used in the computation of the propensity score are outside of the common support. We compute the propensity score using the following probit model:

$$P(\text{Foreign Bank}_{it+1} = 1) = \Phi \left( \begin{aligned} &\beta_0 + \beta_1 * d(\text{country}) + \beta_2 * d(\text{year}) + \beta_3 * (\text{two digit SIC code}) + \\ &+ \beta_4 * d(\text{Foreign Firm}) + \beta_5 * d(\text{Bank - Owned Firm}) + \\ &+ \beta_6 * d(\text{State - Owned Firm}) + \beta_7 * \ln(\text{Firm Total Assets})_{it} + \\ &+ \beta_8 * \ln(\text{Firm Age})_{it} + \beta_9 * \ln(\text{Firm Employees})_{it} + \beta_{10} * \text{ROA}_{it} \end{aligned} \right)$$

The nearest neighbor estimator chooses for each treated firm, the  $n$  firms without relationships with foreign banks with the closest propensity score. Gaussian and Epanechnikov estimators match each treated firm with a weighted average of firms without relationships with foreign banks giving more weight to untreated firms with propensity score similar to the one of the treated firm. The definition of the variables can be found in Table I. We report standard errors in parentheses, which are computed by bootstrapping with 50 replications. \*, \*\*, and \*\*\* indicate significant at 10 percent, 5 percent and 1 percent level, two-tailed.

	$\Delta$ Leverage	$\Delta$ Interest	Investment	$\Delta$ ROA
Number of Observations				
Firms with (a) Foreign Bank(s)	839 4,916	839 4,916	839 4,916	839 4,916
Firms without Foreign Bank(s)				
Gaussian	-0.007 (0.013)	0.015 (0.017)	-0.023 (0.017)	-0.021 (0.015)
Epanechnikov	-0.002 (0.015)	0.01 (0.017)	-0.018 (0.016)	-0.021 (0.017)
Nearest Neighbor (n=10)	-0.005 (0.021)	0.01 (0.019)	-0.025 (0.023)	-0.02 (0.02)
Nearest Neighbor (n=5)	0.007 (0.019)	-0.0004 (0.018)	-0.028 (0.018)	-0.022 (0.02)

**Table VII**  
**Indirect Effects of Foreign Bank Presence and Foreign Loans**

The dependent variables are changes in leverage, interest expenses, investment, and ROA between 2000 and 2005. We use information on firm-bank relationships from 2000. The definition of the variables can be found in Table I. We present ordinary least squares estimates and standard errors in parentheses. Standard errors are corrected for heteroskedasticity. \*, \*\*, and \*\*\* indicate significant at 10 percent, 5 percent and 1 percent level, two-tailed.

Dependent Variable	(1) $\Delta$ Leverage	(2) $\Delta$ Interest	(3) Investment	(4) $\Delta$ ROA
Foreign Firm	0.0378 (0.169)	0.349 (0.339)	0.199 (0.121)	0.0244*** (0.00624)
State-Owned Firm	0.0257 (0.125)	0.319 (0.649)	0.0107 (0.0825)	-0.00385 (0.00376)
Bank-Owned Firm	-0.0253 (0.109)	-0.566*** (0.101)	0.0987 (0.135)	-0.0109 (0.0159)
log(Firm Assets)	-0.0630 (0.0497)	-0.124 (0.161)	-0.161*** (0.0301)	0.000772 (0.00216)
ln(Firm Age)	-0.0690 (0.0498)	-0.0239 (0.139)	-0.125** (0.0479)	-0.00292 (0.00283)
ROA	1.987 (1.654)	-1.513 (1.036)	0.380 (1.075)	-0.776*** (0.0586)
Financial Development	0.0549 (0.391)	3.218* (1.540)	0.135 (0.229)	0.0283 (0.0188)
Foreign Loans	1.428*** (0.493)	2.544 (1.705)	1.598** (0.627)	0.0825* (0.0439)
Foreign Loans * Foreign Bank	-0.168 (0.134)	-0.0454 (0.344)	-0.399** (0.165)	0.00154 (0.0115)
Foreign Loans * Unbanked	-0.115 (0.156)	-0.357** (0.0991)	-0.498*** (0.137)	-0.0229** (0.00967)
$\Delta$ Financial Development	-0.00275 (0.0261)	-0.115 (0.0637)	0.0669*** (0.0123)	-0.00307 (0.00194)
$\Delta$ Foreign Loans	0.630** (0.253)	-1.447 (1.153)	0.985*** (0.111)	0.0167 (0.0292)
Investment Profile	-0.138** (0.0586)	-0.232 (0.225)	-0.0770 (0.0495)	0.00179 (0.00512)
HHI	-1.200 (0.808)	-5.589* (2.516)	-0.758 (0.896)	-0.0660 (0.0674)
Observations	951	951	1,340	1,335
R-squared	0.084	0.171	0.089	0.547

**Table VIII**

**Direct and Indirect Effects of Foreign Bank Presence**

The dependent variable is alternatively the change in leverage (Model 1), the change in interest rate expenses (Model 2), firm investment (Model 3), and the change in ROA (Model 4). The definition of the variables can be found in Table I with the exception of bank dependence which is the ratio of short-term and long-term debt to total liabilities in the firm's industry, measured using U.K. Amadeus data. The table reports the estimated coefficients and standard errors below in parentheses, obtained using ordinary least squares. Standard errors are corrected for heteroskedasticity and are clustered at the firm level. \*, \*\*, and \*\*\* indicate significant at 10 percent, 5 percent and 1 percent level, two-tailed.

	(1)	(2)	(3)	(4)
Dependent Variable	<b>ΔLeverage</b>	<b>ΔInterest</b>	<b>Investment</b>	<b>ΔROA</b>
Foreign Firm	0.0369*** (0.00675)	0.106*** (0.0136)	0.0766*** (0.0284)	-0.596** (0.235)
State-Owned Firm	0.0582*** (0.00227)	0.0902*** (0.00196)	-0.0711*** (0.0169)	-0.0640 (0.150)
Bank-Owned Firm	0.00957 (0.00671)	-0.332*** (0.0130)	0.0485*** (0.00582)	-0.0896*** (0.0231)
log(Firm Assets)	-0.0158*** (0.000988)	0.0477*** (0.000637)	-0.0646*** (0.0155)	0.584*** (0.205)
ln(Firm Age)	-0.00383*** (0.00126)	-0.00633* (0.00349)	-0.0600*** (0.00593)	-0.853*** (0.0389)
ROA	0.000119*** (1.35e-05)	0.195*** (0.0315)	0.000139 (0.000222)	-0.0303*** (0.00144)
Domestic Financial Development * Bank Dependence	-0.0543*** (0.0114)	1.4790*** (0.4070)	0.222 (0.1369)	59.602*** (7.658)
Foreign Financial Development * Bank Dependence	0.2358*** (0.0419)	-4.5190*** (0.7396)	2.030*** (286.8)	93.230*** (5.142)
Foreign Financial Development * Bank Dependence * Unbanked	-0.2361*** (0.0146)	-2.097*** (0.0795)	-1.141*** (0.0813)	-8.727*** (1.460)
Foreign Financial Development * Bank Dependence * Foreign Bank	0.0310 (0.0721)	1.898*** (0.4758)	-1.332*** (0.1180)	-11.853** (5.713)
Country * Year Dummies	Yes	Yes	Yes	Yes
Industry * Year Dummies	Yes	Yes	Yes	Yes
Observations	6,231	1,366	4,357	3,490
R-squared	0.489	0.086	0.095	0.021

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