

Havrylchyk, Olena

Working Paper

The effect of foreign bank presence on firm entry and exit in transition economies

BOFIT Discussion Papers, No. 11/2011

Provided in Cooperation with:

Bank of Finland, Helsinki

Suggested Citation: Havrylchyk, Olena (2011) : The effect of foreign bank presence on firm entry and exit in transition economies, BOFIT Discussion Papers, No. 11/2011, ISBN 978-952-462-706-1, Bank of Finland, Institute for Economics in Transition (BOFIT), Helsinki, <https://nbn-resolving.de/urn:nbn:fi:bof-201408072008>

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<https://hdl.handle.net/10419/212699>

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BOFIT Discussion Papers
11 • 2011

Olena Havrylchyk

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Bank of Finland, BOFIT
Institute for Economies in Transition

BOFIT Discussion Papers
Editor-in-Chief Laura Solanko

BOFIT Discussion Papers 11/2011
3.6.2011

Olena Havrylchyk : The effect of foreign bank presence on firm entry and exit in transition economies

ISBN 978-952- 462-706-1
ISSN 1456-5889
(online)

This paper can be downloaded without charge from
<http://www.bof.fi/bofit>

Suomen Pankki
Helsinki 2011

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All opinions expressed are those of the author and do not necessarily reflect the views of the Bank of Finland.

Olena Havrylchyk*

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Abstract

This study investigates the impact of foreign bank penetration on firm entry in Central and Eastern Europe. Acquisition of domestic banks by foreign investors has lowered rates of firm creation, decreased the average size of entrants, and increased firm exit in industries with greater informational opacity, while entry of greenfield foreign banks appears to have spurred firm creation and exit. We modify the view in earlier studies that informational opacity equates with firm size, defining opacity in terms of technological characteristics for a given industry. We find the economic significance of foreign bank entry is larger for opaque industries than industries with large shares of small firms. The study provides evidence of increased credit constraints for start-ups in Central and Eastern Europe, which is consistent with the theoretical proposition that the presence of foreign banks exacerbates informational asymmetries.

Keywords: Entrepreneurship, Foreign bank entry, Asymmetric information, Credit constraints

JEL: E51, G21, M13

I would like to thank Gunther Capelle-Blancard, Wendy Carlin, Fabricio Coricelli, Peter Haiss, Iftekhar Hasan, Timo Korkeamaki, Jacques Melitz and Greg Moore as well as participants at the 11th Annual Bank of Finland/CEPR Conference, FINESS conference, 2010 Finance and Growth Conference in Zagreb and a seminar in CEPPII for helpful comments and suggestions. I also gratefully acknowledge the financial support from the European Commission (7th Framework Programme, Grant Agreement No.217266).

* Olena Havrylchyk, CEPPII, Paris, France

Olena Havrylchuk

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Tiivistelmä

Tutkimuksessa tarkastellaan ulkomaisten pankkien markkinoilletulon vaikutuksia yritysten syntyyn Keski- ja Itä-Euroopassa. Vaikutukset ovat erilaisia sen mukaan, ovatko ulkomaiset pankit tulleet markkinoille ostamalla toimivan kotimaisen pankin vai perustamalla täysin uuden rahoituslaitoksen. Yritysostojen kautta markkinoille tulleet ulkomaiset pankit hidastavat uusien yritysten syntyä, supistavat syntyvien yritysten kokoa sekä nopeuttavat yritysten poistumista toimialoilla, joilla informaatio on hyvin epäsymmetristä. Sen sijaan uusien, ulkomaalaisomisteisten pankkien tulo markkinoille on lisännyt sekä yritysten syntyä että yrityskuolemia. Aiemmasta kirjallisuudesta poiketen toimialoittaisia informaatioepävarmuuksia kuvataan tässä tutkimuksessa yrityksen koon sijasta toimialan teknisen rakenteen avulla. Verrattuna pienyritysvaltaisiin toimialoihin ulkomaisten pankkien markkinoilletulon vaikutukset ovat merkittävämpiä toimialoilla, joilla informaatioepävarmuudet ovat suuria. Tutkimuksessa osoitetaan myös aloittavien yritysten luotonsaannin vaikeutuneen Keski- ja Itä-Euroopassa. Tulos on yhdenmukainen teoreettisen mallin kanssa; sen mukaan ulkomaisten pankkien läsnäolo lisää epäsymmetrisestä informaatiosta aiheutuvia vaikeuksia luottomarkkinoilla.

Asiasanat: yrittäjyys, ulkomaisten pankkien tulo markkinoille, epäsymmetrinen informaatio, luottorajoitteet

JEL: E51, G21, M13

1 Introduction

Economists generally agree that foreign bank entry has increased the supply of credit in developing and transition countries. This gain is often attributed to three advantages of foreign banks: greater efficiency in allocating funds from depositors to creditors, better access to international credit markets, and lower sensitivity to idiosyncratic shocks (Berger et al., 2000; Bonin et al., 2005; De Haas and Lelyveld, 2006; Claeys and Hainz, 2007). Despite a large body of literature on the role of foreign banks in emerging economies, the issue of how much borrowers actually benefit from this improved access to credit remains murky. A number of studies claim that foreign banks avoid providing credit to small enterprises, preferring to focus on lending to large firms (Degryse et al., 2009). The reason for such lending policy may be due to the fact that foreign banks are good at digesting and acting on “hard” financial information but are at a disadvantage in collecting and communicating “soft” relationship-based information. From the public policy perspective, it would make no difference that foreign banks avoided lending to small and medium-sized enterprises (SMEs) as long as domestic banks were willing to pick up the slack and continue to serve smaller clients. The policy challenge emerges when foreign banks enter emerging markets through acquisition of domestic banks and the loss of domestic banks results in less credit access for SMEs.

A shift in lending patterns in favor of large established firms poses a particularly dire threat for start-ups in transition economies. By definition, new firms with no track record are informationally opaque; they face severe credit constraints even in advanced financial markets.¹ Yet, in transition countries, new firms are a major source of new jobs and contribute to lower inequality (Berkowitz and Jackson, 2006). Moreover, the process of creative destruction appears to give a bigger boost to productivity growth in transition economies than in either industrialized or developing countries (Bartelsman et al., 2004).

Our study analyzes the impact of foreign bank presence in Central and Eastern European countries (CEECs) on the rate of firm entry and exit, size of entrants, and their survival probability in the initial years. The CEECs are well suited for this study as bank credit has formed the primary source of finance for enterprises. In contrast, CEEC capital markets, due to their thinness, have not provided a comparable access to finance. Moreover, the banking sector in CEECs has the highest

¹ Banking credit is the main source of non-equity financing for “infant” enterprises less than two years old (Berger and Udell, 1998). Firms that borrow from banks tend to concentrate their borrowing with a single institution, forming a long-term relationship that enables banks to collect private information on creditworthiness of these firms (Petersen and Rajan, 1994).

level of foreign bank penetration in the world. This is of particular value for our discussion as the preferred mode of foreign entry has been acquisition of existing domestic banks, and led in some cases to a virtual extinction of domestic private banks (e.g. Estonia, the Czech Republic, and the Slovak Republic). Firm turnover (entry plus exit) is also relatively high in transition economies, reaching as much as 20.5 % of total number of firms (compared to a range of 3–10 % for developed economies). Notwithstanding the high rate of firm creation, the number of firms per capita remains below the western European level – a gap that shows no sign of closing.

Numerous empirical studies provide strong evidence that foreign-owned banks treat small firms as informationally opaque and show greater reluctance than domestic banks in lending to them (Berger et al., 2001; Clarke et al., 2006; Mian, 2006; Berger et al., 2008). The arrival of foreign banks may cause domestic banks to shift their loan allocation to smaller borrowers (Degryse et al., 2009), leading to a mixed picture of the overall impact of foreign bank entry on credit access. Beck and Martinez Peria (2010) and Gormley (2010) find that foreign bank entry has negatively affected banking sector outreach and access to credit in Mexico and India, respectively. Giannetti and Ongena (2007), analyzing firm-level data for CEECs, conclude that established firms of all sizes benefited from foreign bank entry, but the lion's share of the benefit went to big firms. None of these studies, however, considers the impact of foreign bank presence on firm entry and exit, or the possible effect on entrant size. Moreover, they treat informational opacity as a function of firm size, disregarding other aspects of information asymmetry.

In addition to contributing to the literature on impacts of foreign bank presence on the supply of credit to SMEs, we address the issue of credit constraints as a barrier to firm entry, noting three arenas of discussion. One group of papers establishes that the degree of development of financial institutions directly bears on firm entry and post-entry growth (Guiso and Sapienza, 2004; Klapper et al., 2006; Aghion et al., 2007). A second group of theoretical and empirical studies suggest that credit constraints diminish the size of start-ups so that they are unable to enter at optimal size (Evans and Jovanovic, 1989; Holtz-Eakin et al., 1994; Colombo and Grilli, 2005). The third group looks at specific aspects of financial development such as bank competition (Bonaccorsi di Patti and Dell'Ariccia, 2004; Cetorelli and Strahan, 2006) or US deregulation of bank branching restrictions (Black and Strahan, 2002; Kerr and Nanda, 2009; Kerr and Nanda, 2010). To our knowledge, this study is unique in that it provides a combined assessment of the impacts of foreign bank presence on the firm entry and exit (extensive margin) and size of startups (intensive margin of entry).

We find consistent evidence that foreign bank penetration in CEECs has led to lower rates of firm entry and a higher rates of firm exit in opaque industries relative to transparent industries. Moreover, we find that the mode of foreign bank entry is crucial; the negative impact is driven by the disappearance of domestic banks due to their acquisition by foreign investors. In contrast, the entry of greenfield foreign banks appears to spur firm creation in more opaque industries, which is consistent with market segmentation theories. Finally, we show that the negative effect of foreign bank acquisitions is not experienced by sole entrepreneurs, suggesting that the average size of new entrants drops in line with the hypothesis of credit constraints. We test the robustness of our results by considering other factors that influence entry and exit of firms, such as firm entry regulation and credit supply. Our results have clear policy implications. Where acquisition of domestic banks by foreign investors discourages entry of firms and diminishes the size of new entrants, available measures to lessen credit constraints for newly established firms need to be considered.

The paper proceeds as follows. In section 2 we present theoretical considerations. Section 3 describes our chosen empirical strategy and data. Sections 4 and 5 document our empirical findings and report robustness tests. Section 6 concludes with policy suggestions.

2 Theoretical considerations

Information-based theories contend that foreign banks have a comparative advantage in lending based on “hard” information such as long credit histories and detailed financial statements, while domestic banks are better placed to lend to firms based on “soft” information such as knowledge about an entrepreneur based on personal relationships.² Dell’Ariccia and Marquez (2004) present a model where domestic banks, possessing an information advantage, compete for borrowers with foreign banks that have a cost advantage in extending a loan. This leads to the segmentation of lending markets; foreign banks take market share from local banks where soft informational disadvantages are lowest. Under this model, small borrowers benefit as well, because domestic banks shift

² Soft information tends to be more difficult to transfer than hard information. Hard information is credible, publicly verifiable data, such as a firm’s balance sheets, credit history, collateral, and guarantees. Soft information, in contrast, cannot be verified by a third person and is gained as a result of the relationship between a bank and a borrower. For example, a bank manager could gain, through repeated interviews with an owner of a new firm, a view that the firm’s owner is a smart, honest, and hard-working entrepreneur with a high probability of success. This soft information, however, cannot be transferred to other potential lenders (Petersen, 2004).

their credit allocation toward sectors where their competitors face greater adverse selection problems.

Although not explicitly stated, the implications of the Dell’Ariccia and Marquez (2004) model vary depending on the mode of foreign banks entry. If banks enter via greenfield institutions, the model predicts segmentation of the market, but SMEs benefit because domestic banks step up their supply of loans to them. However, where foreign banks enter via acquisition of domestic institutions (as is mostly the case of transition economies), the number of domestic banks obviously falls. In this case, SMEs face increased credit constraints.

The model proposed by Detragiache et al. (2008) starts with similar assumptions that domestic banks have a cost advantage in gathering and processing soft information and foreign banks have the advantage in dealing with hard information. Under this set-up, however, outcomes depend on the costs of monitoring soft information and costs of adverse selection. When the cost of monitoring soft information is low, entry by foreign banks pushes the economy toward a separating equilibrium (the foreign banks finance transparent borrowers and domestic banks finance opaque borrowers). However, when the costs of monitoring and adverse selection are high, the economy moves to the credit-constrained equilibrium, where borrowers seeking loans based on soft information are excluded from the market – a behavior sometimes referred to a “cream-skimming.” Like the Dell’Ariccia and Marquez (2004) model, this model implies that a separating equilibrium will only work if foreign banks enter via greenfield institutions. The credit-constrained equilibrium is more likely when foreign banks enter via acquisition of domestic institutions as foreign ownership increases the cost of monitoring soft information.

While none of these models considers the impact on firm entry and exit, the implications are self-evident: the choice of the mode of foreign bank entry is determinative. Acquisition of domestic banks by foreign investors is likely to be detrimental to the entry of new firms due to reduced supply of loans to opaque clients, while the entry of foreign banks via greenfield investment may lead to market segmentation or credit-constrained equilibria.

As to firm exit, consider an opaque firm that has a relationship with a domestic bank and this bank is acquired by a foreign investor. Here, the new bank owner has available hard and soft information proving the client’s creditworthiness. Assume that this foreign bank is at a disadvantage in communicating “soft” information within the organization. As a result, the bank does not renew loans to clients based on soft information. This idea is derived from Stein (2002), who argues that hierarchical organizations are more likely to rely on hard information than organizations with flatter structures. Flatter organizations have better control and information on their managers, and thus can

afford to give them more discretion and allow them to rely on soft information. This model, extended to large banks by Berger et al. (2005), is also applicable to foreign banks, which are often part of multinational banking groups and where communication of soft information is obstructed not just by hierarchy but also cultural and linguistic barriers. Similarly, discretion given to loan officers may promote politically connected lending, a common problem in developing countries (e.g. Khwaja and Mian, 2005). This leads to a hypothesis that the acquisition of domestic banks by foreign investors has a more positive effect on firm exit in opaque sectors than in transparent sectors.

3 Estimation strategy and data

Where foreign banks face greater informational asymmetries than domestic banks, information-based theoretical models imply that their presence should have a differential effect on firm entry and exit depending on firm opacity. To capture the impact of foreign bank presence on firm demographics based on the degree of opaqueness of the industry in which the firm operates, we use a difference-in-differences approach inspired by Rajan and Zingales (1998).

This methodology has a number of well-recognized advantages in investigation of financial development impacts on economic growth, or more precisely, the effect of banking sector development on the firm creation (Aghion et al., 2007; Bonaccorsi di Patti and Dell’Ariccia, 2004; Cetorelli and Strahan, 2006). The identification strategy minimizes the risk that our results are driven by reverse causality (foreign banks enter markets with high firm entry rates), i.e. it is unlikely that banks would be attracted to a particular market just because a specific industry experienced a relatively higher rate of firm creation. Moreover, the use of interactions reduces omitted variable problems, which drives both firm demographics and entry of foreign banks.

The key variable in our empirical set-up is a measure of opacity. Earlier studies proxy firm opacity with firm size, but this measure cannot be used in the case of new entrants, because, by definition, neither small nor large start-ups have a credit history or financial statements with long history. Size becomes correlated with transparency only when these firms grow and auditing and disclosure requirements tend to be tighter. Hence, following Bonaccorsi di Patti and Dell’Ariccia (2004), we construct our opacity measure as a ratio of total assets to fixed assets at the industry level (*Opacity (fixed assets)_i*). The underlying notion here is that a bank can more easily evaluate the quality of a business plan when it is based on a simple technology with a large predictable

component and where the unobservable quality of human capital or effort is less important in determining the outcome. Moral hazard can also be reduced where technologies constitute a substantial share of fixed assets available as collateral.³ The above ratio is calculated at the industry level, based on the individual firm data contained in the AMADEUS database for the period between 2000 and 2005.⁴ To minimize measurement errors, we first drop companies falling outside the 5th and 95th percentiles of the distribution of our ratios.

To test the robustness of our results, we propose an alternative measure of opaqueness: skills or knowledge intensity of industries (*Opacity (skill dependence)_i*).⁵ The idea here is similar to the previous argument; it is more difficult for a bank to evaluate firms that operate in industries with a relatively higher knowledge component to their value-added process. Brewer et al. (1996) argue that knowledge assets and R&D-intensive physical assets are highly firm- and industry-specific, thus lowering liquidity value and recovery rates for a bank. Moreover, availability of knowledge assets increases moral hazard by permitting greater managerial discretion in shifting to riskier projects. These theoretical considerations are supported by empirical evidence of higher financial constraints for firms in knowledge-intensive industries (Gellatly et al., 2004). Accordingly, we compute an alternative measure of opaqueness as a ratio of skilled labor to total labor at the industry level, where skilled employee is defined as an employee that has completed at least a few years of college. The data come from the US Bureau of Labor Statistics.⁶

We define opacity in terms of the technological content of specific industries. As we argued earlier, information on size of new entrants in itself cannot be relied on to compute opacity. Nevertheless, we can compute a share of small firms in a total number of firms in a given industry

³ In this vein, Sengupta (2007) presents a model where foreign banks are more likely to rely on collateral as a screening device to contest the informational advantage of incumbent banks. This idea is confirmed by Haselman (2010) who show that better collateral legislation plays a larger positive role in loan supply by foreign banks relatively to their domestic peers. Research also shows that ratings agencies find it easier to rate firms with higher shares of fixed assets.

⁴ Following Bonaccorsi di Patti and Dell'Ariccia (2004), we calculate opaqueness indicators relying on local data for CEECs. This approach departs from that of Rajan and Zingales (1998), who rely on the measure of financial dependence based on the US data. One can argue that the measure of financial dependence is correlated with financial constraints. As such, a neutral measure of financial dependence requires data from a market (e.g. the US) with no credit constraints. In our case, share of fixed assets is not endogenous, so we need to measure opaqueness in the countries of interest. We test robustness of our results on the UK data, and find that opaqueness of industries is highly correlated between countries and our estimations yield similar results. We additionally find that our results hold even if we rely on financial dependence rather than opacity.

⁵ This measure has been inspired by Carlin and Mayer (2003), who look at the relationship between financial development and growth of industries with high level of skilled labor. Skill dependence is used as a proxy for dependence of industries on investment by other stakeholders.

⁶ Similar to opacity measure in terms of fixed assets, we would like to compute skill dependence relying on the CEEC data, but to our knowledge, such data is not collected. However, Carlin and Mayer (2003) show that skill dependence of industries is highly correlated across countries (correlation coefficient of 0.83), which justifies our use of the US data.

(*Small firms_i*)⁷ to test whether foreign bank entry has had a disproportional effect on industries with higher shares of small enterprises due to the level of technology adoption and innovation required by the industry. Such use of “technological size” was introduced by Beck et al. (2008) in their study of the impact of financial deepening on small firms. Contrary to common assumption, industries that have high share of small firms are not necessarily opaque. For instance, firms that are engaged in repair of goods are often small but quite transparent; the skills of employees are often not acquired formally and the firm’s fixed assets can readily be used as collateral. At the same time, production of computers is done by large firms, but they are rather opaque, because their workforce is highly educated and the share of non-tangible assets is very high.

The estimated model can be formally stated as:

$$Demo_{i,j,t} = a_1 Initial\ share_{i,j} + a_2 Opacity_i * Foreign_{j,t-1} + a_3 Small\ firms_i * Foreign_{j,t-1} + a_4 Industry_i + a_5 Country * Year_{jt} + \varepsilon_{i,j,t}$$

$Demo_{i,j,t}$ includes the following firm demographic statistics: entry, exit, net entry, and survival rates. Entry/exit rates refer to a number of firms that entered/exited industry i in country j and in year t divided by total firms in this industry, country, and year. Net entry rate is computed as a difference between entry and exit. Survival rate is computed as the number of firms created in year $t - 2$ that survived until time t as a percentage share of firms in year $t - 2$.⁸ Data on firm demographics are taken from the business demography statistics provided by Eurostat. Our data allow us to calculate the demographic indicators of firms with respect to size. Thus, we compute entry, exit, net entry, and survival rates for the firms with 1) no employees, 2) between one and four employees; 3) between five and nine employees and 4) more than nine employees. All variable definitions are provided in Table 1.

The initial share (*Initial share_{i,j}*) of each industry i in the local market j at the beginning of the analyzed period accounts for the fact that firm demographics depend on the stage of industry development (new, mature, declining, etc.) and is computed with AMADEUS data. The interaction term is the product of opacity in industry i and a measure for the degree of foreign bank presence in

⁷ A firm is considered small if its sales are below the 10th percentile of total sales of firms. A robustness check using firms’ assets found similar results.

⁸ For robustness purposes, we also compute survival rates at three, four and five years after firm creation. The findings remain generally unchanged, so we prefer to report the results of survival after two years due to the higher number of observations.

country j and in year $t - 1$. Foreign bank presence is measured as a share of foreign banks in the total bank capital in country j and in year t ($Foreign_{j,t}$). The data are taken from BankScope and augmented by information provided by central banks, as well as our own web searches of bank websites and newspapers. In addition, we include industry dummies, as well as country*year dummies to control for industry and time varying country effects. We also add size-specific effects when we incorporate firm size dimension into the model.

We perform our analysis based on a dataset that includes 52 industries in nine CEECs (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania, the Slovak Republic, and Slovenia) for the period 2000–2005.⁹ It is immediately apparent that CEECs experience high levels of new firm births and old firm exits. Table 2 shows that in a given year an average of 12 % of all firms are new entrants and 8 % are likely to exit. This figure is somewhat higher than firm turnover in developed countries, where the entry rate is below 6 % (Aghion et al., 2007). The average density of firms, measured by a number of enterprises per 10,000 in population is still lower in the CEECs than in western Europe, but there is great variation inside the region. The Czech Republic has the highest enterprise density in Europe, while Bulgaria, Latvia, Lithuania, and Romania have the lowest (Figure 1). At the same time, if we compute the density of firm entry (number of new enterprises per 10,000 in population), the difference between developed and emerging Europe is not statistically significant (Figure 2), suggesting that the current rate of new firm creation in CEECs remains insufficient to catch up with western Europe.

Given that our empirical methodology investigates the variation of entry rates between industries, we present average entry rates with respect to several industries (Figure 3). As expected, new industries such as computers and related activities experience the fastest entry rates, whereas entry is lowest in manufacturing. Figure 4 presents a scatter plot of our opacity measures: 1) total assets divided by fixed assets, and 2) share of skilled employees to total employees. Our results demonstrate that industries in which the quality of human capital or effort plays the decisive role (e.g. software, hardware, data processing, architecture, research and development, and advertising) are among the most informationally opaque sectors. Even so, the correlation between these two measures is only 38 %, and some industries appear to be opaque according to the first measure (e.g. cleaning, and construction), but completely transparent under the second measure. A relatively small correlation between our measures of opacity implies that these indicators describe different

⁹ Eurostat has no data on firm demographics for Poland, so it was excluded here.

aspects of informational asymmetries.¹⁰ Finally, we present a scatter plot of the average firm entry and the share of domestic banks acquired by foreign investors (Figure 5). The strong negative correlation between these variables provides further motivation to investigate the causality of this relationship.

4 Empirical findings

We report the findings of the baseline model in Table 3. Our variable of interest is the interaction between foreign bank share and opacity, which is negative in all models with the firm entry rate as dependant variable. Notwithstanding the measure of opacity (in terms of fixed assets or skill dependence), foreign bank presence is associated with lower firm creation in informationally opaque industries than in transparent industries. At the same time, we find no significant effect of foreign bank penetration on firm entry in industries with greater dependence on small firms. These results are robust when we control for the exit rate; i.e. account for the “administrative turnover” of firms that change their legal status (Bonaccorsi di Patti and Dell’Ariccia, 2004). The coefficient for exit variable is significant and positive, indicating that a higher entry rate correlates with higher exit rates. Our main results are confirmed by the model with net-entry as a dependant variable.¹¹

We also find that foreign bank presence leads to higher exit rates for firms in opaque industries than in transparent ones. These results are likely to be associated with incumbent firms as no effect on the survival of newly established firms is observed (see column 6 in Table 3). We interpret these finding by the greater reluctance of foreign banks to engage in relationship lending; lending officers in such banks have greater difficulties in communicating soft information to their bank headquarters abroad. Alternatively, where politically connected lending is more likely to happen in opaque industries (because lending officers have greater personal discretion), our results would suggest that foreign banks are less susceptible to political pressure and less likely to lend to connected parties (Detragiache et al., 2006; Giannetti and Ongena, 2007).

¹⁰ The share of small firms is correlated with skill dependence (correlation coefficient of 0.30), but not with the ratio of total assets to fixed assets.

¹¹ We could pose a question differently and analyze whether the share of domestic banks has a disproportionately larger positive effect for the entry opaque firms. The conclusion would be the same, but it is important to note that the effect is driven by domestic private banks, whereas the effect of state-owned banks on entry is almost insignificant.

Our findings do not concur with the work of Giannetti and Ongena (2007), who claim that foreign bank entry spurs both entry and exit in CEECs. This difference is likely due to data issues; their study relies on AMADEUS firm-level data to calculate entry and exit of firms, while we use the actual data on firm demographics. It also explains why we have similar results for exit of incumbent firms (present both in AMADEUS and in our database), while our results differ with respect to new entrants (not present in AMADEUS but covered by our database).

In section 2, we argued that the effect of foreign bank entry differs depending on the mode of entry. In Table 4, we present results separately for foreign investors that entered via acquisition of domestic banks and those that established greenfield banks. In line with theoretical predictions, the negative effect of foreign bank presence on firm entry in opaque industries is observed only when foreign banks prefer to enter via acquisition of domestic banks. There is no impact when foreign banks establish greenfield institutions. Therefore, it is not the entry of foreign banks, but the disappearance of domestic banks, that exacerbates informational asymmetries and leads to credit constraints for start-ups. The impact of both modes of bank entry on firm exit is positive, but no longer consistently significant.

In the following specifications, we relax the assumption of common coefficient of the interaction term and allow it to vary according to the firm size. The results, presented in Table 5, confirm our previous finding that the mode of foreign bank entry is important; only the acquisition of domestic banks leads to lower rates of firm creation in opaque industries. The impact is similar across all size categories, with the exception of individual entrepreneurs,¹² which means a decrease in the average size of start-ups in more opaque industries in the wake of foreign bank entry. Following hypothesis of Evan and Jovanovic (1989), we interpret this result as evidence of increasing credit constraints that prevent new firms from entering at their optimal size. We also find that the entry of foreign greenfield banks increases firm creation. It should be stressed that this effect is not due to higher supply of loans to start-ups by greenfield banks, but rather to the competitive pressure that they exert on domestic banks. In a similar vein, Degryse et al. (2009) provide empirical evidence that greenfield banks attract the most transparent borrowers, and that their entry has a positive effect on loan supply by domestic banks to more opaque and riskier borrowers. This result is consistent with the theory of loan market segmentation of Dell’Ariccia and Marquez (2004).

¹² The lack of impact on individual entrepreneurs that have no employees could be due to new lending approaches, e.g. credit score lending, that are well suited to funding small firms (Mester, 1997; Petersen and Rajan, 2002). This is especially true when credit scores are based on the owner’s personal consumer data obtained from consumer credit bureaus and combined with data on the SME collected by financial institutions.

As to firm exit, we find that foreign bank presence has a positive effect on the exit of smaller firms in opaque industries regardless of mode of bank entry (Table 5). Note that we mostly do not observe disproportionately negative effects on survival of these firms. The implication here is that our finding refers to the exit of incumbent firms, not start-ups. As mentioned earlier, size can be used as a measure of opacity for incumbent firms. Therefore, a higher exit rate for smaller firms in opaque industries in countries with deeper foreign bank penetration likely signals tighter credit constraints for these firms.

As we rely on a difference-in-differences estimation, it is worth pointing out what the coefficients mean in terms of economic significance. Take, for example, the electricity industry, which is at the 25th percentile of opacity, and compare it to database activities, which are at 75th percentile for opacity defined in terms of fixed assets. The coefficient suggests that the difference in entry rates between electricity and database industries in the Czech Republic (which was at the 75th percentile in 2002 in terms of foreign bank presence in 2002) is 0.6 percentage points higher than the difference in entry rates between these same industries in Latvia (which is at the 25th percentile in terms of foreign bank presence). In other words, moving from the Czech Republic to Latvia would benefit an opaque industry like database activities more than a firm in a more transparent industry. This observed change amounts to 4 % of the mean difference in entry rates between these industries across all countries, which reaches 15 %. While this effect may seem negligible, we should recall that it is driven by the fact that there is no significant effect on the creation of individual entrepreneurs. If we look at the creation of firms with more than 9 employees, the observed change amounts to 48 % of the mean difference. The economic significance is quite similar when industry opacity is measured in terms of skill dependence.

5 Additional robustness tests

Our measure of opacity as a ratio of total assets to fixed assets can cause an identification problem as it may be that industries characterized by a high share of fixed assets are also those with high fixed start-up costs (Bonaccorsi di Patti and Dell’Ariccia, 2004). These firms might benefit as foreign banks prefer to extend loans to larger firms or they might suffer if these banks, for diversification purposes, decide to issue many smaller loans rather than to fund a small number of large bor-

rowers. Therefore, we introduce a control variable for start-up costs that equals to the average volume of fixed assets of young firms (less than five years) in the industry ($Entry\ costs_i$). In addition, we construct an opaqueness indicator employing firms younger than five years ($Opacity\ (fixed\ assets\ for\ young\ firms)_i$). The results are presented in Table 6. The coefficient of the interaction with entry costs almost never achieves significance level and its inclusion does not modify our baseline results. Therefore, we can rule out the explanation that foreign bank entry has led to changes in entry rates of firms in industries depending on the size of entry costs.

The entry of foreign banks in CEECs happened after authorities liberalized entry rules for foreign institutions. In theory, all types of entry regulation might have been liberalized at the same time, and, hence it is necessary to account for the entry regulation of firms (Djankov et al., 2002). To control for this, we include an additional interaction variable between an indicator that measures the ease of starting a new business (in terms of time and costs) and a natural rate of firm entry in absence of all entry barriers. Results, reported in Panel A of Table 7, are robust to the inclusion of this variable.

Finally, the entry of foreign banks has been accompanied by rapid growth of the financial sector through improved access to international capital markets or via loans from parent banks. To control for this, we include an interaction term between financial depth and opacity (Panel B, Table 7), but the inclusion of this variable does not change our baseline results. While our findings confirm previous results that associate deeper financial markets with smaller credit constraints for start-ups (Guiso and Sapienza, 2004; Klapper et al., 2006; Aghion et al., 2007), the economic significance of this effect is tiny in this case. From the perspective of entrepreneurs, the increased supply of credit in the wake of foreign bank entry matters less than the increased informational asymmetries that made foreign banks less suitable to lend to them.

6 Conclusions

Although economists generally accept that foreign banks have contributed to the increased loan supply in CEECs, there has been little discussion on how evenly the benefits of increased access to credit have been spread among borrowers. A number of theoretical papers argue that foreign banks have a comparative advantage in lending to informationally transparent firms, while domestic banks are better suited to engage in “relationship lending” with opaque borrowers. Given that start-ups

are the most opaque clients, we were interested here in whether high opacity firms gained or lost from the presence of foreign banks.

Our analysis provides several notable findings. First, the presence of foreign banks is robustly associated with a lower entry rate of firms and smaller size of entrants in industries characterized by high informational asymmetries compared to more transparent industries. Second, we find that foreign bank entry has a positive effect on exit rate in opaque industries. These impacts are economically significant and consistent with theories that emphasize the role of domestic banks in servicing opaque firms such as start-ups.

It should be stressed that the effect of foreign bank penetration depends on their mode of entry. The observed negative effects are due to virtual extinctions of domestic banks where foreign investors entered the local banking market through acquisition. In contrast, the entry of foreign banks via greenfield investment is associated with higher rate of firm creation in more opaque industries, which we interpret as a sign of market segmentation where greenfield foreign banks attract transparent borrowers and, thus, increase competitive pressure on domestic banks to increase their supply of loans to SMEs.

Our results should be viewed in the context of the literature on the impact of foreign bank entry on loan supply. Despite positive effects of foreign banks entry on the average loan supply and its stability (De Haas and Lelyveld, 2006), all borrowers have certainly not benefited equally. Large incumbent firms (and, to a lesser degree, medium and relatively small firms) have seen their access to credit improve (Giannetti and Ongena, 2007). At the same time, our study shows that foreign bank entry could have tightened credit constraints for SMEs, forcing their exit and reducing the entry of new firms.

Our results hold important policy implications as they show that foreign bank entry can impair creation of new firms in industries with higher informational asymmetries. We argue that firm opacity is not necessarily correlated with its size, preferring instead the measures that capture availability of collateral and skill dependence. Moreover, we document that economic significance of foreign bank entry is larger for opaque industries than for industries with large share of small firms. By definition, opaque industries possess high levels of knowledge and skill intensity (e.g. reliance on advanced information technologies), and therefore are crucial in laying the groundwork for future economic growth. Policymakers should consider this negative aspect of foreign bank entry alongside the more obvious positive consequences such as the increased and more stable supply of lending to large firms. When foreign banks have a massive presence in the country and domestic

banks have been displaced, alternative ways of supporting entrepreneurship need to be explored such as the creation of venture capital funds or state sovereign wealth funds in order to assist start-ups and SMEs in opaque industries.

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Figure 1 Firm density

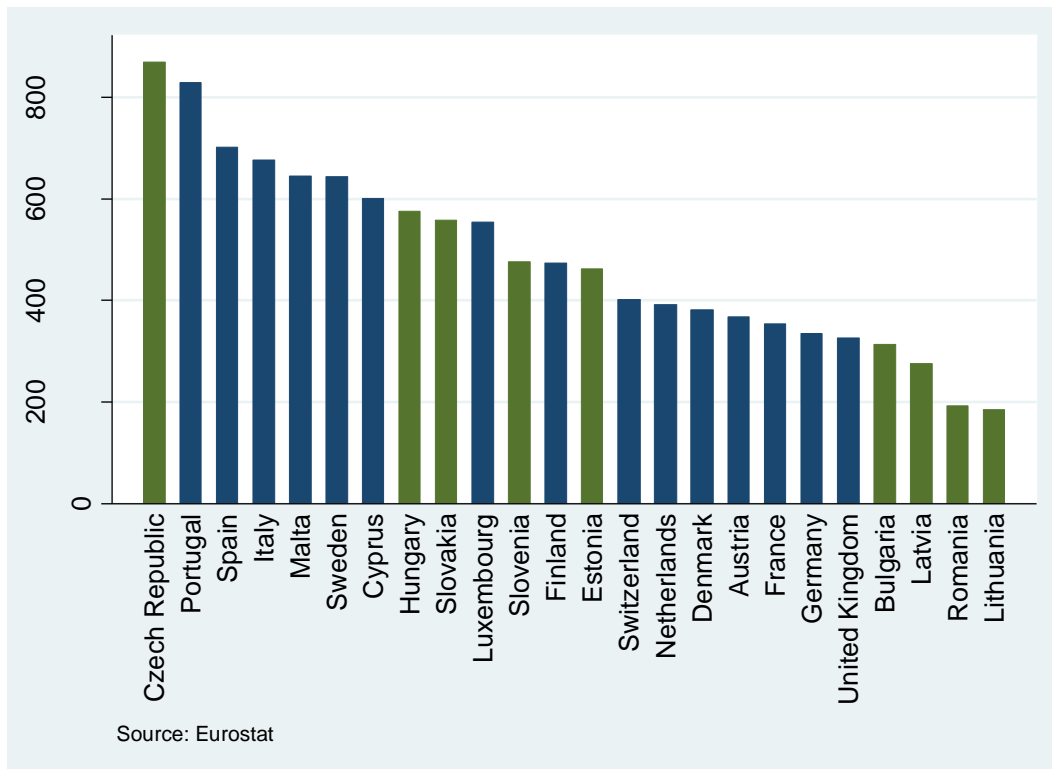


Figure 2 Firm entry density

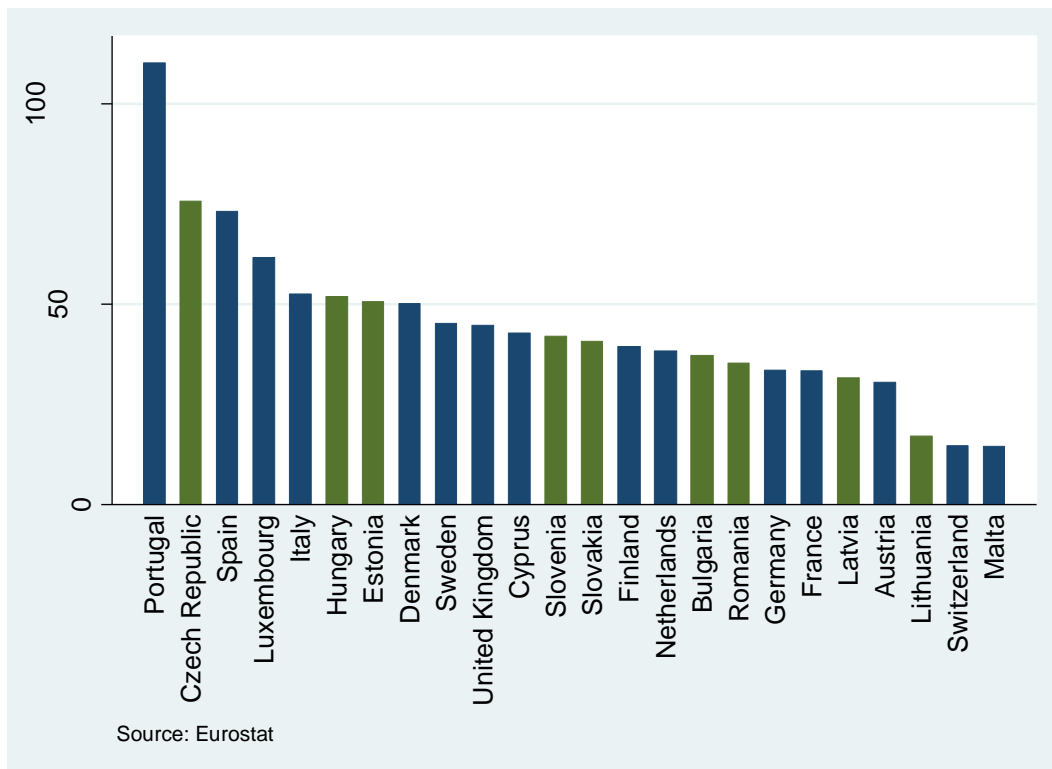


Figure 3 Firm entry rates with respect to different industries

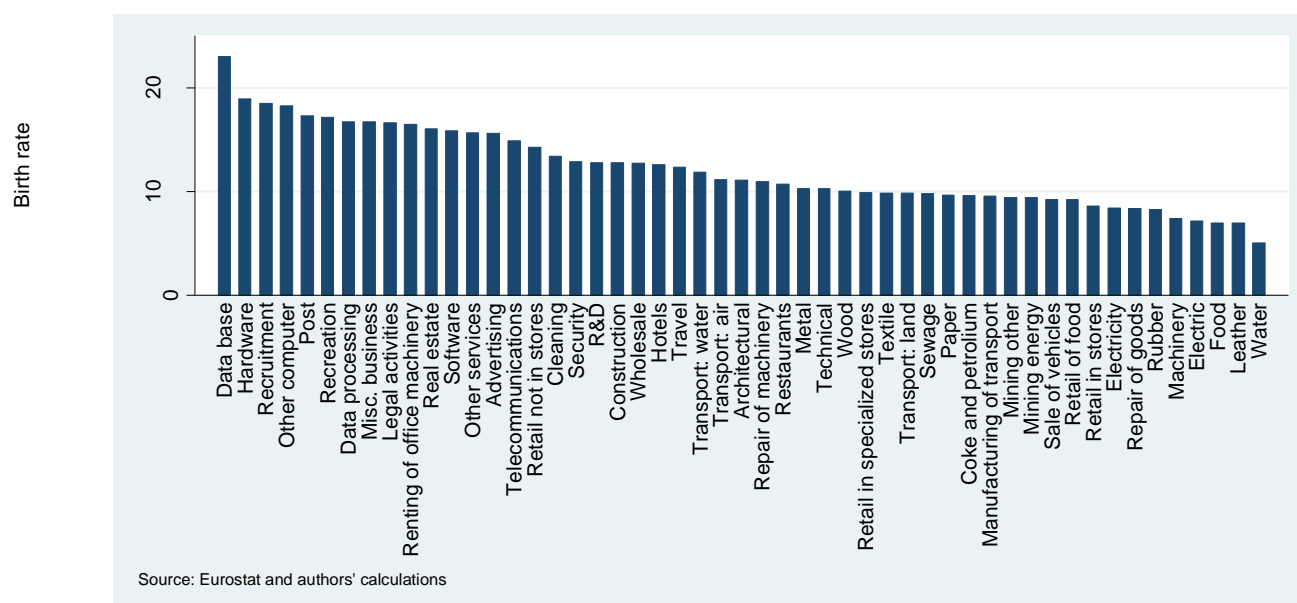
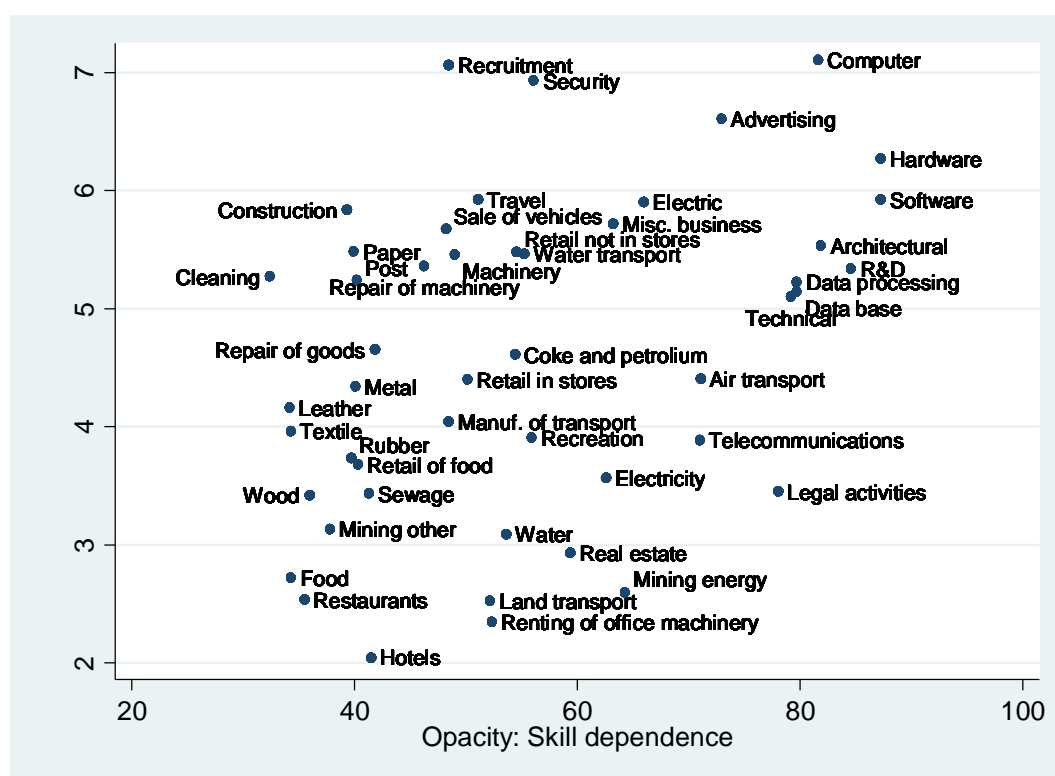
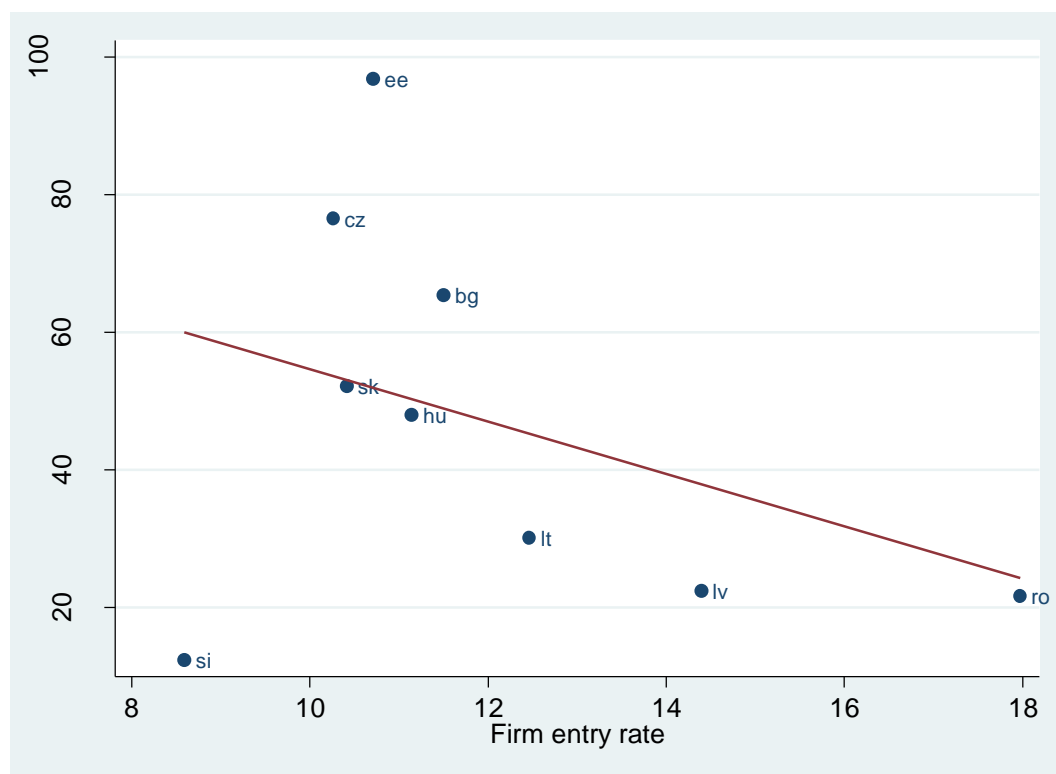


Figure 4 Scatter plot of two measures of opacity



Sources: Amadeus, US Bureau of Labor statistics, and authors' calculations

Figure 5 Scatter plot of firm entry vs. share of foreign acquired banks for the period 2000-2005



Sources: Eurostat, BancScope, and authors' calculations

Table 1 Description of variables

Variable	Definition	Data source
Demographic variables		
Entry _{ijt}	Number of firms that entered industry <i>i</i> in country <i>j</i> and in year <i>t</i> divided by total firms in this industry, country, and year.	Business Demography Statistic (BDS) of Eurostat
Exit _{ijt}	Number of firms that exited industry <i>i</i> in country <i>j</i> and in year <i>t</i> divided by total firms in this industry, country, and year.	BDS of Eurostat
Net entry _{ijt}	Difference between entry and exit.	BDS of Eurostat
Survival _{ijt}	Number of firms that have been created in year <i>t</i> – 3 and have survived till time <i>t</i> as a percentage share of firms in year <i>t</i> – 3.	BDS of Eurostat
Firm density	Number of enterprises per 10,000 of population.	BDS of Eurostat
Firm entry density	Number of new enterprises per 10,000 of population.	BDS of Eurostat
Industry level variables		
Opacity(fixed assets) _i	An average ratio of total assets to fixed assets for an industry <i>i</i> .	Amadeus
Opacity(fixed assets of young firms) _i	An average ratio of total assets to fixed assets for an industry <i>i</i> , computed only for firms less than 5 years old.	Amadeus
Opacity(skill dependence) _i	Ratio of skilled labor to total labor, where skilled employee is defined as one that has completed at least a few years of college.	US Bureau of Labor Statistics.
Opacity (small firms) _i	Share of small firms in a total number of firms. A firm is considered small if its sales fall below the 10 th percentile of total sales of firms.	Amadeus
Entry costs _i	Average volume of fixed assets of young firms (under five years) in the industry.	Amadeus
Initial share _i	The initial share of each industry <i>i</i> in the local market <i>j</i> at the beginning of the analyzed period	Amadeus
Natural _i	Entry rate in industry <i>i</i> in the UK.	BDS of Eurostat
Country level variables		
Foreign _{jt}	Foreign bank presence is measured as a share of foreign banks in the total bank capital in country <i>j</i> and in year <i>t</i>	BankScope and own research
Greenfield _{it}	Greenfield mode of foreign bank entry is measured as a share of foreign banks that entered via greenfield investment in the total bank capital in country <i>j</i> and in year <i>t</i>	Own research
Acquired _{it}	Acquired mode of foreign bank entry is measured as a share of foreign banks that entered via acquisition of incumbent domestic banks in the total bank capital in country <i>j</i> and in year <i>t</i>	Own research
Credit _{jt}	A ratio of total credit to GDP in country <i>j</i> and in year <i>t</i>	IFS
Start-up costs _{jt}	An indicator that evaluates the freedom (time and costs) of starting a new business; indicator ranges from 0 (least free) to 10 (most free).	Fraser Institute

Table 2. Summary statistics for the period 2000-2005

	Obs.	Mean	Std. dev.
Entry rate (in percent)			
Total	2503	12.00	7.57
No employees	2400	20.28	17.14
1 – 4 employees	2455	12.07	9.77
5 – 9 employees	2393	6.09	8.36
More than 9 employees	2391	3.08	4.46
Exit rate (in percent)			
Total	2236	8.49	4.38
No employees	2146	17.20	14.12
1 – 4 employees	2195	8.05	7.32
5 – 9 employees	2142	3.20	5.06
More than 9 employees	2155	1.78	2.60
Net entry rate (in percent)			
Total	2229	3.85	7.73
No employees	2129	4.05	20.70
1 – 4 employees	2176	4.28	11.55
5 – 9 employees	2111	3.07	9.87
More than 9 employees	2109	1.33	4.53
Survival rate (in percent)			
Total	1508	75.75	14.15
No employees	1372	67.76	20.14
1 – 4 employees	1457	82.49	14.80
5 – 9 employees	1190	88.33	16.35
More than 9 employees	1163	87.24	19.06

Entry/exit rates refer to a number of firms that entered/exited industry i in country j and in year t divided by total firms in this industry, country and year. Net entry is computed as a difference between entry and exit. Survival is computed as a percentage share of firms created in year $t - 2$ that survive until time t .

Table 3 The impact of foreign bank presence on firm demographics depending on industry opacity

	Entry	Entry	Exit	Net entry	Survival
Panel A					
Initial industry share	-0.013 (0.704)	-0.063** (0.045)	0.084* (0.056)	-0.134* (0.096)	0.287* (0.066)
Foreign*opacity (fixed assets)	-0.292** (0.013)	-0.248** (0.025)	0.504*** (0.000)	-0.661*** (0.000)	-0.709 (0.289)
Foreign*Share of small firms	0.018 (0.817)	0.022 (0.774)	0.141* (0.095)	-0.125 (0.361)	-0.898 (0.018)
Exit		0.185*** (0.000)			
Constant	11.58*** (0.000)	14.45*** (0.000)	6.121** (0.000)	8.030*** (0.000)	58.55*** (0.000)
Observations	4399	4300	4063	3999	2368
R-squared	0.539	0.571	0.601	0.146	0.364
Panel B					
Initial industry share	-0.003 (0.908)	-0.055* (0.080)	0.068 (0.118)	-0.114 (0.147)	0.329** (0.033)
Foreign*opacity (skill dependence)	-0.043*** (0.000)	-0.042*** (0.000)	0.042*** (0.000)	-0.098*** (0.000)	0.064 (0.431)
Foreign*Share of small firms	0.138 (0.183)	0.147 (0.153)	0.075 (0.462)	0.114 (0.506)	-1.082** (0.016)
Exit		0.184*** (0.000)			
Constant	12.15*** (0.000)	11.29*** (0.000)	6.657*** (0.000)	7.181*** (0.000)	45.72*** (0.000)
Observations	4318	4224	3996	3933	2320
R-squared	0.537	0.568	0.599	0.150	0.364

Robust p-values in parentheses; industry and time-varying country dummies are included; clustered by country/industry.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 4 The impact of foreign bank presence on firm demographics depending on industry opacity and share of small firms

	Entry	Entry	Exit	Net entry	Survival
Panel A					
Initial industry share	-0.030 (0.560)	-0.0973*** (0.000)	0.0685 (0.347)	-0.135* (0.096)	0.336* (0.066)
Acquired*opacity (fixed assets)	-0.527*** (0.000)	-0.435*** (0.000)	0.322 (0.146)	-0.674*** (0.000)	-0.447 (0.558)
Greenfield*opacity (fixed assets)	0.612 (0.252)	0.215 (0.596)	1.286* (0.050)	-0.693 (0.337)	-0.480 (0.760)
Foreign*Share of small firms	-0.003 (0.978)	0.0347 (0.698)	0.0604 (0.621)	-0.131 (0.346)	-0.726* (0.072)
Exit		0.603*** (0.000)			
Constant	5.891*** (0.000)	6.602*** (0.000)	-2.578 (0.340)	7.027*** (0.000)	56.19*** (0.000)
Observations	4399	4300	4063	3999	2368
R-squared	0.083	0.451	0.085	0.130	0.270
Panel B					
Initial industry share	-0.028 (0.592)	-0.089** (0.011)	0.042 (0.552)	-0.117 (0.135)	0.349* (0.055)
Acquired*opacity (skill dependence)	-0.049** (0.019)	-0.056*** (0.000)	0.037 (0.108)	-0.105*** (0.000)	0.0361 (0.690)
Greenfield*opacity (skill dependence)	-0.0244 (0.630)	-0.056 (0.166)	0.074 (0.259)	-0.029 (0.684)	0.342** (0.042)
Foreign*Share of small firms	0.107 (0.434)	0.185 (0.107)	-0.019 (0.895)	0.106 (0.543)	-0.893* (0.060)
Exit		0.601*** (0.000)			
Constant	6.544*** (0.000)	4.197*** (0.000)	3.779* (0.086)	7.907*** (0.000)	30.48** (0.019)
Observations	4318	4224	3996	3933	2320
R-squared	0.082	0.448	0.085	0.134	0.274

Robust p-values in parentheses; industry and time-varying country dummies are included; clustered by country/industry.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 5 The impact of foreign bank presence on firm demographics by size depending on industry opacity

	Entry	Entry	Exit	Net entry	Survival
Initial industry share	0.004 (0.897)	-0.0467 (0.143)	0.107** (0.015)	-0.134* (0.097)	0.265* (0.098)
Acquired*opacity (fixed assets) 0	-0.204 (0.276)	-0.155 (0.380)	0.511*** (0.007)	-0.538* (0.092)	-0.064 (0.937)
Acquired*opacity (fixed assets) 1-4	-2.992** (0.019)	-2.685** (0.034)	-1.406 (0.162)	0.149 (0.926)	-0.104 (0.988)
Acquired*opacity (fixed assets) 4-9	-0.642*** (0.000)	-0.552*** (0.000)	0.440*** (0.000)	-1.065*** (0.000)	-0.172 (0.817)
Acquired*opacity (fixed assets) >9	-0.307** (0.017)	-0.211* (0.087)	0.377*** (0.000)	-0.582** (0.011)	-1.212 (0.199)
Greenfield*opacity (fixed assets) 0	1.389*** (0.000)	1.128** (0.012)	2.151*** (0.000)	-0.707 (0.374)	1.374 (0.428)
Greenfield*opacity (fixed assets) 1-4	9.622** (0.011)	10.41*** (0.000)	8.550** (0.013)	-5.588 (0.301)	11.44 (0.476)
Greenfield*opacity (fixed assets) 4-9	0.613 (0.125)	0.499 (0.200)	1.481*** (0.000)	-0.676 (0.374)	-3.685** (0.034)
Greenfield*opacity (fixed assets) >9	1.656*** (0.000)	1.359*** (0.000)	2.366*** (0.000)	-0.581 (0.455)	-1.939 (0.317)
Exit		0.182*** (0.000)			
Constant	10.08*** (0.000)	12.91*** (0.000)	2.572 (0.320)	6.603*** (0.000)	51.68*** (0.000)
Observations	4399	4300	4063	3999	2368
R-squared	0.544	0.575	0.603	0.147	0.368

Robust p-values in parentheses; industry, size and time-varying country dummies are included; clustered by country/industry.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 6 Robustness test: Fixed assets for young firms and entry costs

	Entry	Entry	Exit	Net entry	Survival
Initial industry share	-0.031 (0.554)	-0.095*** (0.009)	0.071 (0.327)	-0.135* (0.097)	0.344* (0.063)
Acquired*opacity (fixed assets of young firms)	-0.492*** (0.008)	-0.390*** (0.002)	0.307 (0.147)	-0.553** (0.016)	-0.343 (0.643)
Greenfield*opacity (fixed assets of young firms)	0.532 (0.305)	0.165 (0.671)	1.384** (0.031)	-0.976 (0.155)	-0.202 (0.893)
Entry costs	0.000 (0.949)	0.000 (0.443)	0.000 (0.566)	0.000 (0.391)	0.000 (0.868)
Foreign*Share of small firms	-0.025 (0.821)	-0.002 (0.981)	0.093 (0.447)	-0.209 (0.130)	-0.761* (0.070)
Exit		0.603*** (0.000)			
Constant	5.993*** (0.000)	6.800*** (0.000)	-3.268 (0.237)	7.804*** (0.000)	55.81*** (0.000)
Observations	4399	4300	4063	3999	2368
R-squared	0.083	0.451	0.085	0.130	0.270

Robust p-values in parentheses; industry and time-varying country dummies are included; clustered by country/industry.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Table 7 Robustness test: Controlling for start-up costs and financial development

	Entry	Entry	Exit	Net entry	Survival
Panel A					
Initial industry share	-0.030 (0.572)	-0.096*** (0.008)	0.069 (0.338)	-0.136* (0.093)	0.326* (0.075)
Acquired*opacity (fixed assets)	-0.503** (0.011)	-0.416*** (0.003)	0.346 (0.120)	-0.707*** (0.004)	-0.530 (0.488)
Greenfield*opacity (fixed assets)	0.640 (0.232)	0.235 (0.563)	1.339** (0.040)	-0.766 (0.293)	-0.903 (0.568)
Start-up costs*Natural	-0.005 (0.342)	-0.004 (0.411)	-0.007 (0.350)	0.010 (0.310)	0.0441* (0.063)
Foreign*Share of small firms	0.006 (0.957)	0.0425 (0.640)	0.071 (0.557)	-0.147 (0.297)	-0.808** (0.0473)
Exit		0.602*** (0.000)			
Constant	6.002*** (0.000)	6.655*** (0.000)	-2.312 (0.397)	6.754*** (0.000)	55.35*** (0.000)
Observations	4399	4300	4063	3999	2368
R-squared	0.083	0.451	0.085	0.130	0.272
Panel B					
Initial industry share	-0.041 (0.442)	-0.100*** (0.006)	0.0574 (0.426)	-0.123 (0.128)	0.283 (0.127)
Acquired*opacity (fixed assets)	-0.408** (0.047)	-0.405*** (0.004)	0.420* (0.066)	-0.782*** (0.002)	-0.543 (0.481)
Greenfield*opacity (fixed assets)	0.333 (0.545)	0.142 (0.731)	1.267* (0.0543)	-0.670 (0.355)	-0.843 (0.595)
Credit*opacity (fixed assets)	0.010*** (0.005)	0.002 (0.328)	0.011** (0.0181)	-0.011** (0.0145)	0.025* (0.0573)
Foreign*Share of small firms	0.038 (0.729)	0.046 (0.612)	0.111 (0.374)	-0.187 (0.190)	-0.704* (0.082)
Exit		0.602*** (0.000)			
Constant	3.236 (0.132)	6.200*** (0.000)	-5.227* (0.0817)	8.822*** (0.000)	48.90*** (0.000)
Observations	4399	4300	4063	3999	2368
R-squared	0.084	0.451	0.086	0.131	0.272

Robust p-values in parentheses; industry and time-varying country dummies are included; clustered by country/industry.

* significant at 10%; ** significant at 5%; *** significant at 1%.

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Bank of Finland
BOFIT – Institute for Economies in Transition
PO Box 160
FIN-00101 Helsinki

 + 358 10 831 2268

bofit@bof.fi

<http://www.bof.fi/bofit>