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Does foreign bank branch activity affect lending behavior?

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Abstract

In this study, we examine the effects of foreign branch activity on commercial banks in the Central, Eastern, and Southeastern European countries for the period 1995-2015. We show that more foreign bank branches are present in countries that have higher taxes and regulatory restrictions on bank activity. The increased activity of bank branches negatively affects foreign-owned bank lending, and to a lesser extent, that of state-owned banks. We attribute this finding to the fact that branches and foreign-owned banks compete for the same type of clients, namely, multinational corporations. The branch effect seems to be larger for corporate loans than for consumer loans, which confirms our assumptions. Moreover, we find that the negative effect is stronger for foreign banks owned by multinational banks than by non-bank entities.

Keywords: foreign bank branch, lending, subsidiary, crisis, developing markets, EU

1. Introduction

There is an overall consensus in the literature that opening banking sectors to foreign banks increases competition, which leads to better and less expensive access to credit, especially in developing countries (see De Haas and Van Lelyveld (2006a) for a review of the literature on the benefits and risk of global banking). As most developing countries have a bank-based financial system, broader access to credit is vital to companies, and thus to economic growth. Multinational banks usually operate in emerging markets using subsidiaries (Fiechter et al., 2011), meaning that they create a separately capitalized bank that is subject to the host countries regulations. Banks with significant wholesale operations, however, prefer using branches, which allows for cheaper and more flexible transfers of funds between the parent and its foreign entity. Unlike subsidiaries, branches constitute an inseparable part of the parent organization and are subject to the host country regulations. Thus, they rely on the parent bank's capital, which allows them to extend much larger loans than foreign bank subsidiaries can. We assume that an increase in activity by foreign bank branches may negatively affect the lending levels of banks in the host country, especially that of foreign bank subsidiaries.

In this study, we examine the impact of foreign bank branches on the loan growth of both foreign-owned and government-owned banks in Central, Eastern, and Southeastern European (CESEE) countries. CESEE countries have few domestic banks due to the privatization process that occurred at the end of the 1990s. Consequently, 67 of the 100 largest banks based on *The Banker's* ranking for 2018 are foreign-owned, which hold about 67% of the assets in the region. However, the largest banks by assets in the region are the Polish PKO Bank Polski and Bank Pekao, in which the government has a minority shareholding as well a golden share. In almost all CESEE countries, the government decided to maintain direct or indirect control over the largest former state-owned banks, which do remain significantly smaller than most of the multinational banks that operate in the region. We assume that the increasing role of foreign bank branches will most likely affect both state-owned and foreign-owned banks, as they all compete for the same type of clients, namely large companies.

The CESEE countries are an interesting testing ground as they are either candidates or members of the European Union (EU), and some already joined the European Monetary

Union (EMU). Thus, there are few entrance restrictions on financial institutions in terms of cross-border expansion and organizational forms in the region for entities with a banking license in a country belonging to the European Economic Area (EEA)[1]. In fact, most owners of foreign-owned banks in the CESEE are from EEA countries or invest in the region using an entity established in Western Europe. However, we observe an increase in foreign bank branches only in some CESEE countries, despite the liberalization of the banking sector and potential advantage of branches as an organization form. It is surprising, as Fiechter et al. (2011) note, that branches outnumber subsidiaries generally in advanced economies, including western Europe. Henceforth, we could expect an increase in the number of branches in the CESEE region with its successful economic development and ascension into the EU and EMU. Using data on the structure of the banking sectors in the region, we document that the host country's banking regulatory restrictions on activity and high corporate taxes determine the choice of branches as an organization form in CESEE countries.

Moreover, by employing bank-level data, we show that increasing branch activity influences the lending levels of foreign-owned and government-owned banks. One novelty of this study is that we not only control for ownership, but also distinguish between bank and non-bank ultimate owners of the foreign banks in CESEE countries. We assume that non-bank owners are mainly industrial companies who establish bank subsidiaries abroad to facilitate sales of their products. One example is banks established by car companies, which mainly provide credit and other financial services to car buyers. Thus, this type of bank is more likely to be oriented toward retail clients. Conversely, multinational banks often establish subsidiaries to serve corporate clients from the home country abroad. Actually, our results indicate that the extent of the increase in foreign bank branch activity influences the lending levels of the two types of foreign banks. We find that lending by foreign banks owned by multinational banks is more likely to suffer a negative effect from an increasing number of branches in the host country. We attribute this result to the increasing competition for the same type of clients. However, branches have a substantial advantage in being able to grant much larger and significantly cheaper loans than subsidiaries are (Fiechter et al., 2011).

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[1] EEA includes the EU member states and the four countries belonging to European Free Trade Association (EFTA), namely Iceland, Lichtenstein, Switzerland, and Norway.

Our study is motivated by, and contributes to, two stands of literature. The first strand studies the organizational choices of multinational banks for entering and operating in foreign markets. Cerutti et al. (2007) investigate the impact of macroeconomic factors on the choice of branches versus subsidiaries as a mode of entry to emerging markets. They find a positive and statistically significant relationship between the top corporate tax rate in a host country and a bank's decision to incorporate its local business as a branch. Additionally, they report that economic and political risk matter in the choice of organizational form. They find that branches are less common in countries with highly risky macroeconomic environments. Conversely, they find that branches are the preferred mode of entry in countries with high political risk, as it mitigates the risk of nationalization. Moreover, they report that branches are more likely when foreign operations are smaller and have no retail operations. Fiechter et al. (2011) underscore the importance of the scope of services of the foreign bank in the host country for the choice of organizational form in their comprehensive study of branches vis-à-vis subsidiary foreign expansion strategies. They conclude that a branching strategy offers a broader provision of services to core clients, better liquidity and risk management, and better cost efficiency. In contrast, a subsidiary strategy is better able to contain losses and works better for retail banks. Hoggarth et al. (2013), using bank-level data for the UK, confirms that the business model of foreign bank branches is different to that of state-owned and foreign-owned banks. They show that branches provide a significant amount of lending to private non-financial corporations and are important players in the domestic interbank market. We supplement this literature by showing that branch activity negatively effects the corporate lending of state-owned and foreign-owned banks. Moreover, we show that some of the macroeconomic factors that influence the choice of organization form hold, despite the removal of barriers that limit foreign bank entry, including its form. Lastly, we show that other factors, such as a common currency in the host and home country, may determine the choice of organizational form by multinational banks abroad.

Second, we contribute to the literature on foreign bank lending in developing countries and provide additional evidence on cross-border shock transmission via the lending channel. Motivated by De Haas and Van Lelyveld (2006a) and Cull and Peria (2013), we examine the impact of foreign bank branch penetration on foreign-owned and government-owned banks'

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lending patterns before and during the domestic and 2008 global financial crises. De Haas and Van Lelyveld (2006a) show that foreign bank subsidiaries did not reduce lending during a host country banking crisis in Central and Eastern European countries (CEE), but his positive stability effect was driven by greenfield foreign bank subsidiaries. Cull and Peria (2013) and Allen et al. (2017) find that foreign banks' total loan growth decreased to a greater extent than that of domestic private banks during the 2008 crisis in CEE countries. Bonin and Louie (2017) separate foreign banks in CEE into two categories: the subsidiaries of European multinational banks that dominate the region and all other foreign-owned banks. They find that the first type of bank remained committed to the region in terms of their lending behavior, which did not differ from that of domestic banks. Conversely, Bonin and Louie (2017) show that other foreign banks decreased their lending aggressively during the 2008 crisis. We supplement their findings as we control for different types of foreign bank ownership and show that it is important in understanding the lending patterns in host countries.

Cull and Peria (2013) document that the credit growth of government-owned banks exceeded that of domestic and foreign-owned banks in Latin America during the 2008 crisis. However, the authors did not find evidence that government-owned banks in CEE stepped up their lending compared to privately-owned banks. Conversely, De Haas and Van Lelyveld (2014) and Allen et al. (2017) find weak evidence that government-owned banks reduced credit growth in CEE countries to a lesser extent than did privately-owned banks in 2009. According to the authors, some governments might have used state-owned banks to smooth aggregate lending when privately-owned banks began to deleverage. We find some weak evidence supporting this argument, yet we show that it is important to control for exchange rates, which fluctuate considerably during a crisis, especially in developing countries. In fact, when we convert the bank-level data into US dollars, we find strong evidence for the supporting role of government-owned banks during the global crisis. In contrast, when we use the data in local currencies, the results for state-owned banks are insignificant. Hence, we argue that it is important to control for exchange rates, as they may bias the results.

Hoggarth et al. (2013) show that in the UK, branches provided more credit than did domestic and foreign banks prior to the 2008 crisis; yet, they simultaneously contracted more than this types of bank during the crisis. The authors attribute the sharp decrease in lending by

foreign branches to their reliance on cross-border wholesale funding. They argue that it is likely that the parent banks decided to reduce their exposures to the UK and redirect funds to other parts of the banking group. In fact, Danisewicz et al. (2017) argue that foreign bank subsidiaries are more independent in their lending policy than are branches. They analyze the changes in lending by branches and subsidiaries owned by the same parent bank in the UK in response to changes in regulations in the home market. They find that changes in home market regulation might result in reduced lending growth by branches in comparison to subsidiaries, but only in the interbank market. They link this effect to the higher degree of control that parent banks hold over branches compared to subsidiaries. We supplement their findings and show that subsidiaries that also have a branch in the same host country have different lending patterns than other foreign banks prior to and during a crisis.

The remainder of the paper is organized as follows. Section 2 presents the institutional background of branch activity and CESEE countries. Section 3 presents our data and explains the econometric methodology. Section 4 describes our empirical findings, and Section 5 concludes.

2. Institutional background

Our sample consists of 550 commercial and saving banks that operated in 17 CESEE countries for the years 1995-2015. The 17 countries in our sample followed a similar pattern of development in their banking sectors at the end of communist rule in 1989 (Temesvary and Banai, 2017). In these countries, the authorities set up a very lenient licensing procedure to establish new domestic and foreign banks, including branches, in the first years of the transition. The principal motivation was to increase competition in the banking sector. Indeed, in a short time, an impressive number of new domestic banks and several foreign bank branches were established. However, the rapid expansion soon burdened the underdeveloped financial system, as a significant number of the new domestic banks were undercapitalized and underperforming in general (Hryckiewicz and Kowalewski, 2010). Consequently, the authorities changed their policy and foreign banks could enter only by participating in the privatization of state-owned banks or by acquiring failing domestic private banks (Bonin and Wachtel, 2003). At the same time, entry using branches was discouraged (Hryckiewicz and

Kowalewski, 2010). Consequently, no new branches were established in CESEE countries until 2004.

The increasing foreign bank presence since the mid-1990s is one of the most striking developments in the banking sectors in the 17 CESEE economies. At the end of the 1990s, foreign-owned banks accounted for more than half of the total number of banks and held more than two-thirds of total bank assets in most CESEE countries (Claessens and Van Horen, 2014). This development was seen as positive, as earlier empirical evidence suggested that foreign bank entry brings greater efficiency in the banking sector, better access to credit, and lower credit costs to CEE (Bonin et al., 2005; Fries and Taci, 2005) and South Eastern Europe (SEE) countries (Fang et al., 2011).

Giannetti and Ongena (2009) show that foreign bank presence benefits all firms, though the effects are more pronounced for large firms and firms less likely to be involved in connected lending. Additionally, the empirical research prior the 2008 global financial crisis showed that diversity of ownership contributed to greater stability of the credit in the region, as foreign banks showed significant credit growth during domestic crisis periods (De Haas and Van Lelyveld, 2004). In a later study, De Haas and Van Lelyveld (2006b) confirm that during domestic crisis periods, domestic banks contracted their credit, yet they find that only greenfield foreign banks played a stabilizing role by keeping their credit base stable. Moreover, they report that greenfield foreign banks' credit growth is determined by the health of the parent bank. Overall, existing studies present a positive effect of foreign banks on credit lending, and as a result, there was a general assumption that foreign ownership encouraged efficiency and stability in in the banking sectors of CESEE countries.

However, Naaborg et al. (2004) report that the fast increase in foreign bank presence was not accompanied by rapid financial development in the region. They show that although bank assets increased during the 1990s, credit to the private sector remained relatively low. Interestingly, they find that foreign-owned banks lend more to the private sector than domestic banks do. In fact Detragiache et al. (2008) document that while total lending, cost efficiency, and welfare may improve with foreign bank entry, it is not guaranteed. They develop a theoretical model showing that foreign bank entry may result in cherry-picking, which means that foreign banks mainly concentrate their lending on transparent firms with collateral. Thus,

countries with more foreign bank penetration may still have a shallow banking sector, in which foreign banks may have a safer loan portfolio than domestic banks do. They find these predictions to be consistent with data from a sample of 60 lower income countries. However, Kowalewski and Rybinski (2011) show that the institutional and legal environment greatly improved since the 1990s in CEE countries, which in turn means that foreign bank presence should be positively associated with access to credit (Beck et al., 2011).

In fact, in 2004, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia joined the EU, while Bulgaria and Romania did so in 2007, and Croatia joined in 2013. The remaining CESEE countries in our sample are Albania, Bosnia and Herzegovina, Macedonia, Montenegro, the Republic of Moldova, and Serbia. Those countries are EU member state candidates and not required to implement the Second Banking Directive at this stage of the ascension process. The Second Banking Directive came into force on 1 January 1993 and allows credit institutions from one member state to conduct banking activities across borders (the right to provide services) or to establish a branch in another member state (the right of establishment). Branches are authorized to offer a wide range of services as long as their parent is authorized to do so in their home market. The regulatory competence over branches is based largely on the principal state of the credit institution's operations; that is, the country of its head office location. Host member states have very limited supervisory functions and cannot impose any restrictions on or apply economic tests to the branches of credit institutions from other member states. This Directive aimed to create a common banking market by creating a single banking license, with primary regulatory authority overall in one home state[2].

By joining the EU, the CESEE countries become part of the common banking market, meaning that local authorities cannot restrict the establishment of branches by multinational banks with a banking license in an EEA country. In fact, most of the foreign banks in CESEE countries originate from western European countries in terms of number and assets. Yet, there is also a substantial regional variation in the degree of penetration. Greek banks operate mostly in South-Eastern Europe, the Austrian, French, and Italian banks in Central Europe,

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[2]Dermine (2006) provides a good overview of EU banking integration and related problems

while the Scandinavian banks operate in the Baltic countries.

In all CESEE countries, the structure of the financial system is dominated by the banking sector, implying that bank loans to firms in these countries the main source of external funding. By the onset of the 2008 financial crisis, at least two-thirds of the total assets of these banking systems was in foreign ownership. In some cases, this ratio was above 90%. This ownership structure remained effectively unchanged throughout the crisis period, yet several studies indicate that foreign-owned banks may have reduced credit availability in CEE countries during the 2008 crisis. Cull and Peria (2013) find that foreign bank total loan growth decreased to a greater extent than that of domestic private banks in CEE countries. Allen et al. (2017) confirm that foreign-owned bank lending remained constant or increased during episodes of banking crises in CEE countries, while the lending of government-owned banks declined. In turn, however, they find that foreign-owned banks reduced lending in general during the recent financial crisis, while government-owned banks increased lending during the 2008 crisis.

The level of banking lending is crucial for the economic growth of the countries in our sample. The existing empirical literature documents a strong relation between bank ownership and the credit supply in CESEE countries. In particular, recent studies show that the influence of ownership structure on lending activity depends on the type of banking crisis that banks experience. However, these studies ignore the cross-country variation in the structure of the banking sector, especially the opening of foreign bank branches. The number of branches, even within EU member countries, differs significantly across time and by country. In this study, we try to shed some light on these differences and whether they influence the lending activity of foreign and domestic banks in CESSE countries.

3. Data and methodology

3.1. Sample

We retrieve unconsolidated bank-level data, where available, from BankScope. Using the data, we constructed a panel of 6,225 bank-year observations. However, the panel is unbalanced, as we do not have data for all years for each bank. We supplement the bank-level

data with macroeconomic data, which we retrieved mainly from WDI World Bank. Table A3 in the Appendix presents the definitions and sources of the variables in our study.

We encode the ownership structure of the banks in the sample using ownership dummy variables for each bank in each year. We track ownership and changes using the information available in Bankscope and the bank ownership database of Claessens and Van Horen (2014) as our primary sources. We complement this information with information from several other sources, including individual banks' websites and annual reports. We were able to obtain ownership information for all banks in our sample for the entire period in which they were active. Additionally, we retrieve information on the type of ultimate owner of the domestic and foreign entities, which we use to identify the origin of each bank as foreign, private domestic, and state-owned. In the regression, we control for state-owned banks, as there is a large strand of the literature showing that this type of bank preforms worse than both private domestic banks and foreign-owned banks[3]. The dummy variable *FGN* takes the value of one if the bank is foreign-owned and zero for all other bank type. We use the definition generally applied in the literature and consider a bank as foreign-owned if at least 50% is owned by foreign entities (Claessens et al., 2001). The dummy variable *GOV* equals one if the public sector owns more than 30% of the bank, and consequently has a significant impact on its management, and zero otherwise. We capture the third type of ownership, private domestic, by the constant term in the regressions. Additionally, we use two dummies to distinguish between two types of foreign bank owners. The dummy variable *B-Sub* equals one if the owner of the subsidiary is a multinational bank, and zero otherwise. The dummy variable *NB-Sub* takes the value of one if the foreign bank investor is a non-bank, which includes financial investors such as insurance companies or private equity funds. We distinguish between the two groups as De Haas and Van Lelyveld (2010) find that strong parent banks use their internal capital market to provide subsidiaries with capital and liquidity, which stabilizes local lending, including during local crisis periods. However, they also find that multinational bank subsidiaries curtailed credit growth more aggressively than domestic banks did during the 2008 financial crisis. We assume that foreign banks owned by

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[3]Cull et al. (2018) provide an excellent literature survey on bank ownership

multinational banks and non-bank entities differ in clients and founding, and therefore may have different lending dynamics during domestic banking crises and the 2008 financial crisis. Using this division, the sample includes 712 observations for government-owned banks, 2,840 observations for banks owned by private domestic investors, and 3,385 bank-year observations for foreign-owned banks. Among the foreign-owned banks, we have 2,810 observations for bank subsidiaries owned by multinational banks and 567 observations for banks owned by non-bank entities. We have 2,879 bank year observation for banks owned by entities from EEA countries, which confirms that the majority of the banks in CESEE are controlled by entities from Western Europe; thus, most of the banks can easily choose whether they want to operate in the region using either a subsidiary or branch. Moreover, the vast majority of non-EEA banks operate through a subsidiary in one EEA country. As an illustration, consider Citibank (US), which in Poland controls its subsidiary and branches via a US and Irish subsidiary, respectively. Thus, most of the foreign banks in our sample are not restricted by regulations, whether they operate as a subsidiary or branch in CESEE countries that are EU members. As it happens, Citibank decided to convert its subsidiaries to branches in the Czech Republic, Hungary, Romania, and Slovakia during 2007-2008 Allen et al. (2013). The conversion of subsidiaries to branches and vice versa is a relatively new phenomenon in the region, which changes the composition of branches versus subsidiaries in the host countries.

3.2. Descriptive statistics

In our study, we are mostly interested in whether foreign branch penetration affects the lending behavior of domestic and foreign-owned banks. Hence, our main dependent variable is the percentage of real growth in gross loans ($\Delta Loans$) of bank i in country j in year t. Additionally, we investigate the impact of foreign bank branches on the growth of consumer and corporate loans. We calculate the depended variables using domestic currency, as Bonin and Louie (2017) show that the countries in the region have distinct characteristics in terms of their exchange rate regimes and dynamics. They argue that ignoring these characteristics may result in omitting an important determinant of lending. To mitigate the effect of outliers, we Winsorize growth rates at the 1st and 99th percentiles.

In the regression, we control for the bank's funding, profitability, solvency, and size. We control for funding using the ratio of loan to deposits (LtD) and the ratio of nonfinancial de-

posits to total assets (*Deposits*). De Haas and Van Lelyveld (2006*a*) argue that the difference between domestic and foreign-owned banks in CEE countries is the reliance on the money market. In their opinion, this difference exists because foreign banks are less dependent on local deposits on average, as they can obtain financing relatively easily on the money market or from the parent bank. Consequently, we may assume that there is a difference between domestic and foreign-owned banks, but also between foreign banks owned by banks and non-banks entities.

Branches may alter the domestic lending market as they have direct access to the parent bank's funding, which is likely to be less costly than the funding for foreign bank subsidiaries. Fiechter et al. (2011) show also that branches have a significant share in the domestic interbank market. During the 2008 crisis, branches reduced their credit, especially to banks and non-bank financial companies. Thus, the branch activity may also strongly influence the domestic interbank market, whereas their lending activity seems to be much more volatile than that of domestic and foreign-owned banks.

High profitability (*ROA*) and a solid capital base (*Equity*) should also be positively related to a bank's loan growth. Additionally, if depositors observe increased bank risk in the financial system, then high profitability and a solid capital base should lead to increased deposits. However, the entry of branches can decrease deposits, especially during crisis periods, as they may be seen as safer than host country banks. This in turn can negatively affect the funding and profitability of host country banks.

Subsequently, we control for the bank's size (*Size*) calculated as the ratio of a bank's assets to the GDP of the country in which the bank is licensed. We expect smaller banks to report higher loan growth, but lower deposit growth. Table 1 presents the summary statistics for the main variables across domestic and foreign banks in CESEE countries.

Table 1

Branches differ significantly in the scope of services they offer abroad. In contrast to commercial banks, they are not obliged to publish their financial results in most countries. If branches provide financial statements, they probably apply the accounting standards of their parent bank and thus also often do not need to report all information. Consequently, evaluating the performance of branches in comparison to commercial banks is very difficult. We

employ variables that control for branch penetration instead of branch-level specific variables for this reason, though we are aware of the shortcomings of our measures. The first control variable is *Branches/B* calculated as the ratio of the total number of foreign bank branches to the total number of commercial banks in the host country. The second control variable is *Branches/T*, calculated as the ratio of the total number of foreign branches to the sum of the total number of commercial banks and foreign bank branches in the host country. We hypothesize that a relative increase in the number of foreign bank branches to commercial banks may influence the activity of the latter, especially their loan activity. Foreign bank branches rely on parent bank capital and funding, which should give them a significant competitive advantage over the commercial banks in the host country. This competitive advantage may also explain why some multinational banks operate both branches and subsidiaries in a host country. Danisewicz et al. (2017) ague that multinational banks may use branches and subsidiaries simultaneously to exploit the benefits specific to both organizational forms, as well as to serve a wide range of client types and provide different products. We control for this strategy using a variable, *Sub-Branch*, which takes the value of one if the owner of the subsidiary simultaneously operates a branch in the host country, and zero otherwise.

The data in Table 1 and Table A1-A2 in the Appendix illustrate a large variation in the number of branches, which differ across time and by CESEE country. We aim to identify the industry- and country-level factors that may explain these differences. Among the industry-level variables, we control for the average ratio of operating costs (*CIR*) and their activity restrictions (*Activity*). One of the arguments in favor of using branches over subsidiaries is the cost advantage due to the lower regulatory and allocations costs (Fáykiss et al., 2013). Subsequently, multinational banks may prefer to operate as a branch in host countries where banks have low overhead costs on average. Cerutti et al. (2007) show that multinational banks are more likely to operate as branches in host countries with lower regulatory restrictions on bank activities and entry. We measure the activity restrictions using the index constructed byBarth et al. (2013), which measures the degree to which the national regulatory authorities in the host country allow banks to engage in fee-based activities such as securities, insurance, and real estate. The indicator ranges from 4 to 12, with higher values indicating greater activity restrictions for banks in the host country.

In addition, we control for competition within the host banking sector using the variable *CR3*. On the one hand, high concentration is associated with lower competition in the industry. On the other hand, Beck et al. (2006) present strong evidence that concentrated banking systems are more stable. Consistent with these findings, Schaeck et al. (2009) show that concentration decreases the crisis probability and increases time to crisis. We assume that branches are more likely to be established in highly concentrated banking sectors as this organization form is much more flexible and suitable for a niche strategy. The fact that concentrated sectors are more stable should also encourage the use of branches as an organizational form.

In fact, Cerutti et al. (2007) document that host country risk affects a bank's choice of organizational form. They find that branches are less common in countries with risky macroeconomic environments. We control for host country macroeconomic risk and political credibility using sovereign credit ratings (*Rating*). Additionally, we control for domestic systematic banking crisis (*B-Crisis*) and the 2008-2009 financial crisis (*G-Crisis*). We identify the years of the banking crisis in a country using Laeven and Valencia (2018) database. The variable *G-Crisis* controls for the 2008 global crisis as well as the 2009 European debt crisis.

We use country *GDP* and *GDP growth* as variables indicating the attractiveness of the market and country risk. Additionally, we control for the level of corporate taxes (*Tax*) in the host country, as Cerutti et al. (2007) find that branches are more likely to be established in countries that have higher taxes.

3.3. Methodology

In this study, we use different approaches to analyze the effect of branch activity on bank lending in a host country. However, we first try to establish what determines the establishment of foreign bank branches in CESEE countries. Correspondingly, the dependent variable in the model illustrates an increase of branches in a host country's banking sector. We can express this regression as follows:

$$Branch_{j,t} = \alpha + \beta_{j,t}Sector + \beta_{j,t}Macro + \epsilon_{j,t} \tag{1}$$

where $Branch$ is one of the three variables that we use to measure the number of branches in host country j in year t. The three dependent variables are the number of foreign bank branches ($Branch$), the number of branches to the number of commercial banks ($Branches/B$) and the number of branches to the total number of branches and commercial banks ($Branches/T$). $Sector$ refers to the variables that capture banking industry-specific factors, and $Macro$ represents the variables that characterize the location-specific variables. We estimate the model using using ordinary least squares (OLS)with year and country fixed-effects. In some CESEE countries we do not report any branches, and we subsequently employ a Tobit model as a consistency check on the OLS estimators. In this empirical methodology, the dependent variable is truncated at zero. All regressions are estimated with robust standard errors.

Next, we examine the effect of the host country's ascension to the EU and the EMU, and the subsequent increase in branch presence on bank loan dynamics using the following specification:

$$\Delta Loan_{i,j,t} = \alpha + \beta_1 Bank_{i,j,t} + \beta_2 FGN_{i,j,t} + \beta_3 GOV_{i,j,t} + \beta_4 Branch_{j,t} + \beta_5 E_{j,t} + \beta_6 C_{j,t} + \delta_{j,t} + \epsilon_{i,t}$$

(2)

where $\Delta Loan$ is the growth of total gross loans for bank i in a country j at time t. In the sensitivity analysis, we also employ the growth of corporate and consumer loans to further examine the impact of branch penetration on domestic and foreign bank lending in the host country. $Bank$ refers to the variables that capture bank-level characteristics. FGN and GOV refer to dummy variables that control for bank ownership. The two ownership variables summarize the differential rate of growth of each type of bank vis-à-vis domestic private banks. $Branch$ represents one of the two variables to control for the increasing significance of branches in the host banking sector. E represents the dummy variables that control for the host country's ascension to the EU or the EMU. C represents the dummy variables that control for either a domestic banking crisis or the 2008 financial crisis. δ represents the country-year fixed effects. We estimate the panel model with OLS with country-time fixed-effects, which allow us to control for macro characteristics that might change across countries and over time.

4. Results

We present first the results showing the factors that explain the increase in foreign bank branches in CESEE countries. Next, we discuss the results of the effects of branch penetration on government and foreign bank lending growth in the host countries.

4.1. What factors lure foreign bank branches?

Table 2 reports the results of the estimation of Equation 1. In columns (1)-(3), we show the results of the OLS estimation using a different measure of branch increases as the dependent variable in each column. As a robustness check, we repeat the regressions using the Tobit model, and present the results in columns (4)-(6). In columns (1) and (4), the dependent variable is the number of foreign bank branches in a host country; while in columns (2)-(5) and (3)-(6), we scale the number of branches by the total number of commercial banks or by the sum of the total number of commercial banks and branches in the host country, respectively. There are slight differences in the results when using an absolute or relative measure of the importance of branches in the host country as the dependent variable. In the discussion, we focus mainly on the relative measures, which better reflect the importance of branches in a host country's banking sector in our opinion.

Table 2

The results in Table 2 support the findings ofCerutti et al. (2007), who show that foreign banks are more likely to operate as branches in host countries that have lower regulatory restrictions on banks. In all specifications, the coefficient for the variable that proxies for restrictions on bank activity is positive and statistically significant at the 1% level. Thus, the number of branches increases in host countries with greater restrictions on bank activities. Thus, we confirm that regulations are an important factor explaining the choice of branches as an organizational form. Simultaneously, we find that the coefficient controlling for EU membership is positive, but statistically insignificant. Subsequently, the results illustrate that foreign bank entrance regulations are not the only factor that may hinder the establishment of branches in a host country.

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Interestingly, we find confirmation that the level of banking sector development seems to determine the organizational form as well. We find that the coefficient for the ratio of average cost to income for the industry is negative and significant at the 5% level at least. Thus, banks prefer branches in countries characterized by relatively low overhead costs in the banking industry. At the same time, the coefficient for concentration is positive and statistically significant in most specifications. High concentration means lower competition, which may encourage multinational banks to use branches to execute a niche strategy abroad. Furthermore, high concentration means a more stable banking sector, what may also encourage the use of branches as an organizational form.

Our results support the findings of Cerutti et al. (2007), who report that branches are less common in countries with risky macroeconomic environments. In fact, we find that the coefficient for a country's rating is positive and significant in most specifications. In other words, we find that more branches are more likely in countries with high sovereign ratings. Moreover, we find that the coefficient for systematic banking crisis is negative, but significant only in columns (2) and (5) at the 5% level. This finding also confirms that host country risk matters in the choice of organizational form. In practice, it means that multinational banks may prefer to limit their exposure in riskier host countries by operating as a subsidiary. We find that the coefficient controlling for Eurozone membership is positive and statistically significant, which supports our argument. A country that wants to join the EMU needs to fulfil five criteria, which impose control over inflation, the public debt and deficit, exchange rate stability, and the convergence of interest rates with those of existing EMU countries. Moreover, in the EMU countries, the European Central Bank is responsible for monetary policy and guarantees price stability, thereby supporting economic growth. Thus, we may assume that EMU member countries are economically and politically stable. In addition, we may assume that the integration of a branch with its parent bank is easier in EMU countries due to the common currency and monetary policy. This is a new and important finding not explored in previous studies, which is, in our opinion, important from a policy perspective. Lastly, in line with Cerutti et al. (2007), we find that high corporate taxes are also an important factor determining branches as an organization form. The coefficient for corporate taxes is positive and significant in all specifications at the 5% level at least. We find also that the

coefficient of the variable GDP is positive, yet significant only in the OLS regression. Hence, we find only weak evidence that banks are more likely to use branches in larger economies.

4.2. Do foreign bank branches change the lending activity in the host country?

Table 3 shows the results of the estimation of Equation 2. In the first column, we present the baseline results. In the following two columns, we add the two variables that control for deregulation and the changes in the banking sector following the host country's ascension to the EU and EMU, respectively. In the next two columns, we add the measures that control for the increase in branches relative to commercial banks in the host country. Employing different variables that control for the changes in the structure of the banking sector does not change the sign of the coefficients of the bank-level variables. The results confirm that a bank's profitability is positively correlated with credit growth. The coefficient for profitability is positive and statistically significant in all specifications. The remaining bank-level variables are insignificant, but we find interesting differences in the behaviors of foreign and government-owned banks. In most of the specifications, the coefficients for ownership are statistically significant; however, the coefficient for foreign ownership is positive, while for government ownership it is negative. The results are in line with those of Cull and Peria (2013), who report that foreign banks fueled growth prior to the 2008 financial crisis in CEE. In addition, we find that the government-owned banks were less active than foreign and domestic banks were during the entire period.

In columns (2) and (3), we control for the ascension of the selected CESEE countries to the EU and EMU, respectively. The coefficient of the variable controlling for the host country's ascension to the EU is positive and significant at the 1% level, while that for EMU ascension is positive, yet insignificant. Consequently, ascension to the EU is positively related to loan growth. This result is not surprising considering the positive impact of EU ascension on economic growth, and the following inflow of structural funds to the host countries in the subsequent years. However, we do not find any evidence that adopting the Euro affected banks' lending levels in the host country. Interestingly, we find that the interaction terms between EU and the ownership dummies are negative and statistically significant. In economic terms, our results imply that prior to joining the EU, foreign-owned banks expanded lending in host countries while government-owned banks contracted lending. Joining the EU

had a negative effect on foreign bank lending in host countries, however. The coefficient for the interaction term between EU and foreign ownership is negative and significant at the 5% level. In terms of size, it is much larger than the coefficient for the interaction term between EU and government ownership. Thus, banking industry deregulation following EU ascension had a more pronounced effect on foreign-owned banks. We may assume that the entrance of new banks, especially branches, increased competition, which affected mainly foreign-owned banks. Indeed, the results in columns (4)-(6), in which we control for branch penetration using two different control variables, confirm our assumptions. Our results show that an increase in the number of branches is positively associated with the level of lending in CESEE countries. The coefficients on branch penetration are positive and statistically significant at the 1% level in all specifications. Simultaneously, we find that the increase in branches negatively affects the lending levels of foreign-owned banks. The interaction terms between the two control variables for the number of branches and foreign ownership are negative and statistically significant at the 5% level at least. In contrast, the interaction terms between the two control variables for branch penetration and government ownership is also negative, but insignificant.

The results are not surprising since foreign banks and branches compete for the same type of clients in host countries, namely multinational companies. One of the main motives for banks to expand is the need to follow their clients (see Williams (2002) for a literature survey on the defensive expansion hypothesis). Subsequently, multinational firms, who often seek loans and other financial services abroad, are important clients for foreign-owned banks. Hoggarth et al. (2013) document that foreign branches provide a significant amount of lending to private non-financial companies. Moreover, they show that the assets of foreign branches held by non-residents accounted for 72% of assets at the end of 2011 in the UK, while the equivalent shares for UK-owned banks and foreign banks were 33% and 32%, respectively. The data illustrate that branches serve foreign clients to a larger extent than foreign banks do. Thus, an increase in branches is more likely to mean a decline in clients for foreign banks, which in turn leads to a lower level of loans. In contrast, government-owned banks are more likely to provide finance to the companies that it directly or indirectly controls.Sapienza (2004) shows, however, that state-owned banks are also more inclined to favor large enterprises.

Consequently, foreign bank branches and government-owned banks also compete, in part, for the same clients – large state-controlled companies – which explains the negative coefficient on the interaction term.

<center>Table 3</center>

4.2.1. Modes of foreign bank ownerships

We test our assumptions of whether increased branch penetration results in customer defection from foreign banks by controlling whether a subsidiary is owned by a multinational bank or a non-bank entity. We expect that a higher outflow of corporate clients from subsidiaries owned by multinational banks than from subsidiaries owned by non-banks, which are more likely to focus on retail clients. Table 4 presents the results of the regressions. In the last column, (7), we employ a new control variable to control for subsidiaries that have also have a branch in the host country.

<center>Table 4</center>

Employing the two control variables for foreign bank ownership does not produce different results from those reported above. In all specifications, the bank-level variables influence the dependent variable in the same directions as in Table 3. Moreover, the coefficients are stable in magnitude and do not change their statistical significance. Therefore, to save space, we do not present the coefficients for the bank-level variables in the following tables. We do, however, discuss their differences from the results presented in Table 3[4].

In line with our previous findings, we find that the coefficient for bank state-ownership is negatively related to lending and is statistically significant in all specifications. In contrast, the coefficients for the type of foreign bank ownership are positive, yet insignificant in most specifications. Similarly, the coefficients for host country ascension to the EU and the relative increase in the number of branches are positively related to loan growth. The coefficients are statistically significant at the 1% level, while the coefficient for EMU ascension remains positive, yet statistically insignificant.

We find that the coefficient for the interaction terms between the variable controlling for

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[4]The full results are available from the authors upon request.

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EU ascension and ownership type are negative and all are statistically significant. The results confirm that the liberalization of the banking sector following EU ascension negatively affected the loan growth of both state- and foreign-owned banks. In our opinion, the decline in lending can be attributed to the increased competition, including the entrance of new foreign banks and branches. We find, however, that the coefficient for the interaction term between subsidiaries owned by multinational banks is significantly larger than the coefficient for the interaction term between state-owned banks or subsidiaries owned by foreign non-bank entities. The results indicate that the increased competition had a stronger effect on foreign banks owned by multinational banks than on the other types of banks. The result is strengthened by the fact that the coefficient for the interaction terms between the variable controlling for EMU ascension and the type of ownership is negative only for subsidiaries owned by multinational banks, yet it is statistically insignificant.

Similarly, the coefficient for the interaction term on increased branch activity of branches and subsidiaries owned by multinational bank is negative and significant at the 1% level. The results confirm that the increased activity of foreign branches negatively affected the credit growth of subsidiaries owned by multinational banks in CESEE countries. Additionally, in column (7), the coefficient for foreign bank subsidiaries that also have a branch in the host country is also negative and statistically significant at the 1% level. Hence, the results indicate that when a multinational bank owns both a subsidiary and branch in one country, it will probably shift its lending activity from the first entity to the second. This is not surprising as branches have the advantage over subsidiaries in being able to use the parent bank's capital, and branches are more likely to have lower funding costs than do subsidiaries (Hoggarth et al., 2013). Moreover, parent banks are likely to be interested in cherry picking the best customers for their branch, which would explain the decline in its subsidiary's lending.

In line with our previous results, we find a negative coefficient for the interaction term between the two variables for the relative increase in branches and bank state-ownership, yet the coefficients are insignificant. Similarly, the coefficient for the interaction term between the variables for relative increase of branches and subsidiaries owned by nonbanks is negative, but insignificant. Hence, the results confirm that state-owned banks and subsidiaries owned by nonbank entities suffered a smaller effect from branch activity. In the latter case, it is not

surprising, as such foreign banks are owned mainly by industrial companies and consequently concentrate their activities on retail customers. Hence, we attribute the different effect of branches on the two types of banks we to their differing loan portfolio structure.

4.2.2. Consumer and corporate loans

We further test our assumption on the effects of branches on foreign and state-owned banks by replacing in the regressions that have the growth of total gross loans with the growth of corporate and consumer loans. The number of banks that report the breakdown of loans is smaller than those we included in the gross loans' regressions reported so far. Nonetheless, the regressions by loan type capture the largest banks in CESEE countries, and are thus likely to be representative of the volume of loans of each type.

Table 5 shows the regressions for the growth rate of consumer loans in CESEE. In line with our previous results, we find that government ownership is negatively related to a bank's consumer loan growth. In contrast to the previous results, we find that the coefficient for the variables that control for EU and EMU ascension are negative, yet insignificant, while only the interaction term between host country ascension to the EMU and subsidiary owned by nonbanks is negative and statistically significant.

Table 5

Conversely, both coefficients for branch activity are positive and statistically significant at the 1% level. Hence, it seems that branch entrance was positively related to consumer loan growth. However, we find that the interaction terms between the relative number of branches and the bank's ownership are all statistically insignificant. On the one hand, it means that the increase in branches did not have a strong effect on consumer loan growth in other banks, regardless of ownership. On the other hand, the coefficient for the interaction term for subsidiaries owned by nonbanks is negative. These results confirm our assumption that this type of foreign bank provides credit mainly to consumers, which would explain the negative sign of the coefficients.

Interestingly, we also find that the level of consumer loans declines among foreign bank subsidiaries in which the parent bank also has a branch in the host country. The coefficient for this type of subsidiary is negative and statistically significant at the 1% level, meaning that

parent banks also cherry-pick retail customers for its branches at the cost of its subsidiary. Our result supports Beck and Brown (2015) finding that information asymmetries in the retail credit market lead foreign banks to cherry-pick financially transparent clients in similar ways as they do for corporate credit. Table 6 presents the results of the regressions on the growth rate of corporate loans for banks in CESEE. In contrast to our previous results, we find that the bank-level variables are important factors explaining corporate loan growth. We find that the ratio of loans to deposits is positively correlated with corporate credit growth, and the coefficients of the ratios are statistically significant in almost all specifications. The coefficients for assets are negative and significant in all specifications. The results imply that banks providing corporate loans are likely to be small and mostly rely on outside financing. This result is not surprising as most foreign banks operating in CESEE have a niche strategy aimed at multinational companies. Thus, they have only a limited retail operation and therefore relatively low level retail deposits.

Table 6

As expected, the coefficient for government ownership is negative, but statistically insignificant. In our opinion, the results indicate that government-owned banks are an important provider of corporate loans, especially to state-controlled companies. As the role and number of state-controlled companies declines in the CESEE countries, so does the position of the government-owned banks in the corporate loan market. In contrast, the coefficient for subsidiaries owned by multinational banks is positive and statistically significant in half of the specifications. The results document that this type of foreign bank is more likely to be more engaged in corporate lending than subsidiaries owned by nonbanks are. The statistically weak results can be explained by the fact that some of the multinational banks acquired former state-owned banks with a strong retail presence in the host countries (Bonin and Louie, 2017).

As before, we find that the coefficients for EU and EMU ascension are positive, but only the former is statistically significant, and only at the 10% level. Similarly, we find that the relative increase in branches is positively related to corporate lending, and the coefficients are statistically significant at the 5% level at least. We find that the coefficients for the

interaction terms between the variables controlling for EU ascension, EMU ascension, or the relative increase in branches and bank ownership are negative in almost all specifications. We find, however, that the effect of deregulation or increased branch activity had a much stronger effect on foreign-owned banks. The coefficients for the interaction terms between EU ascension or branch activity and foreign ownership are statistically significant at the 5% level in all specifications at least. The coefficients are statistically significant for both types of foreign bank (owned by multinational banks or non-banks), while only coefficient on the interaction term between government ownership and EU ascension is statistically significant, and only at the 10% level. We argue that this result confirms that foreign banks and branches compete directly for the same clients, namely, corporations. The increased competition had only a partial influence on the corporate lending of government-owned banks, as they serve a different clientele than foreign-owned banks do. Additionally, we again find an indication of cherry-picking by parent banks, as the coefficient on the foreign banks with both a subsidiary and a branch is negative and statistically significant at the 1% level. The results document that having both forms simultaneously will have a negative effect on the corporate level lending of the latter.

4.2.3. Banking crisis

Last, we investigate the impact of branch activity on credit growth during a systematic banking crisis and the 2008 global financial crisis, controlling for bank ownership. Hoggarth et al. (2013) find significant differences in lending patterns between foreign banks and branches prior to and after the 2008 financial crisis. They show that foreign branch credit growth increased by almost 50% compared to 30% for domestic and foreign-owned banks two years prior to the crisis in the UK. During the crisis, however, branches contracted lending significantly more than domestic and foreign-owned banks did. Moreover, Danisewicz et al. (2017) examine UK lending among branches and subsidiaries belonging to the same banking group. They show that branches respond to tighter capital requirements in their home countries by contracting their lending more than subsidiaries do. Based on these results, we expect that foreign banks that operate both a subsidiary and a branch in a host country decreased lending prior to the 2008 crisis, while they expand in a crisis period. Table 7 presents the

results of the regressions. In column (1)-(2), we present the determinants of bank lending during domestic systematic banking crises in CESEE countries. To control for the domestic systematic banking crises, we include a dummy variable, $B - Crisis$, which equals 1 for the years of a systematic banking crisis in a particular CESEE country and zero otherwise. The coefficients for government-owned banks and foreign banks operating both branches and subsidiaries are negative in all specifications and statistically significant in all specifications. The results suggest that this type of bank provided less credit than other banks did prior to a domestic banking crisis. Surprisingly, the coefficients for foreign banks are positive, but statistically insignificant. Hence, we do not find strong evidence that the foreign banks expanded credit more than other banks did prior to a domestic crisis.

In contrast to our expectation, we find that the coefficient for domestic banking crisis is positive and statistically significant. Moreover, we find that the coefficients for domestic banking crisis and ownership are insignificant. The results contradict the finding of Allen et al. (2017) and De Haas and Van Lelyveld (2006a), who show that during domestic crisis periods, domestic banks contracted their credit, whereas foreign-owned banks stabilized lending in CEE countries. One explanation for the contradictory results is that our sample is much larger, and more importantly, some of the CESEE countries reported a systemic banking crisis during the 2008 crisis. De Haas and Van Lelyveld (2014) and Allen et al. (2017) show evidence that foreign banks reduced lending in CEE countries significantly during the 2008 financial crisis. Hence, this crisis may influence our results.

We therefore repeat our regressions, but as a robustness check, we use only the data for 1995-2006. We present the results in columns (3)-(4). The results are in line with our previous findings. The only difference is that we find strong evidence that all types of foreign banks accelerated their credit growth prior to the 2008 financial crisis. The results are in line with Allen et al. (2017), who document that foreign banks fueled growth prior to the crisis in CEE countries. Additionally, we find that the coefficient for domestic banking crisis is now insignificant, while the coefficient for the interaction term between domestic banking crisis and foreign banks owned by non-banks is now positive and statistically significant, yet only at the 10% level. Hence, the results indicate that this type of bank increased their lending during a domestic banking crisis. In this regression, we do not have the interaction term for

foreign banks that operate both a branch and a subsidiary due to the limited number of such cases in this period.

In columns (5)-(6), we present the results on the determinants of bank lending during the 2008 global financial crisis. As mentioned earlier, we control for both the 2008 crisis and the 2009 European debt crisis by including a dummy variable, $G-Crisis$, which takes the value of one for the years 2008-2010, and zero otherwise. We find that the coefficient for $G-Crisis$ is positive, but statistically insignificant. In line with the results in columns (1)-(2), we find that the coefficient on foreign ownership is positive, but insignificant. However, when we interact the ownership dummy with the global crisis dummy, the coefficient for the interaction term is now negative and statistically significant at the 5% level. Our results support De Haas and Van Lelyveld (2014) and Allen et al. (2017), who find that foreign-owned banks decreased lending during the global financial crisis in CEE countries. Moreover, our results indicate that subsidiaries owned by multinational banks reduced lending much more than did other types of banks, as the coefficient on the interaction term is negative and statistically significant at the 5% level. The interaction term between the global crisis and subsidiaries owned by non-banks is also negative, yet statistically insignificant. In contrast, we find that banks with both a subsidiary and a branch slightly increased their lending relative to other banks during the crisis. The coefficient on the interaction term is positive, yet statistically insignificant. The results support the findings of Hoggarth et al. (2013), who document that branches decreased their lending more than foreign-owned banks did during the financial crisis.

Lastly, in contrast to Allen et al. (2017), we do not find any support for the increase in lending by government-owned banks during the 2008 crisis. The coefficient for the interaction term between financial crisis and government ownership is positive, but statistically insignificant in all specifications.

Table 7

4.2.4. Sensitive analysis

One of the explanations for the differences between our results and those in the empirical literature is that most existing studies use bank-level data denominated in US dollars. How-

ever, most of the countries in our sample have flexible exchange rates. Consequently, their currencies significantly depreciated versus the US dollar during domestic banking crises and the 2008 crisis. As an example, Poland's currency appreciated versus the US dollar by more than 15% in 2007, while in 2008, the currency depreciated by more than 20%. In addition, the CESEE countries that joined the Eurozone or pegged its currency to the Euro reported significant fluctuations in their exchange rates. As an example, the Euro appreciated versus the US dollar by over 40% during 2001-2003 and again by over 20% during 2005-2007. In fact, Bonin and Louie (2017) document that whether loan growth is calculated in the domestic currency or US dollars may determine the results. We checked whether exchange rates explain the differences between our results above and those in the literature. Hence, we repeat our last regressions using real loan growth in US dollars as the dependent variable. Table 8 shows the results. Indeed, we find some important differences in the results. The coefficient for domestic banking crisis remains positive, but is now insignificant in all specifications. Conversely, the coefficient for subsidiaries owned by non-banks is positive and now significant in all specifications. Hence, the results indicate that this type of bank provided more leading than other banks did prior to a domestic banking crisis. However, we find that the coefficient for the interaction term between domestic crisis and subsidiaries owned by non-banks remains positive but is now insignificant.

In line with the empirical literature, we now find that the coefficient $G - Crisis$ is negatively related to bank lending and statistically significant at the 1% level. Consequently, the results now indicate a decline in lending in CESEE countries due to the 2008 crisis. As before, we find that the coefficient for government ownership is negative and significantly associated with loan growth ratios. However, when we interact the ownership dummy with the global crisis dummy, we find that the coefficient on the interaction term is now positive and statistically significant at the 10% level. Hence, the results now support Allen et al. (2017), who find that government-owned banks increased lending during the global financial crisis in CEE countries. In contrast, we now find no support for the decrease in foreign bank lending during the 2008 crisis. The coefficients on the interaction terms between the global crisis and foreign banks are negative, yet statistically insignificant in all specifications.

Interestingly, the coefficient on foreign banks operating both a subsidiary and a branch re-

mains negative and statistically significant in all specification, while the coefficients on the interaction term between this type of bank and global crisis is still positive, but now statistically significant at the 5% level at least. Consequently, we find strong support that branch activity is negatively related to subsidiaries' lending growth. At the same time, branches are more sensitive to the situation in the home market and hence reduce lending more than foreign banks do during a crisis in the home market.

Overall, the results document that the denomination of the bank-level variables (domestic currency versus U.S. dollars) may determine the results. While we do not find significant direct ownership differences in the pre-crisis periods using total loan growth denominated in either in U.S. dollars or the local currency, we find notable differences for the crisis periods. This result is not surprisingly, as during a crisis period, the local currency exchange rates, especially in developing countries, can fluctuate significantly. Hence, the growth rates dominated in other currencies can have a strong bias, as shown above.

Table 8

5. Conclusions

This study extends the literature by investigating whether opening a banking sector to foreign bank branches will affect banks' lending levels. To carry out the analysis, we utilize financial and ownership data on commercial banks from 17 CESEE countries over the period 1995-2015. We begin by analyzing the determinants of an increase in the number of branches in some CESEE countries. A visual inspection of the data shows that entry regulations, which are low for banks with a license in an EEA member country, are not the only reason that some countries have few or no foreign branches, which our result confirms. In line with Cerutti et al. (2007), we find that the level of corporate taxes and the host country's bank activity regulations strongly determine the choice of bank organization structures in CESEE countries. Surprisingly, we do not find that easing the restrictions on foreign bank branch entry, which we proxy by the EU ascension, determines the relative number of branches in a host country. However, we find a strong and positive relationship between the number of branches and the adoption of the Euro by the host country. This result is not surprising, as most foreign banks in the CESEE have a European origin, and therefore a common currency

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may significantly ease the integration of a branch with the parent bank. Moreover, the introduction of the Euro signals economic and political stability in the host country, which is an important factor influencing the choice of branches as an organizational form.

Next, we study the impact of increased branch activity on the lending of state- and foreign-owned banks. We show that increased branch activity is negatively related to the credit growth of foreign-owned banks, while government-owned banks provided fewer loans than foreign-owned banks did over the study period, they were not as strongly affected as foreign banks were by the increased activity of branches. We attribute this result to the fact that foreign branches and foreign-owned banks compete for the same type of clients, namely, large multinational companies. Branches may have a competitive advantage over foreign banks as they rely on the parent bank's capital, meaning that branches can provide larger loans than subsidiaries can, and often at lower costs. Indeed, our results show that the negative effect of branch activity on foreign bank lending is stronger for corporate loans than for consumer loans. Additionally, we find that subsidiaries owned by multinational banks suffered a stronger effect from branch activity than subsidiaries owned by nonbank entities did. We argue that this confirms our assumptions, as these types of foreign banks generally provide services for different clients. Subsidiaries owned by multinational banks generally focus on lending to multinational companies, while subsidiaries owned by nonbanks are often established to improve the industrial founder's sales. Hence, these banks are more likely to be retail oriented. Government-owned banks focus on serving the needs of state-controlled enterprises, which can be of interest to both foreign banks and branches.

Last, we analyze the lending of foreign banks that operate both a subsidiary and a branch in a host country. In line with our previous results, we find that the branches of this type of bank have a negative impact on the subsidiary's lending. In our opinion, this result shows that such banks are cherry-picking both its corporate and retail clients from their subsidiaries. We find, however, that this effect reversed during the 2008 financial crisis. Hoggarth et al. (2013) argue that the decline in foreign branch lending in the UK was due to parent bank's actions to reduce their exposure to the UK market and the redirection of funds to other parts of the banking group. In our opinion, branches scaled back their lending activities in the host countries due to the difficulties in their home markets during the 2008 crisis. The results

partially support Allen et al. (2017) finding that the subsidiaries of foreign banks decreased lending in CEE during a home market crisis. Moreover, Allen et al. (2017) show that foreign-owned banks decreased lending during the 2008 crisis, while government-owned bank lending increased relatively. In contrast, we find only weak evidence that state-owned banks increased lending during the 2008 crisis. Indeed, we show that the results depend strongly on whether the bank-level variables are dominated in the local currency or US dollars. We therefore argue that it is important to control for exchange rates in bank studies, as these fluctuate significantly in a crisis period, and can have a strong bias on the outcome.

We document that foreign banks that operate both a subsidiary and a branch in a host country increased lending relative to other foreign banks and state-owned banks during the 2008 crisis. The results conform to those of Ongena et al. (2013), who find that foreign banks in CEE lowered their lending standards for corporate clients and took on more risk following the implementation of home country regulation that reduces banks' profitability in their primary domestic market. Moreover, Danisewicz et al. (2017) document that parent banks hold a higher degree of control over branch operations than those of its subsidiaries. They argue that parent banks delegate more decision-making authority to foreign subsidiaries than to branches, which make them relatively autonomous in their credit decisions. Parent banks are unlikely to reverse the delegation granted to subsidiaries, as it may negatively affect the firm's performance. Hence, we argue that subsidiaries try to maintain their relationships with their clients during crisis periods, and consequently do not reduce lending as much as branches do. In conclusion, our results of the analysis of the operations of foreign-owned banks show the need to control for the increasing role of foreign branches in host countries. In many developed countries, foreign branches are surpassing foreign bank subsidiaries, while parent banks often operate a branch and subsidiary simultaneously in a host country. We believe that our results are important from a policy perspective because we indirectly demonstrate that foreign branches increase competition in the banking sector. At the same time, branches may act as an important channel of international shock transmission from crisis countries to host countries. Thus, this cost should be weighed against the benefits of higher competition.

References

Allen, F., Gu, X. and Kowalewski, O. (2013), Corporate governance and intra-group transactions in european bank holding companies during the crisis, *in* 'Global Banking, Financial Markets and Crises', Emerald Group Publishing Limited, pp. 365–431.

Allen, F., Jackowicz, K., Kowalewski, O. and Kozłowski, Ł. (2017), 'Bank lending, crises, and changing ownership structure in central and eastern european countries', *Journal of Corporate Finance* **42**, 494–515.

Barth, J. R., Caprio Jr, G. and Levine, R. (2013), 'Bank regulation and supervision in 180 countries from 1999 to 2011', *Journal of Financial Economic Policy* **5**(2), 111–219.

Beck, T. and Brown, M. (2015), 'Foreign bank ownership and household credit', *Journal of Financial Intermediation* **24**(4), 466–486.

Beck, T., Demirgüç-Kunt, A. and Levine, R. (2006), 'Bank concentration, competition, and crises: First results', *Journal of Banking & Finance* **30**(5), 1581–1603.

Beck, T., Demirgüç-Kunt, A. and Pería, M. S. M. (2011), 'Bank financing for smes: Evidence across countries and bank ownership types', *Journal of Financial Services Research* **39**(1-2), 35–54.

Bonin, J. P., Hasan, I. and Wachtel, P. (2005), 'Privatization matters: Bank efficiency in transition countries', *Journal of Banking & Finance* **29**(8-9), 2155–2178.

Bonin, J. P. and Louie, D. (2017), 'Did foreign banks stay committed to emerging europe during recent financial crises?', *Journal of Comparative Economics* **45**(4), 793–808.

Bonin, J. and Wachtel, P. (2003), 'Financial sector development in transition economies: Lessons from the first decade', *Financial Markets, Institutions & Instruments* **12**(1), 1–66.

Cerutti, E., Dell'Ariccia, G. and Pería, M. S. M. (2007), 'How banks go abroad: Branches or subsidiaries?', *Journal of Banking & Finance* **31**(6), 1669–1692.

Claessens, S., Demirgüç-Kunt, A. and Huizinga, H. (2001), 'How does foreign entry affect domestic banking markets?', *Journal of Banking & Finance* **25**(5), 891–911.

Claessens, S. and Van Horen, N. (2014), 'Foreign banks: Trends and impact', *Journal of Money, Credit and Banking* **46**(s1), 295–326.

Cull, R. and Peria, M. S. M. (2013), 'Bank ownership and lending patterns during the 2008–2009 financial crisis: Evidence from latin america and eastern europe', *Journal of Banking & Finance* **37**(12), 4861–4878.

Cull, R., Peria, M. S. M. and Verrier, J. (2018), Bank ownership and economic development, *in* T. Beck and R. Levine, eds, 'Handbook of Finance and Development', Edward Elgar Publishing, pp. 419–447.

Danisewicz, P., Reinhardt, D. and Sowerbutts, R. (2017), 'On a tight leash: Does bank organizational structure matter for macroprudential spillovers?', *Journal of International Economics* **109**, 174–194.

De Haas, R. and Van Lelyveld, I. (2004), 'Foreign bank penetration and private sector credit in central and eastern europe', *Journal of Emerging Market Finance* **3**(2), 125–151.

De Haas, R. and Van Lelyveld, I. (2006*a*), 'Foreign banks and credit stability in central and eastern europe. a panel data analysis', *Journal of banking & Finance* **30**(7), 1927–1952.

De Haas, R. and Van Lelyveld, I. (2006*b*), 'Foreign banks and credit stability in central and eastern europe. a panel data analysis', *Journal of Banking & Finance* **30**(7), 1927–1952.

De Haas, R. and Van Lelyveld, I. (2010), 'Internal capital markets and lending by multinational bank subsidiaries', *Journal of financial Intermediation* **19**(1), 1–25.

De Haas, R. and Van Lelyveld, I. (2014), 'Multinational banks and the global financial crisis: Weathering the perfect storm?', *Journal of Money, Credit and Banking* **46**(s1), 333–364.

Dermine, J. (2006), 'European banking integration: Don't put the cart before the horse', *Financial Markets, Institutions & Instruments* **15**(2), 57–106.

Detragiache, E., Tressel, T. and Gupta, P. (2008), 'Foreign banks in poor countries: theory and evidence', *The Journal of Finance* **63**(5), 2123–2160.

Fang, Y., Hasan, I. and Marton, K. (2011), 'Bank efficiency in south-eastern europe', *Economics of Transition* **19**(3), 495–520.

Fáykiss, P., Grosz, G. and Szigel, G. (2013), Transforming subsidiaries into branches: Should we be worrying about it?, Technical report, Hungarian National Bank (MNB).

Fiechter, J., Ötker-Robe, I., Ilyina, A., Hsu, M., Santos, A. O. and Surti, J. (2011), Subsidiaries or branches; does one size fit all?, Technical report, International Monetary Fund.

Fries, S. and Taci, A. (2005), 'Cost efficiency of banks in transition: Evidence from 289 banks in 15 post-communist countries', *Journal of Banking & Finance* **29**(1), 55–81.

Giannetti, M. and Ongena, S. (2009), 'Financial integration and firm performance: Evidence from foreign bank entry in emerging markets', *Review of Finance* **13**(2), 181–223.

Hoggarth, G., Hooley, J., Korniyenko, Y. et al. (2013), Financial stability paper no 22: Which way do foreign branches sway? evidence from the recent uk domestic credit cycle, Technical report, Bank of England.

Hryckiewicz, A. and Kowalewski, O. (2010), 'Economic determinates, financial crisis and entry modes of foreign banks into emerging markets', *Emerging Markets Review* **11**(3), 205–228.

Kowalewski, O. and Rybinski, K. (2011), 'The hidden transformation: the changing role of the state after the collapse of communism in central and eastern europe', *Oxford Review of Economic Policy* **27**(4), 634–657.

Laeven, L. and Valencia, F. (2018), Systemic banking crises revisited, Technical report, International Monetary Fund.

Naaborg, I., Scholtens, B., De Haan, J., Bol, H. and De Haas, R. (2004), 'How important are foreign banks in the financial development of european transition countries?', *Journal of Emerging Market Finance* **3**(2), 99–123.

Ongena, S., Popov, A. and Udell, G. F. (2013), '"when the cat's away the mice will play": does regulation at home affect bank risk-taking abroad?', *Journal of Financial Economics* **108**(3), 727–750.

Sapienza, P. (2004), 'The effects of government ownership on bank lending', *Journal of financial economics* **72**(2), 357–384.

Schaeck, K., Cihak, M. and Wolfe, S. (2009), 'Are competitive banking systems more stable?', *Journal of Money, Credit and banking* **41**(4), 711–734.

Temesvary, J. and Banai, A. (2017), 'The drivers of foreign bank lending in central and eastern europe: The roles of parent, subsidiary and host market traits', *Journal of International Money and Finance* **79**, 157–173.

Williams, B. (2002), 'The defensive expansion approach to multinational banking: Evidence to date', *Financial Markets, Institutions & Instruments* **11**(2), 127–203.

Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
dLoans	0.325	0.854	-0.889	12.461	5528
dConsumer Loans	0.247	0.908	-0.989	12.057	1428
dCorp. Loans	0.215	0.481	-0.679	3.743	1781
LtD	1.071	1.031	0	9.902	5971
Deposit	0.687	0.289	0	1	6115
Loan Losses	0.075	0.099	0	1	4947
CIR	0.717	0.59	0	9.468	6103
NIM	0.049	0.044	-0.316	0.725	6179
ROA	0.005	0.051	-0.996	0.656	6201
Equity	0.142	0.138	-2.496	1	6225
Assets	7.726	2.422	0	17.541	6225
GOV	0.114	0.318	0	1	6225
FGN	0.544	0.498	0	1	6225
B-Sub.	0.451	0.498	0	1	6225
NB-Sub.	0.091	0.288	0	1	6225
Sub.-Branch	0.012	0.107	0	1	6225
No. Branches	4.203	5.82	0	23	6220
Branches/T	0.107	0.14	0	0.647	6220
Branches/B	0.158	0.254	0	1.833	6220
Activity	6.938	1.642	3	11	6225
Credit	0.384	0.183	0.035	1.025	6155
NIM	0.047	0.022	0.005	0.158	5967
CR3	0.586	0.148	0.337	1	5950
CIR	0.616	0.125	0.205	1.663	5985
Z-Score	0.072	0.035	-0.005	0.321	5979
Tax	0.266	1.149	0.09	19.5	6220
EU	0.343	0.475	0	1	6225
EMU	0.049	0.215	0	1	6225
GDP Growth	0.034	0.047	-0.148	0.89	6122
GDP	24.39	1.3	20.707	27.024	6223
CPI	0.114	0.597	-0.014	10.584	6225
Rating	8.788	2.556	3	16	4625
B-Crisis	0.107	0.31	0	1	6225
G-Crisis	0.104	0.305	0	1	6225

Table 2: Openning Branches

This table reports the results of the OLS and Tobit regressions of the decision to open a branch in a CESEE country. All variables are as defined in Table A3 in the Appendix. All regressions include a constant, and country-year fixed effects.

	OLS			Tobit		
	(1)	(2)	(3)	(4)	(5)	(6)
CIR	-1.708	-0.453***	-0.150**	-2.991	-0.603***	-0.205***
	(2.421)	(0.166)	(0.074)	(2.709)	(0.179)	(0.078)
CR3	-9.748**	0.430**	0.120	-3.327	0.996***	0.358***
	(4.140)	(0.202)	(0.096)	(4.018)	(0.213)	(0.094)
Activity	0.888***	0.040***	0.019***	0.753***	0.030***	0.015***
	(0.177)	(0.009)	(0.004)	(0.174)	(0.010)	(0.004)
Tax	0.160**	0.014***	0.006***	0.165**	0.015***	0.006***
	(0.072)	(0.005)	(0.002)	(0.064)	(0.004)	(0.002)
GDP Growth	0.913	-1.026	-0.218	-1.157	-1.189	-0.264
	(8.914)	(0.876)	(0.293)	(8.349)	(0.797)	(0.258)
GDP	-1.450	0.518***	0.221***	-9.151***	0.042	0.009
	(2.346)	(0.149)	(0.065)	(2.672)	(0.168)	(0.067)
Rating	0.183	0.016	0.015***	0.302	0.030**	0.021***
	(0.187)	(0.011)	(0.005)	(0.189)	(0.013)	(0.006)
EU	1.722*	0.059	0.045			
	(0.978)	(0.064)	(0.030)			
EMU	0.233	0.202***	0.102***	-0.930	0.136*	0.065**
	(0.925)	(0.072)	(0.027)	(0.901)	(0.069)	(0.026)
B-Crisis	-0.383	-0.117**	-0.027	-0.267	-0.102**	-0.024
	(0.651)	(0.045)	(0.020)	(0.715)	(0.050)	(0.022)
Observation	227	227	227	227	227	227
R^2	0.815	0.769	0.817			
Adjusted R^2	0.774	0.717	0.776			
Pseudo R^2				0.352	1.191	4.849

Note: Robust standard errors clustered at the bank level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 3: The growth of total loans and branch activity

The dependent variable is the annual percentage change in total gross loans calculated using domestic currencies. All regressions include a constant, and country-year fixed effects. Variables definitions are in Table A3 in Appendix.

	(1)	(2)	(3)	(4)	(5)
LtD	0.041	0.042	0.041	0.042	0.042
	(0.027)	(0.028)	(0.027)	(0.028)	(0.028)
Deposit	-0.068	-0.063	-0.067	-0.059	-0.058
	(0.092)	(0.098)	(0.092)	(0.094)	(0.096)
ROA	0.572*	0.585**	0.577*	0.585*	0.602**
	(0.279)	(0.273)	(0.280)	(0.276)	(0.275)
Equity	-0.058	-0.067	-0.059	-0.070	-0.078
	(0.238)	(0.228)	(0.238)	(0.233)	(0.229)
Assets	-0.006	-0.006	-0.005	-0.006	-0.006
	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)
GOV	-0.095**	-0.072*	-0.098**	-0.083**	-0.071*
	(0.036)	(0.040)	(0.037)	(0.036)	(0.034)
FGN	0.027	0.100**	0.031	0.068	0.094*
	(0.042)	(0.045)	(0.044)	(0.046)	(0.045)
EU		0.167**			
		(0.057)			
EMU			0.035		
			(0.071)		
Branch/B				0.864***	
				(0.218)	
Branches/T					3.511***
					(0.716)
GOV × EU		-0.082			
		(0.049)			
FGN × EU		-0.202***			
		(0.063)			
GOV × EMU			0.015		
			(0.069)		
FGN × EMU			-0.070		
			(0.081)		
GOV × Branch/B				-0.073	
				(0.094)	
FGN × Branch/B				-0.241**	
				(0.108)	
GOV × Branch/T					-0.259
					(0.182)
FGN × Branch/T					-0.595**
					(0.214)
Observation	5282	5282	5282	5281	5281
R2	0.214	0.219	0.214	0.216	0.218
AdjustedR2	0.161	0.166	0.161	0.163	0.165

Note: Robust standard errors clustered at the bank level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 4: The growth of total loans - robustness check

The dependent variable is the annual percentage change in total gross loans calculated using domestic currencies. All of the regressions include bank-level control variables as specified in Table 3, a constant, and country-year fixed effects. Variable definitions are in Table A3 in Appendix.

	(1)	(2)	(3)	(4)	(5)	(6)
GOV	-0.099**	-0.075*	-0.101**	-0.087**	-0.074**	-0.099**
	(0.035)	(0.040)	(0.036)	(0.036)	(0.034)	(0.035)
B-Sub.	0.014	0.090*	0.018	0.061	0.089*	0.017
	(0.042)	(0.047)	(0.044)	(0.046)	(0.046)	(0.042)
NB-Sub.	0.086	0.133**	0.084	0.082	0.097	0.085
	(0.053)	(0.056)	(0.056)	(0.061)	(0.065)	(0.053)
Sub.-Branch						-0.131**
						(0.048)
EU		0.181***				
		(0.056)				
EMU			0.051			
			(0.052)			
Branches/B				0.939***		
				(0.226)		
Branches/T					3.799***	
					(0.702)	
GOV×EU		-0.084				
		(0.049)				
B-Sub.×EU		-0.213***				
		(0.063)				
NB-Sub.×EU		-0.147*				
		(0.071)				
GOV×EMU			0.003			
			(0.057)			
B-Sub.×EMU			-0.085			
			(0.062)			
NB-Sub.×EMU			0.124			
			(0.324)			
GOV×Branches/B				-0.060		
				(0.097)		
B-Sub.×Branches/B				-0.269**		
				(0.114)		
NB-Sub.×Branches/B				-0.025		
				(0.153)		
GOV×Branches/T					-0.248	
					(0.182)	
B-Sub.×Branches/T					-0.660***	
					(0.215)	
NB-Sub.×Branches/T					-0.199	
					(0.319)	
Observation	5282	5282	5282	5281	5281	5282
R^2	0.215	0.220	0.216	0.218	0.220	0.216
Adjusted R^2	0.162	0.167	0.161	0.164	0.166	0.162

Note: Robust standard errors clustered at the bank level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 5: Determinants of the growth of consumer loans

The dependent variable is the annual percentage change in consumer loans calculated using domestic currencies. All of the regressions include bank-level control variables as specified in Table 3, a constant, and country-year fixed effects. Variable definitions are in Table A3 in Appendix.

	(1)	(2)	(3)	(4)	(5)	(6)
GOV	-0.234***	-0.372*	-0.258***	-0.262*	-0.252*	-0.238***
	(0.074)	(0.200)	(0.082)	(0.126)	(0.135)	(0.076)
B-Sub.	-0.070	-0.142	-0.087	-0.096	-0.090	-0.066
	(0.072)	(0.143)	(0.077)	(0.097)	(0.102)	(0.072)
NB-Sub.	0.119	0.056	0.120	0.142	0.152	0.115
	(0.104)	(0.165)	(0.105)	(0.106)	(0.095)	(0.106)
Sub.-Branch						-0.229**
						(0.088)
EU		-0.070				
		(0.194)				
EMU			-0.126			
			(0.133)			
Branches/B				0.674**		
				(0.248)		
Branches/T					3.451***	
					(0.785)	
GOV×EU		0.215				
		(0.194)				
B-Sub.×EU		0.128				
		(0.147)				
NB-Sub.×EU		0.111				
		(0.312)				
GOV×EMU			0.201*			
			(0.113)			
B-Sub.×EMU			0.178			
			(0.135)			
NB-Sub.×EMU			-0.359*			
			(0.199)			
GOV×Branches/B				0.130		
				(0.257)		
B-Sub.×Branches/B				0.114		
				(0.163)		
NB-Sub.×Branches/B				-0.072		
				(0.334)		
GOV×Branches/T					0.125	
					(0.458)	
B-Sub.×Branches/T					0.132	
					(0.312)	
NB-Sub.×Branches/T					-0.167	
					(0.560)	
Observation	1412	1412	1412	1412	1412	1412
R^2	0.294	0.295	0.295	0.294	0.294	0.294
Adjusted R^2	0.177	0.176	0.176	0.175	0.175	0.177

Note: Robust standard errors clustered at the bank level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 6: Determinants of the growth of corporate loans

The dependent variable is the annual percentage change in consumer loans calculated using domestic currencies. All of the regressions include bank-level control variables as specified in Table 3, a constant, and country-year fixed effects. Variable definitions are in Table A3 in Appendix.

	(1)	(2)	(3)	(4)	(5)	(6)
GOV	-0.034	0.002	-0.023	-0.037	-0.024	-0.035
	(0.065)	(0.064)	(0.073)	(0.044)	(0.036)	(0.066)
B-Sub.	-0.000	0.073*	0.015	0.060*	0.088**	0.004
	(0.030)	(0.038)	(0.031)	(0.034)	(0.038)	(0.030)
NB-Sub.	-0.009	0.064	0.013	0.075	0.108*	-0.008
	(0.039)	(0.040)	(0.038)	(0.046)	(0.052)	(0.039)
Sub.-Branch						-0.120***
						(0.019)
EU		0.111*				
		(0.057)				
EMU			0.148			
			(0.098)			
Branches/B				0.812*		
				(0.393)		
Branches/T					2.907**	
					(1.255)	
GOV×EU		-0.074*				
		(0.042)				
B-Sub.×EU		-0.139*				
		(0.078)				
NB-Sub.×EU		-0.131				
		(0.092)				
GOV×EMU			-0.142			
			(0.098)			
B-Sub.×EMU			-0.206*			
			(0.097)			
NB-Sub.×EMU			-0.367***			
			(0.109)			
GOV×Branches/B				0.100		
				(0.254)		
B-Sub.×Branches/B				-0.323**		
				(0.152)		
B-Sub.×Branches/B				-0.426*		
				(0.204)		
GOV×Branches/T					-0.045	
					(0.419)	
B-Sub.×Branches/T					-0.721**	
					(0.284)	
B-Sub.×Branches/T					-0.884**	
					(0.331)	
Observation	1730	1730	1730	1730	1730	1730
R^2	0.289	0.293	0.292	0.297	0.300	0.290
Adjusted R^2	0.191	0.194	0.193	0.199	0.202	0.192

Note: Robust standard errors clustered at the bank level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 7: Crisis and loan growth

The dependent variable is the annual percentage change in gross loans calculated using domestic currencies. In columns (1)-(2) the sample include all CESEE countries; columns (3)-(4) include only EU member countries; columns (5)-(6) include non-EU member countries. All of the regressions include bank-level control variables as specified in Table 3, a constant, and country-year fixed effects. Variable definitions are in Table A3 in Appendix.

	(1)	(2)	(3)	(4)	(5)	(6)
GOV	-0.095***	-0.099***	-0.106**	-0.106**	-0.110***	-0.114***
	(0.031)	(0.031)	(0.042)	(0.043)	(0.037)	(0.037)
FGN	0.032		0.118**		0.040	
	(0.042)		(0.055)		(0.046)	
B-Sub.		0.022		0.122**		0.030
		(0.042)		(0.054)		(0.046)
NB-Sub.		0.087		0.115		0.101
		(0.050)		(0.078)		(0.059)
Sub.-Branch		-0.128**		-0.134**		-0.155***
		(0.048)		(0.059)		(0.046)
B-Crisis	0.342***	0.342***	0.046	0.078		
	(0.108)	(0.112)	(0.176)	(0.180)		
GOV×bcrisis	-0.008	-0.009	0.052	0.057		
	(0.124)	(0.124)	(0.180)	(0.180)		
FGN×bcrisis	-0.049		0.002			
	(0.133)		(0.213)			
B-Sub.×bcrisis		-0.055		-0.039		
		(0.138)		(0.219)		
NB-Sub.×bcrisis		-0.017		0.462**		
		(0.161)		(0.217)		
SB×bcrisis		-0.030				
		(0.080)				
G-Crisis					0.036	0.037
					(0.039)	(0.040)
GOV×crisis					0.186	0.186
					(0.116)	(0.116)
FGN×crisis					-0.104**	
					(0.046)	
B-Sub.×crisis						-0.108**
						(0.046)
NB-Sub.×crisis						-0.129
						(0.085)
SB×crisis						0.145
						(0.087)
Observation	5282	5282	3136	3136	5282	5282
R^2	0.214	0.216	0.206	0.208	0.216	0.218
Adjusted R^2	0.161	0.162	0.151	0.152	0.162	0.164

Note: Robust standard errors clustered at the bank level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 8: Crisis and loan growth - sensitivity analysis

The dependent variable is the annual percentage change in gross loans calculated using US dollars. In columns (1)-(2) the sample include all CESEE countries; columns (3)-(4) include only EU member countries; columns (5)-(6) include non-EU member countries. All of the regressions include bank-level control variables as specified in Table 3, a constant, and country-year fixed effects. Variable definitions are in Table A3 in Appendix.

	(1)	(2)	(3)	(4)	(5)	(6)
GOV	-0.106**	-0.111**	-0.101*	-0.105*	-0.124**	-0.131***
	(0.040)	(0.041)	(0.049)	(0.051)	(0.043)	(0.043)
FGN	0.048		0.143**		0.045	
	(0.045)		(0.063)		(0.052)	
B-Sub.		0.034		0.139*		0.029
		(0.047)		(0.068)		(0.056)
NB-Sub.		0.119**		0.173*		0.129**
		(0.049)		(0.091)		(0.061)
Sub.-Branch		-0.156**		-0.176***		-0.191***
		(0.064)		(0.047)		(0.062)
B-Crisis	0.049	0.070	0.030	0.054		
	(0.126)	(0.137)	(0.190)	(0.188)		
GOV×bcrisis	-0.029	-0.042	0.037	0.033		
	(0.173)	(0.176)	(0.245)	(0.247)		
FGN×bcrisis	-0.122		-0.073			
	(0.165)		(0.245)			
B-Sub.×bcrisis		-0.161		-0.105		
		(0.180)		(0.243)		
NB-Sub.×bcrisis		0.095		0.631		
		(0.262)		(0.513)		
SB×bcrisis		0.010				
		(0.116)				
G-Crisis					-0.160***	-0.152**
					(0.053)	(0.057)
GOV×crisis					0.221*	0.220*
					(0.122)	(0.122)
FGN×crisis					-0.058	
					(0.063)	
B-Sub.×crisis						-0.072
						(0.068)
NB-Sub.×crisis						-0.033
						(0.148)
SB×crisis						0.229**
						(0.087)
Observation	5343	5343	3165	3165	5343	5343
R^2	0.363	0.365	0.417	0.418	0.364	0.365
Adjusted R^2	0.320	0.321	0.376	0.377	0.320	0.322

Note: Robust standard errors clustered at the bank level are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table A1: Table shows the number of branches in a given CESEE country

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Czech Republic	10	9	9	10	10	10	10	8	8	9	12
Estonia	0	0	0	0	0	1	1	1	1	3	4
Hungary	0	0	0	0	0	0	0	0	0	0	3
Latvia	0	0	0	0	0	1	1	1	1	1	1
Lithuania	0	0	1	1	1	1	1	1	1	1	1
Poland	1	1	1	1	1	1	1	1	1	3	7
Slovakia	9	5	4	2	2	2	2	2	3	3	5
Slovenia	0	0	0	0	0	0	1	1	1	2	3
Bulgaria	4	4	4	5	7	7	7	6	6	6	6
Romania	7	9	9	9	7	8	8	8	8	7	6
Croatia	0	0	0	0	0	0	0	0	0	0	0
Albania	2	2	2	2	1	1	1	1	1	1	1
Macedonia	1	1	1	0	1	1	0	0	0	0	0
Montenegro	0	0	0	0	0	0	0	0	0	0	0
Serbia	0	0	0	0	0	0	0	0	0	0	0
Rep. of Moldova	0	0	0	0	0	0	0	0	0	0	0
Bosnia-Herzegovina	0	0	0	0	0	0	0	0	0	0	0

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Czech Republic	13	14	16	18	19	21	20	21	22	23	22
Estonia	7	9	11	10	11	10	8	7	7	7	7
Hungary	4	6	10	11	10	11	10	9	10	10	10
Latvia	3	4	6	6	8	9	9	9	10	10	10
Lithuania	0	7	7	7	9	6	5	8	8	7	7
Poland	12	14	18	18	21	19	20	22	22	22	21
Slovakia	7	10	9	11	14	17	14	15	15	15	15
Slovenia	2	3	3	3	3	3	3	3	4	4	3
Bulgaria	4	5	6	6	6	7	7	6	6	6	5
Romania	6	12	10	10	9	8	8	9	9	7	8
Croatia	0	0	0	0	0	0	0	0	0	0	0
Albania	1	1	1	1	1	1	1	0	0	0	1
Macedonia	0	0	0	0	0	0	0	0	0	0	0
Montenegro	0	0	0	0	0	0	0	0	0	0	0
Serbia	0	0	0	0	0	0	0	0	0	0	0
Rep. of Moldova	0	0	0	0	0	0	0	0	0	0	0
Bosnia-Herzegovina	0	0	0	0	0	0	0	0	0	0	0

Table A2: Table shows the number of commercial banks in a given CESEE country

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Czech Republic	45	44	41	35	32	30	28	29	27	26	24
Estonia	9	6	6	6	7	7	7	7	7	9	9
Hungary	43	42	45	44	43	42	41	38	38	38	37
Latvia	41	34	32	28	24	22	23	23	23	23	23
Lithuania	15	12	12	12	13	13	13	14	13	12	12
Poland	81	81	81	83	77	73	69	59	58	57	61
Slovakia	22	24	25	24	23	21	19	18	18	18	18
Slovenia	39	36	34	30	31	28	24	22	18	18	18
Bulgaria	47	35	34	34	34	35	35	34	35	35	34
Romania	24	31	33	36	34	33	33	31	30	32	33
Croatia	34	38	41	40	33	25	24	26	22	20	22
Albania	6	8	9	10	13	13	13	13	15	16	16
Macedonia	21	22	22	24	21	21	21	20	21	21	20
Montenegro								10	10	10	10
Serbia	112	103	106	104	75	81	54	50	47	43	40
Rep. of Moldova	25	22	22	23	20	20	19	16	16	16	16
Bosnia-Herzegovina	41	41	52	53	61	56	49	40	37	33	24

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Czech Republic	24	23	21	21	22	23	23	23	23	23	23
Estonia	7	6	6	7	7	7	7	7	7	7	8
Hungary	40	40	41	40	40	38	35	35	35	35	37
Latvia	24	25	27	27	20	21	21	19	19	19	19
Lithuania	11	9	10	10	9	8	7	7	7	6	6
Poland	63	64	70	67	49	47	45	41	38	38	36
Slovakia	17	16	17	15	15	14	14	13	13	13	12
Slovenia	17	18	18	19	19	19	17	17	17	15	14
Bulgaria	32	29	30	30	30	31	31	30	28	28	27
Romania	31	31	32	31	30	31	30	29	29	27	27
Croatia	22	24	21	22	22	22	20	20	21	20	16
Albania	17	17	16	16	16	16	16	16	16	16	16
Macedonia	19	18	18	18	18	17	16	15	15	15	15
Montenegro	10	11	11	11	11	11	11	12	14	14	15
Serbia	37	35	34	34	33	33	32	30	29	30	31
Rep. of Moldova	15	16	16	15	14	14	14	14	14	11	11
Bosnia-Herzegovina	20	20	20	20	19	18	18	16	17	16	13

Table A3: Variable descriptions

Variable name	Description	Source
Bank-level data		
ΔLoans	Real growth rate of bank loans to non-financial entities	
ΔCorporate loans	Real growth rate of bank corporate loans to non-financial entities	Bankscope
ΔConsumer loans	Real growth rate of bank consumer loans to non-financial entities	
LtD	Ratio of loans to deposits	
Deposit	Ratio of non-financial deposits to total assets	
ROA	Return of net profit to average total assets	
Equity	Ratio of equity capital to total assets	
Assets	Bank's assets to host-country's GDP	Bankscope, WDI
GOV	A dummy variable that takes the value 1 if the government owns more than 30% of the shares and zero otherwise	Classens and Van Horen(2014), Bankscope, websites
FGN	A dummy variable that takes the value 1 if a foreign entity owns more than 50% of the shares and zero otherwise	
B-Sub	A dummy variable that takes the value 1 if the owner of a foreign entity is a multinational banks and zero otherwise	Bankscope, websites
NB-Sub	A dummy variable that takes the value 1 if the owner of a foreign entity is a non-bank entity and zero otherwise	
Sub.-Branch	A dummy variable that takes the value 1 if the owner simultaneously to the subsidiary operates a branch and zero otherwise	
Country-level data		
No Branches	Number of foreign bank branches	National Supervisory Authorities
Branches/B	Ratio of number of foreign bank branches to total number of commercial banks	
Branches/T	Ratio of number of foreign bank branches to the sum of number of commercial banks and foreign bank branches	
CIR	Total costs as a share of total income of all commercial banks.	Cihák et al. (2012
CR3	Assets of three largest banks as a share of assets of all commercial banks.	

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Variable	Description	Source
Activity	The extent to which banks may engage in (a) underwriting, brokering and dealing in securities, and all aspects of the mutual fund industry, (b) insurance underwriting and selling, and (c) real estate investment, development, and management. Higher values indicate greater restrictiveness	Barth et al. (2013)
EU	A dummy variable that equals 1 if a country is member of the European Union and zero otherwise.	
EMU	A dummy variable that equals 1 if a country is member of the European Monetary Union and zero otherwise.	
Tax	Corporate tax rate	
GDP Growth	Real GDP growth	World Development Indicators
GDP	Logarithm of gross national product (current US$)	
Rating	The long-term rating of a country's foreign currency in a given year. Higher values indicate better credibility.	S&P
B-Crisis	Dummy variable that equals 1 during a systematic banking crisis and zero otherwise.	Laeven and Valencia (2018)
GF-Crisis	A dummy variable that equals 1 for the years 2008-2009 and 0 otherwise.	