



## What determines the composition of banks' loan portfolios? Evidence from transition countries

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### ABSTRACT

This paper explores how bank characteristics and the institutional environment influence the composition of banks' loan portfolios. We use a new and unique data set based on the EBRD Banking Environment and Performance Survey (BEPS), which was conducted for 220 banks in 20 transition countries. We show that bank ownership, bank size, and legal creditor protection are important determinants of the composition of banks' loan portfolios. In particular, we find that foreign banks play an active role in mortgage lending. Moreover, banks that perceive pledge and mortgage laws to be of high quality choose to focus more on mortgage lending.

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### 1. Introduction

The last two decades saw important changes in the ownership structure and the institutional environment of banks in transition countries. The most striking development has been the large-scale penetration of foreign banks. This has led to an unprecedented level of integration between banking systems in developed – mainly western European – countries and those in transition countries. In many transition countries foreign banks now dominate the market and their affiliates form the main source of external finance for households and firms. The progress in the transition from planned to market economies has also gradually – but very substantially – changed the working environment of banks. Most important is the (uneven) progress countries have made in improving the legal protection of banks and the enforcement of this creditor protection through the courts.

This paper explores how bank-level variations in ownership and perceptions of the institutional environment explain the role of banks in financing businesses, households, and the government. While earlier research focused on lending growth in transition

countries, little is known about the composition of bank lending as regards customer types. Do foreign banks differ from domestic banks in their loan portfolio composition or is bank size more important than ownership per se? And is the composition of bank lending also influenced by the quality of creditor protection?

We are able to shed more light on these issues due to a new EBRD survey which allows for a bank-level analysis of credit portfolios and of banks' own perceptions of their institutional environment. The Banking Environment and Performance Survey (BEPS) was conducted in 2005 among 220 banks in 20 transition countries. We combine this dataset with Bureau van Dijk's BankScope database that contains detailed balance sheet information on the same banks. The resulting unique dataset allows us to contribute to the empirical literature in several ways. First, we can directly relate banks' loan portfolio composition to other bank characteristics as well as to cross-country differences in the legal environment. Earlier studies did not have detailed information on bank customer types because such information usually cannot be gleaned from balance sheet statements. Second, our focus on transition countries means that we study a group of countries with very heterogeneous levels of legal creditor protection, allowing us to exploit this dimension in our empirical analysis. Finally, our dataset allows us to go beyond a simple distinction between foreign and domestic banks. We differentiate between greenfield foreign banks (*de novo*

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foreign bank subsidiaries that have been newly established by parent banks), foreign banks that are the result of the take-over of a previously domestic bank, private domestic banks, and state-owned domestic banks.

We find that bank characteristics such as ownership and size are important determinants of banks' customer portfolios. In line with earlier empirical studies, we show that small banks lend more to small and medium-sized enterprises (SMEs) than large banks.<sup>1</sup> Large banks still have a comparative advantage in lending to large customers. Our results on bank ownership tell a subtler story than earlier studies as we find that foreign banks can move beyond their stereotypical role as financiers of only large and foreign-owned firms. While foreign banks lend relatively more to foreign firms than domestic banks, they also have a stronger focus on households (in the form of mortgage lending). These results run counter the traditional view that foreign banks in emerging economies prefer to focus on large businesses only.

We also find some evidence for the hypothesis that better legal protection changes bank portfolio composition, although banks' perception of the legal environment is a much less important determinant of their customer focus than banks' ownership structure and size. Our main robust finding in this regard is that banks that perceive pledge and mortgage laws to be of high quality focus more on mortgage lending. In line with this we also find some weaker econometric evidence that a better legal protection of banks allows them to move away from serving state-owned firms to focus more on private-sector customers.

Although we cannot ascertain causality with certainty, in order to minimize concerns about endogeneity we use two country-level indices of creditor protection as instruments for banks' perception of collateral laws in two-stage procedures. Under the hypothesis that these instruments are valid, the evidence is suggestive of a causal link from the banks' perception of the quality of collateral laws to the loan decision.

The outline of this paper is as follows. Section 2 provides an overview of the literature on the determinants of bank portfolio composition. Section 3 describes our data and empirical methodology, and Section 4 summarizes our empirical results. Section 5 concludes.

## 2. Determinants of the composition of banks' loan portfolios

### 2.1. The matching process between banks and their customers

The BEPS survey offers a unique opportunity to use bank-level information on portfolio composition and link it to other bank characteristics. We thus mainly analyze the bank–customer relationship from the point of view of the bank. However, the matching process between banks and their customers is a two-way process. While banks target certain customer groups, customers also choose the banks they want to work with. The literature on this matching process is still limited and tends to take the perspective of either the bank or the customer. Many contributions stress that it is ultimately the bank that decides which customers it *wants* to focus on (for instance because of their profitability) or *can* focus on (the bank may only be able to serve relatively small customers because of large exposure limits).<sup>2</sup>

Another strand of literature takes the firm's perspective to analyze bank–customer relationships. Recent years saw a burgeoning literature on multiple bank relationships in particular. This litera-

ture revolves around the observation that although having a single bank relationship is efficient, firms often prefer multiple bank relationships. This is due to a number of reasons, such as preventing credit rationing by a single partner bank (Thakor, 1996), avoiding expropriation of informational rents by such a bank (Rajan, 1992), or because firms need several banks to fulfill all funding requirements (Berger et al., 2008). All these theories assume that the firm is the active party in instigating a relationship with one or more banks.

In sum, although we approach the bank–customer relationship from the bank's perspective, the matching is in practice a two-way process. Our approach reflects the new and unique data source that is available to us, which includes data on banks' portfolios but excludes, for instance, information on firms borrowing from multiple banks.

### 2.2. Bank characteristics, the legal environment and bank portfolio composition

More active and more efficient banking systems are associated with capital accumulation, productivity increases, and hence faster economic development (King and Levine, 1993; Brown et al., 2009; Hasan et al., 2009). However, the type of customers that banks focus on may have implications for the exact impact that bank lending has on economic growth. In a transition context, for instance, academics and development banks often focus on the amount of bank lending to small and medium-sized enterprises (SMEs). SME financing is important in transition countries, as small firms play an important role in the restructuring process by absorbing employees that lose their jobs in privatized or bankrupt state-owned enterprises. Carlin and Richthofen (1995) find that the rapid growth of SMEs, and the availability of sufficient external funding for these firms, has contributed to the integration of the former East and West Germany. It is therefore important to understand what determines banks' willingness and ability to lend to SMEs – at least to those SMEs that need external financing for further growth (Vos et al. 2007) – as opposed to other customer types such as large enterprises or retail clients. We consider three main potential determinants of bank portfolio composition: bank ownership, bank size, and the legal environment.

#### 2.2.1. Bank ownership

Domestic banks and foreign banks may focus on different customer types if they have access to different sorts of client information and process this information differently. Domestic banks tend to have a deep understanding of local businesses and base their lending decisions on the 'soft' qualitative information that is available on local and smaller firms with whom they develop long-term relationships (Berger and Udell, 1995, 2002; Petersen and Rajan, 2002). Such relationships also enable banks to collect information about borrowers' capacity to repay, thus reducing the cost of providing credit. Foreign banks may have difficulties in processing soft information. They often grant loans on a transaction-by-transaction basis using standardized decision methodologies. Such methods to assess creditworthiness tend to use 'hard' information like financial ratios calculated on the basis of financial statements (Berger et al., 2001). Foreign banks that lack local knowledge may therefore mainly grant credit to large and foreign-owned firms, which tend to be more transparent than local SMEs. The increased presence of foreign banks in transition countries may therefore have led to a relative decline in SME lending.

Among foreign banks, greenfield banks can be expected to have the strongest focus on large and foreign companies, while acquired foreign banks are more like domestic banks. Claeys and Hainz (2007) develop a model in which greenfield foreign banks have no access to soft information. They only use hard, quantitative cli-

<sup>1</sup> See Berger et al. (2001), Berger and Udell (2002), and the references in Section 2.3.

<sup>2</sup> De Haas and Naaborg (2006) describe how many banks in transition countries took the strategic decision to move from large clients to medium-sized and smaller firms because competition in the latter market segment was lower and profitability higher. Banks thus actively managed the types of customers they were after.

ent information, which they process through screening technologies introduced by their parent banks. In contrast, acquired foreign banks still have access to soft information about the old customers from the pre-acquisition period (Van Tassel and Vishwasrao, 2007).<sup>3</sup> At the same time acquired banks can also use modern screening technologies. Acquired foreign banks thus combine characteristics of domestic banks and foreign greenfield banks.<sup>4</sup>

On the basis of the above, we expect that the comparative advantage in SME lending is the greatest for domestic banks, followed by acquired foreign banks and greenfield foreign banks, respectively. Nevertheless, the distinction between hard and soft information may be too simple. Foreign banks may actually successfully apply transaction technologies that use hard information, such as credit scoring, to lend to SMEs without the need to develop relationships to extract soft information. They may also use asset-based lending technologies in which the bank looks mainly at the underlying assets as the primary source of repayment rather than at the overall creditworthiness of the borrower (Berger and Udell, 2006). The impact of foreign bank entry on SME lending therefore ultimately remains an empirical matter.

### 2.2.2. Bank size

Besides ownership, the size of a bank may also influence its customer profile. The reasoning is similar to the ownership argument. Large banks may have a comparative advantage in lending to large customers as they can exploit scale economies in evaluating the hard information that is available on such customers. Small banks, however, may not be able to lend to large companies because of size limitations. They are, for instance, more constrained by regulatory lending limits. Small banks may also have a comparative advantage in processing soft information on SMEs. The consolidation process in transition countries may therefore have led to a reduced focus of (large) banks on SME financing. Again, to the extent that large banks may use technologies such as credit scoring and asset-based lending to get around the “soft information problem”, they may actually be well suited to lend to SMEs. Since such technologies benefit from economies of scale, large and international banks may eventually even develop a comparative advantage in SME lending (De la Torre et al., 2008).

### 2.2.3. The legal environment

La Porta et al. (1997, 1998) show that legal institutions differ markedly between countries and are an important determinant of the amount of external financing that is available for the business sector. The legal environment in which banks operate may also influence their lending composition. The “lending infrastructure of a country” (Berger and Udell, 2006) determines which lending technologies can be used and therefore to what extent banks are limited to certain types of lending. An important part of this infrastructure includes the commercial and bankruptcy laws that determine banks’ creditor rights and their enforcement by the courts.

Legal institutions may thus affect the composition of bank lending. For instance, asset-based lending technologies, where the value of collateral is more important than the financial ratios of the borrower, are used by many large banks to lend to opaque SMEs (Berger and Udell, 2006). Weak commercial laws on security interests (such as movable and immovable assets) and the enforcement

of such collateral rights may make such asset-based lending less attractive. Similarly, restrictions on the sharing of information and the unavailability of credit bureaus may limit the use of credit-scoring technologies. When there is hardly any public information available on firms’ past payment performance (for example through credit bureaus) this may severely limit the supply of bank credit to less transparent clients.

### 2.3. Empirical evidence

Various empirical studies confirm that foreign banks and large banks lend less to informationally opaque SMEs. In the United States, foreign banks provide less credit to small firms (Berger and Udell, 2002). Keeton (1996) finds, again for the United States only, that banks that belong to an out-of-state holding are less likely to grant credit to local businesses. Similar results exist for various emerging markets. Berger et al. (2001) study SME financing in Argentina. They find that foreign banks and large banks have more difficulties in lending to small firms, although this result only holds for foreign banks that are headquartered in a geographically distant nation. Berger et al. (2008) show that foreign banks in India lend to older, larger and more transparent firms. Finally, Detragiache et al. (2006) find for a group of low and middle income countries that foreign bank penetration tends to be associated with shallower and slower growing banking systems. The authors attribute this finding to ‘cream-skimming’: the focus of foreign banks on transparent and large firms may lead to a decline in aggregate credit as opaque businesses see a disproportional decline in bank lending.

However, a number of other empirical studies find that large and foreign banks may actually lead to more SME lending in the medium term. Berger et al. (1998) show for the United States that, while consolidation initially reduced SME financing, the refocusing and restructuring efforts of the acquiring banks fully or partly offset this negative effect later on. In line with this, Petersen and Rajan (2002) find that foreign acquiring banks may adopt new lending technologies to collect and process information. Increasingly, this may enable relatively opaque SMEs – hitherto deprived of foreign bank credit – to receive funding from foreign banks. Indeed, De la Torre et al. (2008) show that large and foreign banks increasingly use lending technologies such as credit scoring that allow them to lend to opaque SMEs.

Using data from a large cross-country survey of enterprises – including in transition countries – Clarke et al. (2001) find that foreign bank entry improves financing conditions for enterprises of all sizes, although larger firms benefit more. Unfortunately, given the authors’ empirical set-up, they are unable to decide which of the two interpretations of this result is correct: either foreign banks provide credit to both large firms and SMEs, or foreign bank competition for large customers leads domestic banks to move down the market and increase SME credit. Clarke et al. (2005) analyze bank-level data for Argentina, Chile, Colombia and Peru. They find that small foreign banks lend less to small businesses (as a share of total lending) than private domestic banks. However, in Chile and Colombia, large foreign banks actually lend slightly more to SMEs than large domestic banks. In addition, in both Argentina and Chile, SME credit has been growing faster at foreign banks with a large local presence than at large domestic banks. This last result is consistent with the notion that large foreign banks – using credit-scoring methodologies, enhanced computer power and improved data availability – will increase SME lending (Mester, 1997). Some other recent studies that focus on foreign banks in developing countries also conclude that an increasing presence of foreign banks leads to a greater availability of credit to SMEs (Beck et al., 2004; Berger et al., 2004).

<sup>3</sup> This may also partly explain why greenfield entry is more common in relatively developed banking markets, where ‘hard’ information is more readily available, while foreign bank entry through acquisition is more prevalent in less-developed banking systems (Lehner, 2009).

<sup>4</sup> Empirical evidence confirms that greenfield subsidiaries are more strongly integrated into multinational banking groups than acquired subsidiaries (De Haas and Van Lelyveld (2006, in press).

There exist only very few empirical studies on foreign bank entry and SME credit in transition economies. This is mainly due to a lack of systematic data on the composition of banks' credit portfolios in this region. Kraft (2002) argues on the basis of interviews with bank managers that foreign bank entry has not led to a decrease in SME financing in Croatia. De Haas and Naaborg (2006) provide similar interview findings for a broader set of transition countries. Giannetti and Ongena (2009) combine firm data with country-level data on bank lending and find for a set of transition countries that foreign bank lending stimulates growth in firm sales and assets, but this effect is dampened for small firms. In a sample of firms from thirteen transition countries, Giannetti and Ongena (2008) combine data on firms' primary bank relationships with BankScope data. A static analysis shows that large firms and foreign firms are more likely to have a relationship with a foreign bank, while small firms tend to be served by private domestic banks. However, a dynamic analysis reveals that new clients of foreign banks are neither larger nor more often foreign owned than firms that established a new relationship with a domestic bank. While Giannetti and Ongena (2008) analyze firm–bank relationships from the perspective of the firm, this paper is the first to take the perspective of the bank, as the BEPS survey is the first data source on the composition of banks' credit portfolios across the transition region.

Finally, as regards the impact of legal systems on lending composition, we do not know of any previous studies that looks into

this. Haber and Musacchio (2005) hypothesize that Mexican banks' focus on uncollateralized consumer lending, rather than mortgage lending or corporate lending, may be due to the fact that enforcement of consumer loans is relatively easy given the ineffective Mexican legal system. Because the authors only have data on bank lending composition but not on (banks' perceptions of) the legal environment, they are unable to test this 'contract rights hypothesis'. Our dataset allows us to do just that.

### 3. Data and methodology

#### 3.1. Data and sample characteristics

In this paper we combine two main data sources: the Business Environment and Performance Survey (BEPS) and Bureau van Dijk's BankScope. BEPS is an EBRD survey on bank activities and the influence of the institutional environment on these activities. It was conducted in 2005 across 20 transition countries in Central Europe and the Baltic states (CEB: Czech Republic, Estonia, Hungary; Latvia; Lithuania, Poland, Slovak Republic, Slovenia); South-Eastern Europe (SEE: Albania, Bosnia and Herzegovina, Bulgaria, Croatia; FYR Macedonia, Romania, Serbia and Montenegro) and the Commonwealth of Independent States (CIS: Belarus, Kazakhstan, Moldova, Russia, Ukraine). The sample selection process started with identifying all banks that were active in these countries in 2004.

**Table 1**  
Number of banks in the sample. Source: BEPS.

Country	Number of banks	Country	Number of banks
Albania	5	Lithuania	7
Belarus	9	Moldova	9
Bosnia and Herzegovina	13	FYR Macedonia	6
Bulgaria	13	Poland	15
Croatia	12	Romania	13
Czech Republic	8	Russia	30
Estonia	6	Serbia and Montenegro	19
Hungary	6	Slovak Republic	8
Kazakhstan	9	Slovenia	7
Latvia	17	Ukraine	8
		Total	220

Note: The survey was carried out before Montenegro was recognized as an independent state in June 2006.

**Table 2**  
Summary statistics. Sources: BEPS and BankScope.

Variable	No. of observations	Mean	Std. Dev.	Min	Max
Mortgage lending (%)	157	9.2	16.0	0	100
SME lending (%)	122	41.8	27.8	0	100
Large firm lending (%)	122	19.9	22.2	0	88
Foreign subsidiary lending (%)	121	4.4	12.0	0	90
State-owned lending (%)	182	4.0	10.6	0	76
Greenfield foreign bank	220	0.3	0.5	0	1
Privatized foreign bank	220	0.3	0.3	0	1
State bank	220	0.1	0.3	0	1
Bank size	220	12.8	1.6	8.9	17.0
Per capita GDP	220	4.9	3.1	0.8	16.2
Perception of collateral law	192	3.7	1.0	1	6
Depth of credit information	204	2.3	1.9	0	5
EBRD enforcement index	204	6.5	2.2	1.5	9.8

Note: This table shows the summary statistics of all variables. The sample consists of a cross-section of banks in 20 transition countries in 2005. The first five variables are the proportion (in total bank lending) of mortgage lending and of lending to small and medium firms, to large firms, to subsidiaries of foreign companies, and to state-owned firms. *Greenfield foreign* is a dummy variable that takes the value of 1 (61 observations) if the bank is a *de novo* foreign bank subsidiary that has been newly established by the foreign owners. *Privatized foreign* is a dummy variable that takes the value of 1 (61 observations) if the bank is owned by foreigners but was previously a state bank. *State bank* is a dummy variable that takes the value of 1 (15 observations) if the bank is owned by the country's government. The excluded ownership group thus consists of private domestic banks (83 observations). *Bank size* is defined as the logarithm of total bank assets in 2003 (from BankScope). Per capita GDP is in thousands of US dollars (as at 2004). *Perception of collateral law* is a subjective index of the banks' perception of mortgage and pledge laws (from BEPS). The last two variables are the World Bank Doing Business indicator on "depth of credit information" for 2004 and the EBRD legal indicator on the enforcement of charged assets.

**Table 3**  
Portfolio composition by bank type (in percent of total lending, 2004). Sources: BEPS and BankScope.

	Greenfield foreign banks	Privatized foreign banks	Private domestic banks	State-owned domestic banks	Small banks	Large banks
Mortgages	12.1	11.7	5.8	1.6	7.7	14.7
Other consumer lending	18.3	18.1	14.0	16.4	15.4	15.4
SMEs	41.1	27.0	47.0	31.3	56.9	28.4
Large enterprises	15.0	23.7	27.4	9.0	12.5	26.3
State-owned enterprises	3.6	3.8	2.4	14.2	4.3	3.4
Other	9.9	15.6	3.5	27.4	3.2	11.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: This table shows the average lending portfolio composition by bank type. The sample consists of a cross-section of banks in 20 transition countries in 2004. A bank is classified as “small” when its total assets are less than US\$ 200 million and as “large” when its assets exceed US\$ 1 billion.

Each year, EBRD conducts a Banking Survey in all transition countries in which central banks provide EBRD with a standard set of data on the main characteristics (including ownership) of all the banks that operate in their respective country. We thus know the complete banking population in our sample in terms of number of banks ( $N = 1976$ ), ownership structure and total assets. We then disregarded all banks that were not included in BankScope. We had to do this because we want to use more detailed financial information in the subsequent analysis and combine this with the BEPS survey information. EBRD approached all banks that were covered in BankScope ( $N = 419$ ) and asked them to participate. Two hundred and twenty banks were willing to do so and ended up in our final sample, which is a reasonable sample size for statistical purposes, as well as a good response ratio. The survey thus obtained detailed data on the credit and deposit activities and a large number of other variables related to 220 banks. Table 1 shows their geographical distribution.

Our sampling strategy may introduce two types of selection bias: BankScope may not be representative of the full bank population and our final sample of banks that agreed to participate may not be representative of BankScope. We discuss both issues in turn.

We first compare the subset of banks in BankScope with the total population. This check is important because BankScope's coverage can be very selective. For example, Bhattacharya (2003) shows that the two main Indian bank categories – regional rural banks and foreign banks – are virtually absent from BankScope. We thus need to check whether such severe selection bias is present in our BankScope sample as well. This shows that BankScope covers on average 81% of all banking assets and 53% of all banks in a particular country. In Russia, however, coverage in terms of number of banks is much lower (9%) since BankScope does not capture most of the very small regional ‘pocket’ banks. In terms of ownership structure, BankScope contains sufficient information on all bank categories, although foreign banks make up a bigger proportion of the sample than in the whole population (47% versus 18%). The same holds for state-owned banks (7% versus 4%), while private domestic banks are underrepresented (45% versus 78%). Overall, BankScope contains information on more than three quarters of all banking assets in the countries we are interested in. Importantly, all types of banks are sufficiently represented and, contrary to the case of India, there are no bank categories that are completely absent from BankScope.

In a second step we compare the 419 banks that were present in BankScope and that were invited to partake in BEPS, with our final sample of 220 banks that agreed to participate. Here we find only small differences between banks that agreed to participate and those that declined. Both in BankScope and in our final dataset 7% of the banks are state-owned. While in BankScope 47% of all banks are foreign owned, in our dataset 55% are foreign owned. And while in BankScope 45% of all banks are private domestic

banks, 38% of all banks in our final sample belong to this category. As regards bank size, we find that our final sample contains 53% of all BankScope banks and 58% of all banking assets covered in BankScope. There is thus no apparent relationship between bank size and inclusion in our final sample.

Although the differences between banks that agreed to participate and those that declined seem small, we nevertheless address the potential bias that can arise from the self-selection of banks into our sample by using a two-step Heckman selection procedure. Throughout the paper we report the estimation results of this procedure. We find evidence of self-selection in our sample, with banks with previous relationships with EBRD being more likely to participate in the survey. However, the estimated coefficients on the inverse Mill's ratio are never statistically significant, suggesting that sample selection bias does not have an important impact on our findings.

For all banks a common questionnaire, translated into each local language, was presented to a senior bank officer in a face-to-face interview. The first part of the questionnaire – regarding financial information – was shared with the banks in advance,

**Table 4**  
Determinants of the perception of collateral law. Sources: BEPS and BankScope.

	OLS estimates
Depth of credit information	0.17*** (4.32)
EBRD enforcement index	0.14*** (5.81)
Greenfield foreign bank	-0.31** (-2.22)
Privatized foreign bank	-0.80*** (-3.83)
State bank	-0.33 (-1.09)
Bank size	0.13*** (2.92)
Per capita GDP	-0.08*** (-3.05)
Constant	1.52*** (2.91)
Observations	188
Adjusted R-squared	0.16
F(7, 19)	10.93***

Note: This table shows the results of an OLS regression of the perception of collateral law on country-level variables measuring credit protection, bank characteristics (ownership structure and size), and per capita GDP. The sample consists of a cross-section of banks in 20 transition countries in 2004. The regression model in this table is the same that is used in the first stage of all IV procedures in the paper. All variables are described in Table 2. The omitted ownership group is formed by private domestic banks. All standard errors are clustered at the country level. Robust t-statistics are in parentheses.

\*\* Indicates significance at 0.05 level.

\*\*\* Indicates significance at 0.01 level.

**Table 5**

Determinants of the proportion of mortgage lending. Sources: BEPS and BankScope.

	(1) OLS	(2) OLS	(3) IV	(4) Heckman
Greenfield foreign bank	0.80** (2.18)	0.72*** (2.53)	0.88** (2.35)	0.64* (1.67)
Privatized foreign bank	0.84** (2.50)	0.03 (0.94)	1.07*** (3.37)	0.67 (1.45)
State bank	-0.41 (-0.83)	0.05 (0.12)	-0.31 (-0.47)	-0.40 (0.46)
Bank size	0.10 (1.17)	0.16 (1.53)	-0.01 (-0.06)	0.09 (0.93)
Per capita GDP	0.08* (1.92)	-	0.09** (2.20)	0.08** (2.02)
Perception of collateral law	0.24 (1.04)	0.08 (0.60)	0.98*** (3.05)	0.25** (2.01)
Inverse Mill's ratio	-	-	-	-0.64 (-0.52)
Constant	-5.84*** (-7.60)	-5.14*** (-3.86)	-7.37*** (-9.79)	-5.12*** (-3.01)
Observations	150	150	150	334
Adjusted R-squared	0.19	0.37	-	-
J-statistic (p-value)	-	-	0.60 (0.44)	-
Country fixed effects?	No	Yes	No	No
Errors clustered by country?	Yes	No	Yes	No

Note: This table shows the results of regressions of the (logistic transformation of) the proportion of mortgage lending in total bank lending on bank characteristics (ownership structure and size), per capita GDP, and an index of banks' perception of the quality of collateral laws. The sample consists of a cross-section of banks in 20 transition countries in 2004. All variables are described in Table 2. The omitted ownership group is formed by private domestic banks. In columns 1 and 3, standard errors are clustered at the country level. In column 2, we include country fixed effects. In column 3, the instruments for the perception of collateral law are the World Bank Doing Business indicator on "depth of credit information" for 2004 and the EBRD legal indicator on the enforcement of charged assets. In column 3, we report a Hansen J-test statistic of over-identifying restrictions along with its p-value (using robust standard errors). In column 4, we use a two-step Heckman selection procedure. The variables in the selection equation are bank characteristics (ownership structure and size), per capita GDP, and a dummy variable that indicates whether the bank was an EBRD client in 2004 or not. Column 4 also reports the coefficient for the inverse Mills' ratio. Robust t-statistics are in parentheses.

\* Indicates significance at 0.10 level.

\*\* Indicates significance at 0.05 level.

\*\*\* Indicates significance at 0.01 level.

while the other part – containing qualitative questions on bankers' judgments of the institutional environment – was only shared during the interview.

We link these survey data to bank-level information on balance sheets and profit and loss accounts taken from BankScope. This allows us to get a detailed picture of the financial structure of each bank. Because the BEPS survey includes questions on the allocation of loans across customer types, we can also construct a set of dependent variables that measure the loan proportions allocated to the following customers: mortgage lending, other household lending, SMEs (1–249 employees), large enterprises (250 or more employees), state-owned enterprises, and other customers (including state-owned agencies).

BEPS also provides detailed information on bank ownership, which allows us to differentiate between four ownership categories: (i) private banks with majority domestic ownership, (ii) newly created foreign banks (greenfield foreign banks), (iii) privatized banks with majority foreign ownership, and (iv) state-owned banks. This means that some bank categories are not explicitly distinguished. First, we do distinguish foreign-owned state banks because such banks are not present in our sample and are also very rare in the full banking population. For instance, Russian state-owned banks such as VTB and Sberbank have only recently set up subsidiaries in neighboring countries. Secondly, virtually no new domestic state banks have been created after the start of the transition process, so there is no need for a separate greenfield state-bank category. Finally, we regard privatized domestic banks and greenfield domestic banks as one benchmark group. The reason is that only 13 domestic banks are former state banks, while the rest of them are all greenfield domestic banks. This reflects that in the vast majority of bank privatizations in transition countries the buyers were foreign rather than domestic strategic investors

(Bonin and Wachtel, 2003). Most countries only opened up to majority foreign ownership after being hit by systemic banking crises, at which time domestic capital was generally not available for recapitalization.<sup>5</sup>

Table 2 displays summary statistics for all variables used in this paper. In the sample, 15 banks (7%) were still state-owned, 61 banks (28%) were greenfield foreign banks, 61 banks were privatized foreign banks (28%), and 83 banks (38%) were in private domestic hands. The number of observations for the portfolio composition measures varies because not all banks could provide the interviewers with information on the complete breakdown of their loan portfolio. While all banks were able to provide the split between corporate and retail lending, some banks did not provide information about the further breakdown of corporate lending into SME lending and lending to large corporates and/or of retail lending into mortgage lending and non-mortgage retail lending.

Table 3 provides descriptive information on the relationship between bank ownership and portfolio composition in 2004. It shows that foreign banks were relatively more involved in lending to households than domestic banks (on average 30% of the loan portfolio compared with 19%). SMEs comprise the most important customer category for almost all types of banks. Private banks' business with state-owned enterprises is very limited (on average 3%) while – perhaps predictably – state-owned banks still allocate a considerable part of their loan portfolio to state-owned firms

<sup>5</sup> Given the very small number of privatized domestic banks, it is difficult to pick up a separate ownership effect in our regressions. Indeed, when we re-estimate all OLS regressions with an ownership dummy for these 13 banks, we never find a significant coefficient. Our data thus do not allow us to detect statistically significant differences between the small minority of privatized domestic banks and the majority of greenfield domestic banks.

(14%) and other clients (including governments and government agencies, 27%).

Large banks lend more – in terms of portfolio composition – to large enterprises and governments (governmental lending accounts for most of the “other” category). They lend markedly less to small enterprises: small banks lend on average 57% of their portfolio to SMEs, whereas the largest banks only allocate 28% of all loans to SMEs.

During the BEPS survey senior bank management was also asked about its perceptions of the security rights of lenders, the bankruptcy law and its application, the quality of the courts, and the effectiveness of regulatory policy. BEPS respondents were given a series of questions or statements about their perception of the quality of their legal environment and were asked to provide responses to each question on a six-point scale (with a higher number reflecting a more positive view). For the questions on the perceptions of pledge laws and mortgage laws that we use in this paper, the respondents were asked to rate on a scale running from “strongly disagree” (1) to “strongly agree” (6) whether these laws:

- provide an adequate scope for security,
- enable an efficient creation and perfection of security rights,
- enable an efficient enforcement of security rights,
- adequately protect secured creditor rights.

We average the scores on the questions to arrive at a general measure of respondents’ confidence in the pledge law and mortgage law, which we refer to as the “perceived quality of collateral law”. The data show that bank managers across different regions turn out to have very different perceptions of the quality of their legal environment, with bankers in CEB having the most positive views on average. However, there are also substantial differences between countries within a region. For example, while overall perception indices in Russia and Ukraine are the lowest among all transition countries, the perception of the banking environment in Belarus, Kazakhstan and Moldova are comparable to some countries in CEB. Similarly, the perceptions about the legal environment in Bulgaria, FYR Macedonia and Romania are similar to those in countries like the Czech Republic, Poland and Slovenia. This indicates that a country’s level of economic development and banks’ average perception of the quality of the legal creditor protection are not perfectly correlated.

Laws tend to be seen as weaker throughout the CIS and SEE. In CEB, bankers rate the legal environment as weak in the Czech Republic, Lithuania, Poland and Slovenia. Looking at the ownership of banks, it becomes clear that while scores in CEB remain the strongest across all bank ownership types, within CEB managers in privatized foreign banks rate the legal system relatively low. In the CIS, domestic banks tend to be more positive about the legal environment than either the greenfield or privatized foreign banks. By contrast, in SEE, privatized foreign banks are the ones that evaluate the legal environment the most positively. While state-owned domestic banks in CEB have a positive perception of the legal environment in SEE these are the banks with the most negative perception.

### 3.2. Empirical strategy

As discussed in the previous section, the economic literature singles out three determinants that may influence what type of customers banks focus on: bank ownership, bank size, and the institutional environment. The information gathered from the BEPS survey allows us to disentangle these determinants and see which ones matter the most for portfolio composition in practice. To do so, we estimate four types of regressions for each dependent vari-

able. We start with an OLS regression with errors clustered by country and an OLS regression with country fixed effects. Both variants are more conservative than standard OLS because they correct for the fact that observations from the same country are likely to have a common component to their error term. We also estimate a Heckman two-step selection regression, in which we include bank characteristics (ownership structure and size), per capita GDP, and a dummy variable that indicates whether the bank was an EBRD client in 2004 or not, as variables in the first-stage selection equation. The latter variable is particularly important as banks that were EBRD clients at the time of the BEPS survey may be more amenable to EBRD’s request to participate in the survey than non-clients.

Lastly, we estimate an instrumental variables (IV) regression with errors clustered by country. Here we instrument banks’ perceived quality of the institutional environment by two objective institutional measures (see below). We do this because banks’ perception of institutions may be affected by the specific type of customers they focus on and, consequently, simultaneity may exist. In the first stage of the IV regressions, the dependent variable is our index of banks’ perception of the quality of collateral laws, which we construct on the basis of the data from the

**Table 6**

Determinants of the proportion of lending to small and medium-sized firms. Sources: BEPS and BankScope.

	(1) OLS	(2) OLS	(3) IV	(4) Heckman
Greenfield foreign bank	−0.29 (−0.79)	−0.02 (−0.06)	−0.31 (−0.94)	−0.78 (−1.38)
Privatized foreign bank	−0.54 (−1.47)	−0.65 (−1.03)	−0.59* (−1.68)	−1.12* (−1.68)
State bank	0.24 (0.23)	0.11 (0.10)	0.25 (0.25)	0.39 (0.52)
Bank size	−0.36*** (−3.76)	−0.24** (−1.93)	−0.36*** (−3.68)	−0.34*** (−2.57)
Per capita GDP	0.02 (0.41)	–	0.02 (0.56)	0.02 (0.26)
Perception of collateral law	−0.11 (−0.72)	0.14 (0.88)	−0.31 (−1.02)	−0.16 (−1.01)
Inverse Mill’s ratio	–	–	–	−2.66 (−1.27)
Constant	4.57*** (3.88)	2.44 (1.22)	5.15*** (3.59)	7.38*** (2.60)
Observations	116	116	116	301
Adjusted R-squared	0.14	0.42	–	–
J-statistic (p-value)	–	–	0.11 (0.74)	–
Country fixed effects?	No	Yes	No	No
Errors clustered by country?	Yes	No	Yes	No

Note: This table shows the results of regressions of the (logistic transformation of) the proportion of SME lending in total bank lending on bank characteristics (ownership structure and size), per capita GDP, and an index of banks’ perception of the quality of collateral laws. The sample consists of a cross-section of banks in 20 transition countries in 2004. All variables are described in Table 2. The omitted ownership group is formed by private domestic banks. In columns 1 and 3, standard errors are clustered at the country level. In column 2, we include country fixed effects. In column 3, the instruments for the perception of collateral law are the World Bank Doing Business indicator on “depth of credit information” for 2004 and the EBRD legal indicator on the enforcement of charged assets. In column 3, we report a Hansen J-test statistic of over-identifying restrictions along with its p-value (using robust standard errors). In column 4, we use a two-step Heckman selection procedure. The variables in the selection equation are bank characteristics (ownership structure and size), per capita GDP, and a dummy variable that indicates whether the bank was an EBRD client in 2004 or not. Column 4 also reports the coefficient for the inverse Mills’ ratio. Robust t-statistics are in parentheses.

\* Indicates significance at 0.10 level.

\*\* Indicates significance at 0.05 level.

\*\*\* Indicates significance at 0.01 level.

**Table 7**

Determinants of the proportion of lending to large firms. Sources: BEPS and BankScope.

	(1) OLS	(2) OLS	(3) IV	(4) Heckman
Greenfield foreign bank	−1.04* (−1.88)	−0.93** (−2.06)	−1.09** (−2.22)	−1.07** (−2.18)
Privatized foreign bank	−0.95** (−2.10)	−0.43 (−0.83)	−1.08*** (−2.63)	−0.98* (−1.61)
State bank	−0.90 (−1.54)	−1.31** (−2.37)	−0.89 (−1.44)	−0.96 (−1.48)
Bank size	0.47*** (4.48)	0.45*** (3.06)	0.49*** (4.81)	0.45*** (3.65)
Per capita GDP	−0.10 (−1.38)	− −	−0.09 (−1.33)	−0.09* (−1.84)
Perception of collateral law	−0.19 (−1.24)	0.03 (0.22)	−0.66 (−1.20)	−0.20 (−1.29)
Inverse Mill's ratio	−	−	−	0.13 (0.07)
Constant	−6.11*** (−5.94)	−7.24*** (−3.21)	−4.69*** (−2.93)	−6.00*** (−2.49)
Observations	116	116	116	301
Adjusted R-squared	0.19	0.47	−	−
J-statistic (p-value)	−	−	0.15 (0.70)	−
Country fixed effects?	No	Yes	No	No
Errors clustered by country?	Yes	No	Yes	No

Note: This table shows the results of regressions of the (logistic transformation of) the proportion of lending to large firms in total bank lending on bank characteristics (ownership structure and size), per capita GDP, and an index of banks' perception of the quality of collateral laws. The sample consists of a cross-section of banks in 20 transition countries in 2004. All variables are described in Table 2. The omitted ownership group is formed by private domestic banks. In columns 1 and 3, standard errors are clustered at the country level. In column 2, we include country fixed effects. In column 3, the instruments for the perception of collateral law are the World Bank Doing Business indicator on "depth of credit information" for 2004 and the EBRD legal indicator on the enforcement of charged assets. In column 3, we report a Hansen J-test statistic of over-identifying restrictions along with its p-value (using robust standard errors). In column 4, we use a two-step Heckman selection procedure. The variables in the selection equation are bank characteristics (ownership structure and size), per capita GDP, and a dummy variable that indicates whether the bank was an EBRD client in 2004 or not. Column 4 also reports the coefficient for the inverse Mills' ratio. Robust t-statistics are in parentheses.

\* Indicates significance at 0.10 level.

\*\* Indicates significance at 0.05 level.

\*\*\* Indicates significance at 0.01 level.

BEPS survey ( $i, j$  subscripts indicate bank and country, respectively):

$$\begin{aligned} CollatLaw_{ij} = & \alpha + \beta_1 \cdot Enforce_j + \beta_2 \cdot Depth_j + \beta_3 \cdot GreenFor_{ij} \\ & + \beta_4 \cdot PrivatFor_{ij} + \beta_5 \cdot State_{ij} + \beta_6 \cdot Size_{ij} \\ & + \beta_7 \cdot GDP/Cap_j + \varepsilon_{ij} \end{aligned} \quad (1)$$

The explanatory variables in this first stage include two objective country-level legal indicators, three bank ownership dummies, bank size and GDP per capita. The first objective legal indicator is the EBRD legal indicator on the enforcement of charged assets,  $ENFORCE_j$ . The data to construct this indicator come from the EBRD Legal Transition Programme (EBRD Legal Survey, 2004). The indicator comprises information on the amount that can be expected to be recovered from a debtor, the time needed to realize recovery and the simplicity of the associated legal process. The second objective country-level legal indicator is the World Bank Doing Business indicator on "depth of credit information" for 2004,  $DEPTH_j$ . For each country it measures the scope, quality and access of credit information.

The bank ownership dummies identify four types of banks: greenfield foreign banks, privatized foreign banks and state-owned banks, leaving private domestic banks as the control group. Bank size is defined as the logarithm of total bank assets. Although newly created foreign banks and domestic private banks tend to be somewhat smaller in size on average, there is no strong correlation between bank size and its ownership.

In Table 4 we report the results from the estimation of Eq. (1) using all available data. Both the depth of credit information and the EBRD index are positively correlated with our subjective index, as expected. The high t-statistics suggest that our proposed instruments are not weak. Furthermore, the two instruments are not

highly correlated with each other ( $p = 0.18$ ), which helps in testing for over-identifying restrictions.

The economic arguments for our instruments are as follows. Country-level variables that measure the legal protection of creditor rights should only affect bank behavior to the extent that they affect banks' perceptions of the quality of such laws. Thus, under the assumption that our perception variable is broad enough to capture most aspects of the laws protecting banks as creditors, the two instruments should be excluded from the right-hand side of regressions of banks' lending choices on the perception of collateral laws and other determinants.

Of course, it is not possible to test for the validity of these exclusion restrictions. However, because we have two different instruments, we can perform tests of over-identifying restrictions under the null that both our instruments are valid. A rejection of the null would cast doubt on the validity of the instruments. Because both instruments are constructed on the basis of different rationales, the over-identifying restriction tests are more compelling, because if one of the instruments is valid, the test serves as a test of the validity of the other instrument.

In the second stage regressions, we use  $PCollatLaw_{ij}$  – the predicted value of  $CollatLaw_{ij}$  from the first stage – as an independent variable to explain a set of  $PROP_{ij}$  variables which measure the (log-transformed) proportion of mortgage lending, SME lending, lending to large firms, lending to subsidiaries of foreign firms and lending to state-owned enterprises, respectively:

$$\begin{aligned} PROP_{ij} = & \alpha + \gamma_1 \cdot PCollatLaw_{ij} + \gamma_2 \cdot GreenFor_{ij} + \gamma_3 \cdot PrivatFor_{ij} \\ & + \gamma_4 \cdot State_{ij} + \gamma_5 \cdot Size_{ij} + \gamma_6 \cdot GDP/Cap_j + \eta_{ij} \end{aligned} \quad (2)$$

where

$$PROP_{ij} = \ln \left( \frac{1 + p_{ij}}{101 - p_{ij}} \right)$$

where  $p_{ij}$  is the percentage of loans to each specific client type.<sup>6</sup> In addition we include the bank-specific ownership and size determinants. In all regressions (except of course in those with country dummies) we use GDP per capita to control for the level of economic development of the country where the bank operates.

#### 4. Empirical results

Tables 5–9 show our empirical results on what determines bank customer focus: the proportion of mortgage lending (Table 5), the proportion of SME lending (Table 6), the proportion of lending to large firms (Table 7), the proportion of lending to subsidiaries of foreign firms (Table 8) and the proportion of lending to state-owned enterprises (Table 9).

The results as reported in Table 5 show that foreign banks, in particular greenfield foreign banks, are significantly more involved in mortgage lending than private domestic banks. This suggests that foreign banks have been actively involved in developing the mortgage markets in the transition region, markets that were completely absent before the end of communism. Many banking groups from Western Europe have “exported” their know-how on mortgage lending to their new eastern markets in search for new retail customers. Domestic private and state-owned banks, on the other hand, have not been able to keep up with this development and have lagged significantly behind in introducing mortgages. There is no statistically significant effect of bank size on the relative importance of mortgage lending.

Finally, both the IV regression and the Heckman regression show that better collateral laws lead to banks’ increased focus on mortgage lending, which is after all a typical form of collateralized lending. Only when banks are confident that their rights as creditors are respected and that the realization process – the selling of the mortgage property in the case of non-payment by the mortgagor – is effective and efficient, are they willing to expand their mortgage business.

For the IV specification, we report at the bottom of the table the  $J$ -statistic of a test of over-identifying restrictions and its  $p$ -value. The test does not reject the null that our two instruments are jointly valid under traditional confidence levels, which increases our confidence in the IV procedure. In the Heckman regression, we do not find a statistically significant coefficient for the inverse Mill’s ratio, suggesting that selection bias is not affecting the results.

To evaluate the economic significance of our findings, we compute the marginal effects of the relevant variables evaluated at the means of the data.<sup>7</sup> For a bank with the average proportion of mortgage loans in our sample, the greenfield foreign banks’ lending proportion to mortgages is 5–7% points larger than the domestic banks’ proportion of mortgage loans (depending on the specification). The analogous effect for privatized foreign banks is of a similar magnitude, ranging from 6% to 9% points, except for the second specification. A one-standard-deviation increase in the perception of collateral law increases the proportion of mortgage lending by roughly 2–8% points for the average bank, except again for the second specification.

In Table 6 we report the results of regressions of lending to small and medium-sized private domestic enterprises (SMEs), while in Table 7 we report similar regressions for large firms. We do not find any robust relationships between bank ownership

<sup>6</sup> We use the logistic transformation since percentages are bounded between 0 and 100. We add 1 to both numerators and denominators to allow for banks that have either 0% or 100% in loans to a given customer type.

<sup>7</sup> Due to the logistic transformation the marginal effects are not constant. In order to compute them, we multiply each estimated coefficient by  $y(1-y)$ , where  $y$  is the dependent variable in proportions (that is, divided by 100).

**Table 8**

Determinants of the proportion of lending to foreign companies. Sources: BEPS and BankScope.

	(1) OLS	(2) OLS	(3) IV	(4) Heckman
Greenfield foreign bank	0.70*** (3.06)	0.26 (0.91)	0.73*** (3.51)	0.98*** (2.40)
Privatized foreign bank	1.06* (1.92)	0.57 (1.06)	1.15*** (2.37)	1.34*** (2.68)
State bank	0.47 (0.98)	-0.19 (-0.07)	0.47 (1.28)	0.44 (0.80)
Bank size	0.08 (0.93)	0.00 (0.03)	0.07 (0.73)	0.08 (0.79)
Per capita GDP	-0.02 (-0.55)	-	-0.03 (-0.77)	-0.03 (-0.57)
Perception of collateral law	0.07 (0.73)	-0.10 (-0.77)	0.38 (1.02)	0.09 (0.70)
Inverse Mill’s ratio	-	-	-	1.37 (0.92)
Constant	-5.52*** (-6.31)	-3.86** (-2.32)	-6.44*** (-4.14)	-7.10*** (-3.45)
Observations	115	115	115	300
Adjusted R-squared	0.11	0.46	-	-
J-statistic (p-value)	-	-	0.42 (0.52)	-
Country fixed effects?	No	Yes	No	No
Errors clustered by country?	Yes	No	Yes	No

Note: This table shows the results of regressions of the (logistic transformation of) the proportion of lending to foreign firms in total bank lending on bank characteristics (ownership structure and size), per capita GDP, and an index of banks’ perception of the quality of collateral laws. The sample consists of a cross-section of banks in 20 transition countries in 2004. All variables are described in Table 2. The omitted ownership group is formed by private domestic banks. In columns 1 and 3, standard errors are clustered at the country level. In column 2, we include country fixed effects. In column 3, the instruments for the perception of collateral law are the World Bank Doing Business indicator on “depth of credit information” for 2004 and the EBRD legal indicator on the enforcement of charged assets. In column 3, we report a Hansen  $J$ -test statistic of over-identifying restrictions along with its  $p$ -value (using robust standard errors). In column 4, we use a two-step Heckman selection procedure. The variables in the selection equation are bank characteristics (ownership structure and size), per capita GDP, and a dummy variable that indicates whether the bank was an EBRD client in 2004 or not. Column 4 also reports the coefficient for the inverse Mills’ ratio. Robust  $t$ -statistics are in parentheses.

\* Indicates significance at 0.10 level.

\*\* Indicates significance at 0.05 level.

\*\*\* Indicates significance at 0.01 level.

structure and the proportion of SME lending. We do find, however, that foreign banks lend significantly less to large firms when compared to private domestic banks. For instance, for a bank with the average proportion of lending to large firms in our sample, being a greenfield foreign bank means that it would lend roughly between 15% and 17% points less to large firms than a domestic private bank would. The joint results in Tables 5 and 7 strongly suggest that foreign banks are more focused on mortgage lending and less on large firm lending than domestic private banks.

From Tables 6 and 7 we find that bank size is a robust determinant of the proportion of SME and large firm lending: small banks lend more to SMEs and less to large firms, whereas large banks lend less to SMEs and more to large firms. Apparently, large banks still have a comparative advantage in lending to larger customers as they can exploit scale economies in evaluating the “hard” information that tends to be available on such customers. Small banks are still relatively efficient in processing “soft” information on SMEs.

In order to assess the economic significance of the “bank size effect,” we consider the effect of a one-standard-deviation increase in our measure of bank size (log of book assets) for a bank with an average loan portfolio. This increase in size decreases the proportion of lending to SMEs by roughly 14% points and simultaneously increases the proportion of lending to large firms by 12% points.

**Table 9**

Determinants of the proportion of lending to state-owned companies. Sources: BEPS and BankScope.

	(1) OLS	(2) OLS	(3) IV	(4) Heckman
Greenfield foreign bank	−0.00 (−0.01)	0.00 (0.01)	−0.02 (−0.09)	0.41 (1.18)
Privatized foreign bank	0.45 (1.25)	0.74** (2.45)	0.39 (1.22)	0.78** (2.03)
State bank	1.47*** (3.09)	1.36** (2.21)	1.40*** (3.15)	1.52*** (3.26)
Bank size	−0.02 (−0.21)	−0.04 (−0.61)	0.01 (0.11)	−0.01 (−0.12)
Per capita GDP	0.03 (1.33)	− −	0.03 (1.34)	0.02 (0.49)
Perception of collateral law	−0.19** (−2.06)	−0.12 (−1.25)	−0.40 (−1.49)	−0.17* (−1.80)
Inverse Mill's ratio	− −	− −	− −	1.85 (1.36)
Constant	−3.19*** (−3.41)	−2.77*** (−2.51)	−2.72** (−2.34)	−5.07*** (−3.16)
Observations	174	174	174	357
Adjusted R-squared	0.12	0.28	−	−
J-statistic (p-value)	−	−	2.75 (0.10)	−
Country fixed effects?	No	Yes	No	No
Errors clustered by country?	Yes	No	Yes	No

Note: This table shows the results of regressions of the (logistic transformation of) the proportion of lending to state-owned enterprises in total bank lending on bank characteristics (ownership structure and size), per capita GDP, and an index of banks' perception of the quality of collateral laws. The sample consists of a cross-section of banks in 20 transition countries in 2004. All variables are described in Table 2. The omitted ownership group is formed by private domestic banks. In columns 1 and 3, standard errors are clustered at the country level. In column 2, we include country fixed effects. In column 3, the instruments for the perception of collateral law are the World Bank Doing Business indicator on "depth of credit information" for 2004 and the EBRD legal indicator on the enforcement of charged assets. In column 3, we report a Hansen J-test statistic of over-identifying restrictions along with its p-value (using robust standard errors). In column 4, we use a two-step Heckman selection procedure. The variables in the selection equation are bank characteristics (ownership structure and size), per capita GDP, and a dummy variable that indicates whether the bank was an EBRD client in 2004 or not. Column 4 also reports the coefficient for the inverse Mills' ratio. Robust t-statistics are in parentheses.

\* Indicates significance at 0.10 level.

\*\* Indicates significance at 0.05 level.

\*\*\* Indicates significance at 0.01 level.

Because the difference between these two effects is not statistically different from zero, we cannot reject the hypothesis that, as bank size increases, banks substitute loans to large firms for loans to SMEs at a roughly one-to-one ratio.

Our findings do not imply that large banks ignore SME lending altogether. To the extent that large banks in transition countries have been using technologies such as credit scoring to get around the "soft information problem", they may actually have expanded their SME lending. However, our results indicate clearly that when compared with small banks, large banks have a clear focus on larger clients and lend relatively more to these larger customers.

The results in Tables 6 and 7 also tell us that banks' perceptions about the quality of collateral laws do not have a significant effect on the proportion of their lending to SMEs and large firms. Again, one possibility is that this is a consequence of SME financing often being performed using credit-scoring technologies that rely much less on the availability of collateral than other forms of financing (such as mortgage lending).

Finally, in Tables 8 and 9 we show the results for the proportion of lending to foreign companies and state-owned firms, respectively. A first interesting result here is that foreign banks are still relatively involved in lending to subsidiaries of foreign firms. All the results taken together thus suggest that many foreign banks that set up greenfield establishments in transition countries either started to build up a retail franchise (for example Raiffeisen Bank) or started with a clear focus on serving subsidiaries of multinationals, often from the home-country of the bank (for example ABN AMRO Bank). Private domestic banks, on the other hand, are relatively less involved in lending to foreign firms.

In many transition countries the largest firms still tend to be domestically owned, and often state-owned. Table 9 shows that, in line with expectations, state-owned domestic banks lend relatively more to state-owned enterprises. We find similar, but statis-

tically less robust, evidence for former state-owned banks that have been privatized at some point in time. Interestingly, this table also provides some evidence for the hypothesis that when the legal protection of creditors improves, the share of lending to state-owned enterprises decreases across the board. When the legal system provides banks with credible and explicit legal protection this allows banks to gradually move away from lending to (state-owned) companies with their associated implicit guarantees and protection. A better legal framework improves the value of collateral and makes collateral-based lending to private firms and households more attractive relative to continued lending to state-owned companies.<sup>8</sup>

## 5. Conclusions

Our results suggest that bank characteristics, such as ownership and size, are important determinants of banks' customer focus. As for ownership, we find that foreign banks are relatively strongly involved in both mortgage lending and in lending to subsidiaries of international firms. Perhaps unsurprisingly, state-owned banks still lend more to state-owned enterprises than private banks. Since we have complete data on banks' portfolio composition, this paper is actually the first to show that foreign banks' focus on foreign clients is limited to the corporate segment. On the retail side, we find that foreign banks are very well willing and able to lend to local customers, exploiting the experience with mortgage lending they built up in their home countries. This development is part of a wider trend in emerging markets, in which multinational

<sup>8</sup> See Berglöf and Roland (1997) for a theoretical model of how legal deficiencies reduce the value of collateral, thus leading banks to refinance existing inefficient (often state-owned) enterprises while at the same time refusing credit to potentially profitable new clients in the private sector.

banks tend to shift away from cross-border financing, often to enterprises from the home-country, to local lending through local subsidiaries (IMF, 2007).

On the corporate side, however, size still matters for customer focus. Small banks lend relatively more to SMEs than large banks, while large banks have a comparative advantage in lending to large customers. A one-standard-deviation increase in bank size decreases the proportion of lending to SMEs by roughly 14% points and simultaneously increases the proportion of lending to large firms by 12% points.

Finally, we also find some empirical support for the importance of banks' perceptions of the institutional environment in the decisions they make regarding their portfolios. While earlier studies on the finance-growth nexus show an important causal effect of legal creditor protection on the *amount* of bank lending, we also find an effect on the *composition* of bank lending. When controlling for endogeneity and selection bias, we find that banks that perceive pledge and mortgage laws to be of high quality tend to focus more on mortgage lending. More generally, all types of private bank customers tend to profit from legal improvements as we also find that better legal protection allows banks to move away from lending to state-owned enterprises and towards lending to private clients, in particular households.

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