INTERNATIONAL POLICY CENTER
Gerald R. Ford School of Public Policy
University of Michigan

IPC Working Paper Series Number 81

Structural Economic Change and Foreign Acquisition

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January, 2009

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Abstract

In this paper, I study how structural economic change affects the relative benefits of foreign and domestic ownership in emerging markets. The central thesis is that rapid change (a structural economic shock) makes many of the capabilities of domestic firms obsolete. Under these circumstances, foreign acquirers from advanced economies can provide firms with access to knowledge that helps firms to adapt to post-shock economic circumstances more effectively than they could without foreign ownership. Hence, the benefits of foreign acquisition increase following structural economic change.

I develop my argument in the context of the banking industry and test specific hypotheses on a large sample of banks in Central and Eastern Europe. In line with my predictions, foreign acquisition is followed by a period of post-acquisition restructuring that raises costs and reduces profitability. Thereafter, foreign-owned banks gradually improve their performance relative to domestically owned banks. This increase is more pronounced in countries that experience deeper structural change.

Keywords: Banking, Foreign Acquisitions, Structural Economic Change

1. Introduction

Foreign acquisition of firms is profitable if the value of a firm is higher to a new foreign owner than to an existing or prospective domestic owner. It has been a mainstay of the international business literature since at least Hymer (1960/1976) that it is more costly for foreigners to operate a business than it is for domestic owners because foreigners are unfamiliar with the local environment. Hence, unless there are foreign ownership advantages that compensate for the costs of the "liability of foreignness", acquisitions are not possible. These advantages are generally found in superior organizational capabilities or other specialized assets that foreign acquirers transfer to their new subsidiaries (Zaheer 1995).

In this paper, I study how structural economic change affects the benefits of foreign acquisition of firms. The central argument is that rapid change (a structural economic shock) makes many of the capabilities of domestic firms obsolete. Foreign owners from advanced economies can provide firms with access to knowledge that enables emerging market firms to adapt to changing economic circumstances. Therefore, acquisition by foreigners will be more appealing after a structural economic shock than before.

I use the context of the commercial banking industry to develop and test specific hypotheses that follow from my main argument. In recent years, Mexico, Turkey and many transition economies in Central and Eastern Europe (the CEE region) have experienced an increase in foreign ownership of banks in the aftermath of financial crises and significant structural economic change. In banking, the ability to screen borrowers is an important source of competitive strength because it lowers the cost of adverse selection that is inherent to the market for loans (Stiglitz and Weiss 1981; Broecker 1990; von Thadden 2002). Structural economic change that affects the way in which economic agents interact with each other will reduce the usefulness of the know-how and procedures that banks apply to screening borrowers. In order to remain competitive, banks need to develop new know-how or obtain it from other sources. Foreign acquisition becomes attractive under these circumstances if the transfer of know-how from a foreign owner is cheaper than getting hold of know-how from other sources.

In a companion paper, I develop s a dynamic model of banking competition to study the relationship between structural economic change, foreign acquisition and post-acquisition performance.

The purpose of the present paper is to test key predictions of the model with regard to post-acquisition performance. In particular, my model predicts that foreign acquisition will initially lead to a drop in profits (relative to banks remaining under domestic ownership) as owners invest in new know-how. Capitalizing on this know-how, foreign-acquired banks subsequently outperform domestically owned banks. I estimate a treatment effects model – with changes in ownership as "treatment" – using data on more than 225 banks from eleven countries in Central and Eastern Europe over the years 1997 to 2004. I find that indeed, foreign acquisition initially raises cost and reduces profit. However, two to three years after acquisition, foreign-owned banks have higher profits and lower costs than comparable banks that remain under domestic ownership.

I confirm this finding in a number of robustness tests. In particular, I implement a version of the Heckman-Hotz (1989) preprogram test to ascertain that foreigners do not acquire banks that had a faster rate of profit growth (or cost-reduction) even before acquisition. This is not the case. In addition, I use a clustering procedure to create subsamples of banks that are engaged in similar activities. Banks within the same cluster can be expected to respond in the same way to external changes or a switch of ownership. Hence, using only non-acquired banks in the same cluster as comparators for foreign-acquired banks should produce a more reliable estimate of the effect of the ownership treatment. Using this approach, I find that the result that foreign acquisition improves bank performance holds in a cluster of universal banks with large branch networks and a significant involvement in lending, but not in a cluster of universal banks that lend less to their clients. While I cannot test whether banks' involvement in lending preceded foreign ownership or not, the finding that foreign-owned universal banks with high levels of lending do relatively well is interesting in view of the literature on foreign entry in banking. In general, this literature argues that foreign ownership is associated with a reluctance to lend to the typical clients of universal banks: Small and Medium-Sized Enterprises (SMEs) and consumers (Tschoegl 1987; Detragiache, Tressel and Gupta 2006; Mian 2006; Gormley 2008).

Because the CEE countries all experienced significant structural economic change, my model predicts a positive effect of foreign acquisition on bank performance in the sample as a whole. In addition, I show that the contribution of foreign acquisition to bank performance is higher in countries that underwent deeper structural change. This result is based on indicators of structural change that measure the reallocation of resources across sectors. Such a reallocation

leads to obsolescence of banks' knowledge because a banking relationship with, say, a firm in agribusiness demands different skills and financial products than a relationship with e.g. a travel agency. Interestingly, I do not find support for the claim that improvements in creditor rights such as the right to execute collateral in case of default benefit foreign-owned banks more than domestically owned ones (Haselmann, Pistor and Vig 2006). In the theoretical literature, it has been argued that better creditor rights reduce the importance of soft information about borrowers and that this is to the benefit of foreign-owned banks because these banks find it difficult to evaluate soft information (Sengupta 2007).

In addition to providing a rationale for foreign acquisition of banks and the timing of these acquisitions, my work contributes to the literature in several ways. First, by accounting for the initial costs of acquisition, I resolve an apparent paradox in the empirical literature on foreign ownership of banks and performance in the CEE region. On the one hand, a number of papers using efficient frontier analysis find that foreign ownership is associated with higher efficiency (Grigorian and Manole 2002; Bonin, Hasan and Wachtel 2005b; Bonin, Hasan and Wachtel 2005a; Fries and Taci 2005; Yildirim and Philippatos 2007). On the other hand, Lanine and Vander Vennet (2007) argue that foreigners simply acquire the most efficient banks and that, controlling for the endogeneity of ownership, foreign acquisition has an insignificant or negative effect on performance. Poghosyan and Borovička (2007) come to a similar conclusion. All these papers assume that the effect of foreign ownership on performance is constant over time. When I impose a constant effect of ownership on performance, I find an insignificant effect of foreign ownership on performance (controlling for pre-acquisition performance). It is only when I allow the impact of foreign ownership to change over time that I find that foreign ownership has a strong and positive effect of foreign ownership on performance over the medium term.

My work also contributes to the literature by promoting access to knowledge as a motivation for foreign acquisition. This complements the emphasis on cost-of-capital advantages in the theoretical literature on foreign entry into banking (e.g. Detragiache et al. 2006; Sengupta 2007). Investigating the role of knowledge in foreign acquisitions of banks is important because there is a widely held belief that banks in the CEE region as well as in Mexico before the 1994/5 Tequila crisis had a severe lack of know-how about credit assessment and would benefit from an infusion of foreign knowledge (Buch 1997; Bokros 2001; Jotev 2001; Haber 2005; Tschoegl 2005). Moreover, if foreigners merely provided banks with access to low-cost-capital, we would

expect a rapid improvement in performance immediately after acquisition. Subsequently, the performance of domestically owned banks would gradually recover once the impact of a structural shock on their cost of capital subsides. The pattern uncovered in this paper shows that the opposite happens: domestically owned banks gradually loose ground once post-acquisition restructuring is complete.

Furthermore, this paper contributes to the wider literature on foreign acquisition. According to my approach, the dynamics of foreign ownership are driven by a precipitous decline in domestic ownership advantages because domestic owners lack access to knowledge that would enable them to recover from a structural shock. These dynamics are distinct from those in Zaheer and Mosakowski (1997) or in Uhlenbruck (2004). The first paper shows how the liability of foreignness diminishes over time as subsidiaries of foreign banks learn how to operate in the host-country environment (Zaheer and Mosakowski 1997). Uhlenbruck finds, among other things, that foreign firms that have prior experience with acquisitions in the CEE region implement post-acquisition restructuring more effectively than other firms. My argument has similarities to the one in Perez-Batres and Eden (2008), who claim that Mexican banks faced a "liability of localness" following deregulation of the banking sector in the 1990s. However, I take a broader view of structural economic change where they focus on liberalization of banking.

Finally, the analysis in this paper is developed in the context of the banking industry, with an operational definition of structural change – reallocation of resources across sectors – that is specific to this industry. However, the underlying principle that radical economic change provides opportunities for foreign acquisition is valid in other industries as well. Applying this principle would introduce a dynamic perspective into research on foreign acquisitions and complement research that relates contemporaneous host-country characteristics to the likelihood and benefits of such acquisitions (e.g. Wheeler and Mody 1992; Henisz 2000; Javorcik 2004).

In section 2, I discuss the theoretical motivation for this paper and the hypotheses to be tested. Section 0 presents the empirical context and data and section 4 the empirical approach. The results are presented in section 5 and discussed in section 6. Section 7 concludes.

2. Motivation and hypotheses

The level of foreign ownership of banks differs dramatically across emerging markets (Figure 1). Putting aside Hong Kong and Singapore as special cases, foreign ownership (measured by foreign control of bank assets) tends to be low in Asia, is somewhat higher in Latin America and over fifty percent in Central and Eastern Europe. Differences in the level of foreign ownership are associated with differences in the strategic orientation of foreign-owned banks. At the risk of too much generalization, foreign-owned banks in Asia tend to focus on up-market clients and in particular on corporate banking. In Latin America and the CEE region however, foreigners have acquired universal banks with large branch networks that are actively engaging with retail and SME clients (Guillén and Tschoegl 2000; de Haas and Naaborg 2006; Haselmann 2006).

The high levels of foreign ownership in Mexico, Korea and the CEE countries in figure 1 are the result of a relatively brief spike in foreign acquisitions. In Mexico, this spike followed the 1994/5 Tequila crisis, the start of NAFTA in January 1994 and privatization and deregulation of Mexican banks in the early nineties (Gruben and McComb 2003; Haber 2005; Perez-Batres and Eden 2008). In the CEE region governments decided to allow or even encourage foreign acquisition of banks during the process of economic transition (Bokros 2001; Jotev 2001; Cottarelli, Dell'Ariccia and Vladkova-Hollar 2005). In explaining foreign acquisitions of banks and post-acquisition performance, I will focus on the significance of the timing of these acquisitions against the backdrop of structural economic change. My work complements research that seeks to link cross-country differences to foreign acquisition of banks or to the performance of foreign-owned banks (Buch and DeLong 2004; Focarelli and Pozzolo 2005; Haselmann et al. 2006; Focarelli and Pozzolo 2008; Maurer 2008).

Structural economic change encompasses a wide range of factors that affect the interaction between economic agents. In this paper, I think of structural economic change as a process that alters the fundamentals of the relationships between banks and their clients. This may be due to modifications to laws and institutions, changes in the sector structure of the economy or the loss of political patronage for both banks and their clients (Brown and Dinç 2005; Siegel 2007). Structural economic change frequently triggers a financial crisis and such a crisis is often the proximate cause for countries to allow foreign acquisition of banks (Tschoegl 2005). However, financial crises do not have to end in structural change. In so far as a crisis does

not change the economic structure of a county, the fundamental character of post-crisis banking relationships can be the same as before a crisis. This is true even if individual clients go bankrupt due to the financial strain associated with a crisis.[1]

It is useful to consider the bank that is studied in Bogaard and Svejnar (2008).[2] The bank is located in a transition economy and was acquired by a Western European bank upon privatization towards the end of the nineties. Compared to its peers, the bank weathered the economic and financial turmoil of the nineties relatively well. Management and employees were technically competent administrators and stuck to a conservative strategy. However, the new owners soon found that the bank's conservatism came with a risk-averse attitude and the absence of skills to identify, let alone reach out to, valuable clients. This combination of technically competent staff without the skills to market products is familiar from non-financial firms in the CEE region (Meyer and Bjerg Moller 1998; Filatotchev, Dyomina, Wright and Buck 2001; Blazejewski and Dorow 2003). It is also similar to the experiences of banks in Mexico or even Scandinavia that got in trouble after significant changes in the structure of the market for financial products (Drees and Pazarbasiog1o 1995; Gruben and McComb 2003). The experience of the bank also casts doubt on a key assumption in the literature on foreign entry into banking, which is that domestically owned banks are always better at evaluating soft information about borrowers that foreign-owned banks (Dell'Ariccia and Marquez 2004; Detragiache et al. 2006; Sengupta 2007; Gormley 2008). This assumption does not appear to be a good point of departure for theoretical models that explain foreign acquisitions of banks in emerging markets (see also Buch 1997; Bonin, Mizsei, Székely and Wachtel 1998).

The new owners of the bank in Bogaard and Svejnar (2008) became painfully aware of the gap in know-how when they discovered that high-value clients were leaving in droves. In the competitive environment of the twenty-first century the ability to actively engage with clients had become an essential part of the skill set of bank employees. In so far as the incumbent managers recognized the problem, they did not know how to deal with it. Foreign acquisition provided the bank with access to the knowledge of expatriate managers who introduced a business strategy that involved better client segmentation and an organizational model that was aligned with the strategy. In somewhat less detail, case studies by Szczesniák (2007) and Tóth

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[1] Dell'Ariccia (2001) develops a model of banking competition in which turnover of individual clients weakens the competitive strength of an incumbent bank as compared to a potential entrant.
[2] For reasons of confidentiality the name and exact location of the bank cannot be revealed

(2007) also discuss restructuring efforts of foreign acquirers of banks in the CEE region and their emphasis on commercialization of operations.

Research on post-privatization performance of non-financial firms in transition economies tends to find that the success of privatization depends on the identity of the acquirer. Foreign owners are often found to be the only type or among the only types of owners that significantly improve performance (Frydman, Gray, Hessel and Rapaczynski 1999; Djankov and Murrell 2002; Brown, Earle and Telegdy 2006; Hanousek, Kocenda and Svejnar 2007). This suggests that the resources that foreign owners provide to their subsidiaries cannot be acquired on the open market or can be transferred more efficiently within the firm than between firms (Kogut and Zander 1993; Filatotchev, Wright, Uhlenbruck, Tihanyi and Hoskisson 2003).

On the basis of the example of the bank in Bogaard and Svejnar (2008) and related literature, foreign acquisition of banks appears to have the following rationale: (i) a structural shock makes many of the skills of domestically owned banks obsolete and these banks do not have access to the knowledge that is required to adapt effectively to the new economic conditions (ii) the value of a bank under foreign ownership is higher than under domestic ownership because foreign owners can provide the bank with access to key knowledge.[3]

In a companion paper, I formalize this rationale in a model of competition between banks (Bogaard 2008). In the model, I conceive of a bank's ability or skills to maintain client relationships as a strategic asset, called "screening capacity"[4]. In normal economic times, screening capacity needs regular maintenance: training for new employees, marketing campaigns, introduction of new products to keep up with competitors, et cetera. Without maintenance, the value of screening capacity would depreciate just like a fixed asset would for a manufacturing firm. Moreover, by solidifying a bank's competitiveness, investments in maintenance are a deterrent for competitors akin to investments in fixed assets in a capital accumulation game (Spence 1979). In the model, a banks' competitive position depends both on initial screening capacity and on the marginal cost of an additional unit of screening capacity.

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[3] Strictly speaking, a complete rationale requires that acquisition is more attractive than greenfield entry for the foreign owner. In practice, greenfield entry is mostly restricted to corporate banking and other specialized services like private banking and trade finance. In so far as foreigners enter into universal banking and engage with retail and SME clients, acquisition is the dominant mode of entry (see also Guillén and Tschoegl 2000).
[4] Banerjee (2005) and Hauswald and Marquez (2006) also develop models in which banks invest strategically in their ability to screen borrowers,

With screening capacity defined as an asset it requires little imagination to think of a structural shock as a sudden increase in the rate of depreciation of the asset. In my model, such a shock increases the importance of the cost of a unit of screening capacity for the long term competitive position of a bank. The intuition is that a temporary increase in the rate of decay makes it easier for low-cost investors to pre-empt investment by other banks so as to solidify their competitive position. Pre-emption initially leads to higher investment by low-cost investors and a drop in profitability relative to other banks. Once the investments pay off, profits increase and are ultimately higher for low-cost investors than for other banks.

In giving banks access to resources, in particular knowledge, foreign acquisition reduces the marginal cost of investment in screening capacity. In the wake of a structural shock, the value of a bank under foreign ownership increases relative to the value of the same bank under domestic ownership. If the increase is large enough to overcome any costs associated with the liability of foreignness or the costs of post-acquisition (or post-shock) restructuring, structural economic change makes foreign acquisition more likely.

Hypotheses

The theoretical rationale for foreign acquisition and the associated model produce two types of hypotheses that are testable in principle: (i) hypotheses with regard to the timing of foreign acquisitions of banks, which is a country-level phenomenon, and (ii) hypotheses with regard to post-acquisition performance. The latter is measured at the bank-level and is the focus of this paper.

There are two reasons to expect that foreign acquisition will improve the performance of banks in the CEE countries that are part of my sample. To begin with, foreign owners' ability to provide banks with access to knowledge resources is particularly relevant in the CEE economies, all of which experienced significant structural economic change. More generally, foreign acquisition is only profitable if the value of a bank is higher under foreign than under domestic ownership. Unless foreigners systematically overestimate post-acquisition performance foreign acquisition should lead to an increase in performance and value (Gleason, McNulty and Pennathur 2005). Hence:

Hypothesis 1: Foreign acquisition improves the performance of banks relative to the performance of banks that remain under domestic ownership.

Existing research about the contribution of foreign ownership to bank performance in the CEE is inconclusive. On the one hand, there is a significant number of papers that finds that foreign-owned banks outperform domestically owned banks, in terms of either cost or profit efficiency or both (e.g. Grigorian and Manole 2002; Bonin et al. 2005b; Bonin et al. 2005a; Fries and Taci 2005; Yildirim and Philippatos 2007). However, these papers do not control for the fact that owners might simply acquire banks that perform well to begin with. The papers that do so find that foreign ownership has an insignificant or negative effect on bank performance (Poghosyan and Borovicka 2006; Lanine and Vennet 2007).

My thesis also has implications for the relationship between foreign ownership of banks and performance over time. Because foreign owners provide acquisition targets with new know-how about banking, I expect there to be a period of post-acquisition restructuring. In my theoretical model this initially raises cost and reduces profitability. Thereafter, foreign-owned banks outperform the ones that remain under domestic ownership. This leads to the following hypothesis:

Hypothesis 2: The benefits of foreign acquisition materialize over time, but may initially lead to a drop in performance.

So far, there is limited evidence on the dynamics of foreign ownership and bank performance. Most papers impose the assumption that the effect of ownership on performance is constant over time (e.g. Claessens, Demirguc-Kunt and Huizinga 2001; Bonin et al. 2005a; Fries and Taci 2005; Poghosyan and Borovicka 2006; Lanine and Vennet 2007). There is some evidence that the positive impact of foreign ownership on bank performance strengthened over time in Hungary (Majnoni, Shankar and Varhegyi 2003). Bonin et al. (2005b) find that banks that were privatized early are more efficient than banks that were privatized later and argue that this may be due to the fact that the impact of foreign ownership on performance does not take hold immediately. However, their result can also be due to the fact that more efficient banks are privatized first. For a wider sample of countries, Boubakri, Cosset and Guedhami (2005) find that

the economic efficiency of banks improves over time following privatization. However, they do not estimate separate performance trends for foreign-owned and domestically owned banks. Outside of the banking sector, Brown et al. (2006) and Hanousek et al. (2007) show that performance of foreign-owned companies depends on the time that has elapsed since acquisition.

The first two hypotheses describe the general pattern of post-acquisition performance in CEE countries, which all experienced significant structural economic change. Strictly speaking however, the pattern in post-acquisition performance could reflect the fact that acquisitions always lead to some turmoil and a drop in performance before things get better (Brown et al. 2006). In so far as the pattern of post-acquisition performance is due to the general nature of the acquisition process, there will be no differences between countries with more or countries with less structural change. My theoretical model however, predicts that the impact of foreign acquisition on performance is larger in countries with more structural economic change:

Hypothesis 3: Improvements in performance following foreign acquisition are larger in countries that have experienced deeper structural change.

3. Empirical context and data

I test my hypotheses on a sample of banks in eleven Eastern European countries (Bulgaria, Croatia, The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia) over the years 1997 to 2004.

Over the past fifteen to twenty years, the transition economies moved from a mono-bank system with no clear separation between the Central Bank and "commercial" banks to a more modern banking system that is reasonably well regulated by emerging market standards.[5] Soon after the fall of the Berlin Wall in 1989, all CEE countries rapidly separated the Central Bank from commercial banking and allowed the establishment of new banks. Countries also permitted the entry of foreign banks, which initially set up small offices with the objective to support home country clients that had started operations in the CEE region after 1989. Subsequently, they expanded their activities to financing healthy local companies as well as to private banking for

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[5] In addition to a growing number of journal articles there are several books on banking in the CEE region and transition countries. The section draws partially on (Bonin et al. 1998; Bokros 2001 and the chapters therein)

wealthy individuals (De Haas and Naaborg 2005). However, these foreign greenfield banks rarely ventured into the market for retail or SME lending.

The newly formed commercial banks suffered from an overhang of bad loans and governments used a variety of approaches to recapitalize banks. Unfortunately, weak supervision and accounting standards, continued pressure to lend to loss-making industries, bad incentives for risk management and a lack of banking skills resulted in a recurrence of the problems and several governments were forced to recapitalize banks more than once (Buch 1997; Bokros 2001).

Sooner or later, governments came to realize that consolidation of the banking industry and private, and possibly foreign, ownership of major banks was required to put the industry on a sustainable footing. Poland, Hungary and, after a devastating crisis in 1996, Bulgaria, were among the early movers to allow for foreign ownership of banks. The Czech government made a promising start by including three banks in its voucher privatization scheme but held on to controlling stakes in the banks (Bonin et al. 1998 p. 42). It took the government till the end of the nineties to proceed with full privatization and the sale of strategic shares to foreign investors. Romania and Slovakia were similarly slow in reforming their banking sector while Estonia, Croatia, Slovenia and Latvia were among the early birds with Poland, Hungary and Bulgaria (Cottarelli et al. 2005).

By 2005, all eleven countries except Slovenia had a foreign ownership share of 50 percent or higher measured by the percentage of banking assets under foreign control. Western European banks were the most important group of foreign owners. In the Baltic Republics, Scandinavian banks dominate the market while Austrian and German banks play a large role in Poland and the rest of Central Europe. Italian and Greek banks tend to focus on Southern European countries, although the Italian bank Unicredit has a CEE-wide presence since it acquired HVB (and its subsidiary Bank Austria-Creditanstalt). Other banks with multi-country presence include KBC from Belgium, Millennium BCP from Portugal and Allied Irish Bank, Société Générale from France and GE Capital and Citibank from the US. Finally, the Hungarian bank OTP, which has substantial foreign ownership but is managed by Hungarians, has started to expand into other transition economies.

Data and variables

I use *Bureau van Dijk's Bankscope[6]* as the primary data source and my dataset contains information from banks' annual statements for the years 1997 to 2004. I eliminate observations without information on loans, deposits, equity, overheads or total assets, or with inconsistent information such as negative cost. I also excluded a number of smaller banks in Latvia from the dataset because I could not trace their ownership. All the mainstream Latvian banks are part of the dataset. The excluded banks generally provide only specialized services such as trade finance and private banking. This leaves me with a maximum of 1,631 observations on 284 banks. Most regressions contain fewer observations because I do not use the first year that a bank is part of the dataset and there are some observations with other missing variables such as fee income.

As performance indicators, I use Return on Assets (ROA), which I take directly from *Bankscope*, and the Expense-to-Income ratio. ROA is a good summary measure of bank performance. Banks can raise ROA by improving the quality of their assets (screening out bad borrowers and screening in good ones), or by reducing expenses on overheads and funding. As such, ROA reflects both allocative and operational efficiency and is a broader measure of bank performance than the efficiency measures employed in other studies (e.g. Grigorian and Manole 2002; Bonin et al. 2005a; Bonin et al. 2005b; Fries and Taci 2005; Yildirim and Philippatos 2007).[7] The efficiency measures account for productive and scale efficiency, but not for allocative efficiency, i.e. the ability of banks to choose the correct level of output (Berger and Mester 1997).[8] My theoretical framework suggests that the ability to sell loans and deposits and to choose the optimal level of output is part and parcel of good performance.

The Expense-to-Income ratio is frequently used by bank managers as an indicator of operational performance. Income is total operating income from *Bankscope* and is equal to net interest income plus net fee and commission income plus a few smaller items.[9] Expenses, total operating expenditure from *Bankscope*, include personnel expenses and other overheads as well

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[6] *Bankscope* has been used for other studies of banking both within and outside of the CEE region (e.g. Claessens et al. 2001; Bonin et al. 2005a; Micco, Panizza and Yanez 2007)

[7] The papers cited here are all multi-country studies, there are also a number of single-country studies of bank-efficiency that, although they differ on some details, come to the same broad conclusion that foreign-owned banks are more cost-efficient than domestically owned banks and possibly more profit efficient (e.g. Kraft and Tirtiroglu 1998; Nikiel and Opiela 2002; Hasan and Marton 2003; Kraft, Hofler and Payne 2006).

[8] Theoretically it is possible to estimate a version of profit efficiency that encompasses allocative efficiency. However, this method is only valid if there is perfect competition, which is not a tenable assumption in the CEE context (Berger and Mester 1997).

[9] *Bankscope* reports either Fee Income or Commission Income.

as loan-loss provisions and write-downs. To reduce the influence of outliers in the performance measures I winsorize both ROA and the expense-to-income ratio at the upper and lower 2.5[th] percentile. Some of the extreme values in performance appear to be due to idiosyncrasies in income or costs, or to exceptionally low levels of assets rather than to normal variation in business performance.

One of the disadvantages of the *Bankscope* database is that it does not have historic ownership data, which have to be hand-collected. I define ownership categories on the basis of majority ownership. That is, a bank is classified as foreign-owned (state-owned) if foreigners (the state) control more than fifty percent of its shares. Among foreign-owned banks I distinguish foreign greenfield banks and banks acquired by foreigners. A bank is classified as foreign greenfield if it is both controlled by foreigners and was originally established by foreign owners. Banks that are not state-owned or foreign-owned are classified as domestic private. I collected information on bank ownership from the banks' own websites and annual reports, the websites of Central Banks and news reports that I accessed through Factiva.

The fifty percent threshold to assign ownership may appear high. In developed countries, shareholders often have control with ownership shares well below fifty percent. However, many banks in the CEE region are controlled by a few block holders, frequently a foreign owner and the state. While being a block holder gives foreign owners significant influence on operations, the state may still frustrate decision making on key strategic policies (Abarbanell and Bonin 1997). For example, when the Slovenian government refused to give the Belgian bank KBC permission to acquire a majority stake in Nova Ljubljanska Banka, KBC decided to sell its thirty-four percent stake in the bank because it had insufficient control over operational policies (Goldsmith and Cerni 2007). In this context, it is not surprising that foreign owners often buy a majority stake outright or quickly raise their stake beyond fifty percent after initially purchasing a minority stake. Several other studies of the relationship between ownership and bank performance also use fifty percent as a threshold (e.g Bonin et al. 2005b; Fries and Taci 2005; Poghosyan and Borovicka 2006; Yildirim and Philippatos 2007).

If *Bankscope* reports both consolidated and unconsolidated data for a bank, I use consolidated except if a bank had a subsidiary in the dataset or if there was a longer series of unconsolidated data. I use data reported in accordance with International Accounting Standards where available. As is customary, I excluded some specialty banks, in particular car-finance

companies, from the data even though they are labeled "Commercial Bank" in *Bankscope* (see e.g. Bonin et al. 2005a; Micco et al. 2007).

Table 1 gives an overview of data on ownership, by year and by country. Ownership categories are evenly distributed across countries and there are at least several foreign acquisitions in each country. Table 2 provides summary data about performance by origin of ownership – either domestic (panel A) or foreign (panel B). The average size of foreign-owned banks as compared to domestically owned banks gradually increases over time (panel C). In most years, foreign-owned banks are also more profitable and more cost-efficient. Table 3 reports the results of median (quantile) regressions of the performance indicators on ownership, controlling for country x year fixed effects. Foreign-owned banks are both more cost efficient and more profitable than state-owned banks according to these results, although banks that are foreign by acquisition cannot always be distinguished from privately owned domestic banks. Foreign greenfield banks, which have about the same median size as privately owned domestic banks have significantly better performance than these banks. I also estimated these models using OLS regression. This produces very similar results both qualitatively and quantitatively.

Measuring Structural Change

In order to test hypothesis 3, we need a measure of structural change in the economy. My hypotheses are based on the assumption that a structural shock changes the character of banking relationships, which makes existing skills obsolete while creating a need for new skills. I will present results based on several indicators that measure this process. However, my preferred indicator reflects the reallocation of resources across sectors in the national economy. In particular, I use data from the International Labor Organization (ILO) to calculate the 2-digit industry shares of employment in each country. Subsequently, I calculate year-to-year changes in these shares over the 1995 to 1998 period. I then add the absolute values of these changes for each year and country and average the result over the years 1995 to 1998 for each country.[10]

The assumption underlying this measure is that a reallocation of resources and activity across industries requires a reorientation of bank strategies. In addition, the reallocation of

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[10] 1995 is the first year I use because earlier data is generally unavailable. 1998 is the last year I use because the impact of ongoing structural economic change is ambiguous in my theoretical model. Ongoing change prompts foreign-owned banks to raise their investment in new screening capacity more than domestically owned banks and may temporarily reduce their profitability as compared to that of domestically owned banks.

activity reflects the effectiveness of liberalization and reregulation of the economies in the CEE region. The planning system had generally emphasized large industrial companies over (smaller) companies in the service sectors.

In addition to the indicator measuring the reallocation of labor on the basis of ILO data, I will construct similar indicators of the reallocation of exports (using the NBER/United Nations trade data from the Center for International Data at UC Davis) and the reallocation of output, investment and the number of firms (using the Industrial Statistics Database from the United Nations Industrial Development Organization, UNIDO). The key difference between the ILO data on the one hand and the UNIDO and NBER-UN data on the other hand is that the ILO data includes information on service industries whereas the other data sets cover manufacturing only.

The principal alternative to using resource reallocation as a proxy for structural economic change is to use measures of regulatory and institutional change. Several theoretical papers on foreign entry into banking imply that an improvement in e,g, creditor rights and transparency benefits foreign-owned banks because such improvements reduce the importance of soft information (Dell'Ariccia and Marquez ; Sengupta 2007). To compare my approach with the broader literature, I also estimated my models with indicators of creditor rights from the Heritage Foundation and from Haselmann et al. (2006).

4. Empirical Approach

To test my hypotheses, I will estimate treatment effects model in which ownership measures the "treatment" that banks received. Because hypothesis 2 claims that the impact of ownership will change over time, I include a "level-effect" of ownership as well as a "trend-effect" which changes with the time that has passed since a bank last changed between forms of ownership:

$$
\begin{aligned}
y_{ijt} = {} & \alpha + \gamma_1 DP_{ijt} + \gamma_2 FA_{ijt} + \gamma_3 FG_{ijt} \\
& + \delta_1 (owndur_{ijt} \times DP_{ijt}) + \delta_2 (owndur_{ijt} \times FA_{ijt}) + \delta_3 (owndur_{ijt} \times FG_{ijt}) \qquad (1) \\
& + \theta y_{ij0} + \varphi \left(trend_t \times y_{ij0} \right) + z_{jt}^T \cdot \lambda + c_j^T \cdot \omega + trend_t \times c_j^T \cdot \sigma + t^T \cdot \tau + \mu_i + \varepsilon_{ijt}
\end{aligned}
$$

In equation (1) subscripts i are for a particular bank, j for country and t for time. The dummy variables DP_{ijt} (Domestic Private), FA_{ijt} (Foreign Acquired) and FG_{ijt} (Foreign Greenfield)

measure ownership (state ownership is the omitted category) and the coefficients γ represent the level effect of each form of ownership. The variable $owndur_{ijt}$ is equal to year t minus the year in which a bank was acquired by foreigners and the coefficients δ represents the trend effects of foreign ownership (i.e. in each year, the difference in performance between a state-owned bank and a foreign-owned bank is expected to be equal to $\gamma_2 + \delta_2 \times owndur_{ijt}$.

The treatment effects model in equation (1) includes controls for bank specific characteristics by including initial performance, y_{ij0}, in the regression as well as an interaction of initial performance with a trend ($trend_t$ is equal to year $t - 1998$).[11] The vector z_{jt} contains country level controls and c_j, t_t are country and year fixed effects and c_j x $trend_t$ is a country specific trend (country dummies times year minus 1998).

The country level controls in z_{jt} are real GDP growth, GDP per capita, producer price inflation, the lending interest rate and the EBRD transition indicator for Bank Reform. GDP growth controls for changes in the demand for banking services due to a higher level of income GDP per capita controls for changes in the marginal demand for banking services as disposable incomes grow. Price inflation and lending rates control for macroeconomic instability and the EBRD transition indicator is a proxy for progress with regard to the liberalization of the banking sector. Sources for the control variables are the *Economist Intelligence Unit* and the EBRD (see table A2).

I assume that the error term in equation (1) is composed of two parts: a purely random error ε_{ijt} and a bank specific unobserved fixed effect μ_i. In a different specification, Lanine and Vander Vennet (2007) find that μ_i is indeed present and that foreign acquirers tend to buy banks with a high μ_i (i.e. there is selection into ownership on the basis of unobserved efficiency). This renders OLS estimation inconsistent. Tests on preliminary estimates of equation (1) suggest that my model is also affected by unobserved heterogeneity and that it is correlated with one or more of the independent variables.

We can eliminate μ_i, from the equation through either traditional fixed effects (mean-difference) estimation or by first differencing equation (1). First differencing is more convenient because it simplifies the ownership-trend interactions and allows us to drop some variables (Δ is the difference operator, $\Delta x_{ijt} = x_{ijt} - x_{ij,t-1}$):

---

[11] the observation from year 0, the first year that a bank enters the data, is never included in the regressions

$$\Delta y_{ijt} = \gamma_1 \Delta DP_{ijt} + \gamma_2 \Delta FA_{ijt} + \gamma_3 \Delta FG_{ijt} + \delta_1 DP_{ijt} + \delta_2 FA_{ijt} + \delta_3 FG_{ijt}$$
$$+ \varphi y_{ij0} + \Delta z_{jt}^T \cdot \lambda + c_j^T \cdot \sigma + t^T \cdot \tau + \Delta \varepsilon_{ijt} \tag{2}$$

In this specification, the coefficients γ and δ are essentially difference-in-difference estimates of the level and the trend effects. Because the standard errors in difference-in-difference models are affected by serial correlation, we will cluster standard errors and allow for arbitrary correlation between errors by bank (Bertrand, Duflo and Mullainathan 2004).

Finally, to estimate the impact of country-level differences in structural economic change on the relative performance of foreign-owned banks I will augment equation (2) with interactions of measures of structural economic change s_j with both the level and the trend effect of ownership[12]:

$$\Delta y_{ijt} = \gamma_1 \Delta DP_{ijt} + \gamma_2 \Delta FA_{ijt} + \gamma_3 \Delta FG_{ijt} + \delta_1 DP_{ijt} + \delta_2 FA_{ijt} + \delta_3 FG_{ijt}$$
$$+ \pi_1 \Delta DP_{ijt} \times s_j + \pi_2 \Delta FA_{ijt} \times s_j + \pi_3 \Delta FG_{ijt} \times s_j$$
$$+ \xi_1 DP_{ijt} \times s_j + \xi_2 FA_{ijt} \times s_j + \xi_3 FG_{ijt} \times s_j \tag{3}$$
$$+ \varphi y_{ij0} + \Delta z_{jt}^T \cdot \lambda + c_j^T \cdot \sigma + t^T \cdot \tau + \Delta \varepsilon_{ijt}$$

5. Results

I begin by estimating equations (1) and (2), the baseline specification of the model, in Table 4. The OLS estimates are shown to emphasize the importance of controlling for bank specific heterogeneity. With state ownership as the omitted form of ownership, estimates of the full model (columns 3 and 9) suggest that both domestic private banks and foreign greenfield banks perform better than state-owned banks while foreign-acquired banks are insignificantly better (note that a negative coefficient on the expenditure-to-income ratio indicates better performance). Only one trend-effect is significant – on foreign greenfield in the ROA regression.

The first difference estimates (equation (2)) eliminate bank specific effects from the equation and reveal a strikingly different pattern. The level effect of foreign acquisition is negative (the coefficient on foreign ownership in column 6 is almost significant at the 10%

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[12] The measures of structural economic change are constant over time so that the average effect of change on performance is absorbed by the country fixed effects.

level), while the trend effects point towards improved performance over time (the level effect of greenfield ownership drops out in first differences). This is in line with hypothesis 2. The point estimates of the level and trend effects for both ROA (column 6) and the expenditure-to-income ratio (column 12) are economically meaningful. In both cases, the level effect of foreign ownership is about one half of a standard deviation of the dependent variable. Average ROA is 0.94. Foreign acquisition initially drops ROA by about 85 percent of the average, but raises ROA by about 120 percent of the average after five years.[13] The percentages are lower but non-negligible for the expenditure-to-income ratio. The level effect of foreign ownership is about 21 percent of the average (which is 0.83) and the trend effect about 7.5 percent (i.e. a drop in the expenditure-to-income ration of more than 15 percent after five years of foreign ownership).

The trend and level effects of private ownership are insignificant in columns 6 and 12 of Table 4 meaning that privatization to domestic owners produces no significant improvement in performance over state ownership. The coefficients on private domestic ownership are also significantly different from those for foreign-acquired banks at the five percent level or better – over time, foreign-owned banks improve their performance relative to the performance of private domestic competitors.

The negative coefficients on the trend effect of performance in year 0 imply that there is some mean reversion in performance (the level effect of performance in year 0 drops out in the first difference specification). Among the country level control variables, only the indicator of bank reform has a strongly significant impact on bank performance. When bank reform progresses, banks become more cost efficient and more profitable. This is so despite the fact that a higher score on bank reform is associated with an increase in the contestability of the market for banking services. The insignificance of the other controls implies that, after taking account of year and country effects, changes in e.g. GDP per capita have no impact on bank performance. The results in table 4 are in line with hypotheses 1, 2 and 3.

Robustness

I did several checks to ensure that these results are robust. To begin with, I re-estimated the equations in Table 4 with country x year fixed effects rather than the economy controls. Country x year fixed effects absorb all observed and unobserved country level variation that affects bank

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[13] 85 percent ≈ 0.81/0.94 and 120 percent ≈ (5*0.39 – 0.81)/0.94

performance. The results did not change in this specification. Furthermore, we should be concerned that the banks that were acquired by foreigners were improving their performance at a faster rate even before acquisition – first differencing takes care of bank specific level effects, but not of bank specific trends (e.g. Brown et al. 2006). To investigate whether foreigners acquire banks with a higher rate of improvement in performance than non-acquired banks, I implement a version of the pre-program test in Heckman and Hotz (1989). I re-estimate equation (2) with separate trends for banks that are acquired at some point during the sample period and for banks that are never acquired. The results in Table 5 confirm the principal results from table 4 and show that only privately owned domestic banks that are never acquired are significantly different from other domestic banks.[14] Compared to the banks that end up in foreign hands, these banks improve their cost-efficiency faster, not slower. This suggests that there is a subset of domestic private banks that are capable of adapting to changing circumstances and for which the benefits of foreign ownership are limited. I re-estimated the equations in Table 5 with dummies that are equal to 1 only in the last year before acquisition rather than in all pre-acquisition years. These dummies should control for any activities by the previous owners to prepare banks for acquisition (such as debt relief, or initial restructuring).[15] The coefficients on these dummies were never significant and their presence did not materially affect the other coefficients.

In Table 6 I also check if initial ownership of banks affects performance trends and if so, whether this affects our main results. The equation estimated in this table is similar to the one that Hanousek et al. (2007) apply to a sample of non-financial firms in the Czech Republic.

$$
\begin{aligned}
\Delta y_{ijt} = &\ \gamma_1 \Delta DP_{ijt} + \gamma_2 \Delta FA_{ijt} + \gamma_3 \Delta FG_{ijt} + \delta_1 DP_{ijt} + \delta_2 FA_{ijt} + \delta_3 FG_{ijt} \\
&+ \kappa_1 DP_{ij0} + \kappa_2 FA_{ij0} + \kappa_3 FG_{ij0} + \varphi y_{ij0} + \Delta z_{jt}^T \cdot \lambda + c_j^T \cdot \sigma + t^T \cdot \tau + \Delta \varepsilon_{ijt}
\end{aligned}
\tag{4}
$$

In equation (4), DP_{ij0}, FA_{ij0} and FG_{ij0} are dummies for initial ownership the coefficients κ measure the trend-effect associated with initial ownership. The trend effect for initial foreign

---

[14] Note that the level effect of "Domestic Private – Remaining Domestic" drops out in first differences.

[15] Heckman, Lalonde and Smith (1999) point out that neither the Heckman and Hotz pre-program test nor controlling for performance in the year immediately prior to acquisition fully controls for the "fallacy of alignment". In many cases however, the test will reject the estimators that are most biased due to differences between "treated" and "untreated" groups {Heckman, 1999,, p. 2032). Brown et al. (2006) estimate a model with separate pre- and post-acquisition dummies for each year before and after firms in their sample were acquired by foreign owners (from t – 4 to t ≥ 5) and use the pre-acquisition dummies to check for systematic differences between acquired and non-acquired firms. My data do not have sufficient pre-acquisition observations to estimate such a model.

ownership in Table 6 indicates that banks that had been acquired by foreigners by 1998 improve their performance more slowly than banks that are acquired during the sample period. Estimation of this model again confirms the main result that, following post-acquisition restructuring, foreign ownership improves bank performance. At the same time the trend effect on foreign ownership is somewhat higher here than in Table 4. It appears that the impact of foreign acquisition on the trend in performance tapers off over time (the banks that were foreign-owned at the beginning of the sample have relatively high values for $trend_{ijt}$). Unfortunately, the sample covers too short a period to estimate a specification that includes a square of the trend to allow for non-linear trends more explicitly.

An assumption underlying Difference-in-Difference estimation is that in the absence of foreign acquisition both treated and untreated banks would have experienced the same change in performance. In Tables 5 and 6 I investigated whether there were unobserved differences between banks that lead to a violation of this assumption. Another way to check the robustness of our results is to restrict comparisons to banks that are observationally similar before changes in ownership and can therefore be expected to have the same response to treatment or the absence of treatment. This is the idea behind matching estimators (Heckman, Ichimura and Todd 1997). Implementation of a full-fledged matching estimator is hampered by the fact that there are ultimately a limited number of banks per country so that it is difficult to find matches that are close enough. A less ambitious approach is to run the regressions on a restricted sample of banks that have similar characteristics even though they are not exactly matched.

This is what I do in Table 7. To begin with, my theoretical framework is focused on foreign acquisition and *a priori* there are two groups of banks that are different from most of the foreign-acquired banks: foreign greenfield banks and *de novo* domestic private banks (domestic private banks that were established by private entrepreneurs and were never state-owned). Foreign greenfield banks tend to focus on a narrower set of banking services. Similarly, many *de novo* banks provide specialized services and they are rarely acquired by foreigners.[16] Apparently, their assets are not of interest to foreign owners. Columns 1, 2, 5 and 6 of Table 7 therefore exclude greenfield banks or both greenfield and *de novo* banks. Neither of these exclusions affect the main result.

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[16] In general, *de novo* domestic private banks are not identified separately because the level effect of this type of ownership is poorly identified in first difference estimation; there are only about ten foreign acquisitions of these banks.

Rather than making *a priori* judgments about the type of banks that are engaged in similar business, one can let the data speak and use a clustering method to identify banks that are alike. Clustering methods are a non-parametric approach designed to spot similarities between observations (Kaufman and Rousseeuw 1990). Amel and Rhoades (1988) use clustering to identify strategic groups in banking and Brown and Glennon (2000) use it in the context of an evaluation of bank efficiency. Their concern, like mine, is to ensure that all banks included in a regression can be expected to have the same coefficients in the estimated equation. Because many foreign acquisitions involve universal banks with large branch networks I clustered banks on the basis of five financial ratios that I expect to distinguish these banks from others. I anticipate that universal banks have relatively high fixed assets and overheads (which include personnel expenses) because they are managing a branch network. These branches also give banks access to cheap deposits. Hence I use the ratios of fixed assets, overheads and deposits to total assets as clustering variables. In addition, I use the loan-to-asset and fee-income-to-asset ratios. Focus on lending is obviously important for banks and fee income has been identified as an indicator for the quality of bank services. Bonin et al. (2005b) argue that fee-based services require an upgrade in human capital and technology.

Appendix 1 discusses a number of more technical issues with regard to the clustering method used in this paper. These issues include the normalization of data, the choice of a specific clustering procedure and the determination of the number of clusters in the data. The procedure I use is k-medians clustering, also called "partitioning around medoids" (Kaufman and Rousseeuw 1990). k-medians maximizes the absolute distance between observations in different clusters, while minimizing the distance between observations within clusters. The method is akin to the more familiar k-means clustering except for the fact that k-means is based on the Euclidean distance between observations. In using absolute distance between observations, k-medians is more robust to extreme observations. In and of itself, the k-medians algorithm does not determine the number of clusters in the data and I use a method developed by Tibshirani and Walther (2005) to establish how many clusters there are. Their method is based on a statistic called "prediction strength", which can be calculated for any number of clusters k. Given k, prediction strength measures whether k-medians clustering consistently puts pairs of observations in the same cluster (Tibshirani and Walther 2005). The number of clusters in the

data is then the largest number k for which prediction strength is reasonably high. Figure 2 shows that there are four clusters in the data according to this method.

Table 8 provides an overview of ownership indicators in the clusters (appendix Table A1 has more information on the distribution of banks over countries and clusters). The table confirms that greenfield banks tend to be different from other foreign-owned banks. The observations on the former are concentrated in clusters 2 and 3, while the observations on the latter are mostly in clusters 1 and 4. Moreover, most of the acquisitions and privatizations take place in clusters 1 and 4. In Table 9, we see that the banks in clusters 2 and 3 tend to be smaller (note that asset size is not a clustering variable), take in less deposits from customers, have less fee income and lower overheads. The big difference between the banks in clusters 1 and 3 on the one hand and clusters 2 and 4 on the other hand is their involvement in lending.

Closer inspection of the data reveals that many of the individual banks that are assigned to clusters 1 and 4 are universal banks with significant branch networks. Several subsidiaries of Raifeissen, a greenfield bank that sought to operate as a universal bank, belong to cluster 4 rather than to either cluster 2 or 3. This implies that the clusters are more informative about bank strategies than the greenfield / *de novo* classification in the first two robustness tests in Table 7.

Returning to Table 7, we see that the results with regard to the contribution of foreign ownership to bank performance from Table 4 appear to hold in cluster 4, especially for ROA. However, they do not hold in cluster 1. There are several possible explanations for this result including the distribution of observations within clusters across countries and the low number of observations in cluster 1. One of the more intriguing differences between the two clusters however, is that the banks in cluster 4 tend to lend more than banks in cluster 1. It is not clear from these results whether the lending activity is the result of successful management by foreign owners or if banks that lend more derive more benefits from foreign ownership. However, if foreign-owned banks suffered from an information disadvantage as suggested in the literature on foreign entry into banking, we would expect higher levels of lending by foreign-owned universal banks to be associated with worse, not better performance.

Country level differences in structural change

Because the transition economies all experienced a significant structural shock, it is not surprising that foreign-owned banks outperform domestically owned banks in general. To

provide further evidence in support of the rationale for foreign acquisition presented in this paper, I will now investigate whether foreign ownership of banks in countries that experience more structural change has a larger impact on performance (hypothesis 4, equation (3)). Table 10 presents the results from this analysis using reallocation of labor as a measure of structural change. When I introduce the ownership x structural change and especially the ownership x time x structural change interactions in the ROA equation, the normal level and trend effects (without the structural change interaction) become insignificant. However, the trend interacted with ownership and structural change is positive and highly significant in line with hypothesis 3. With Expenditure-to-Income as a dependent variable, the level effect that we found in Table 4 is somewhat larger and more significant. However, the trend effect becomes insignificant while the trend x structural change interaction is significantly negative as expected.

I ran this regression on the same subsamples that I used in table 7. The results hold when I eliminate greenfield and *de novo* banks, but does not hold in the clusters. Similarly, using different indicators of structural change produces mixed results. This may be due to the fact that the other indicators of structural change ignore activity in the service sectors. However, it may also be due to the fact that equation (3) contains seven separate trends and simply asks too much from the data. Therefore, Table 11 takes a different approach and splits the sample in a group of countries with high structural change and a group of countries with low structural change. For each indicator of structural change, countries are categorized as "high Δ" if the indicator is higher than that of the median country. In these regressions, foreign-owned banks tend to improve their performance faster, relative to domestically owned banks, in countries with high levels of structural change. At the same time, the level effects of foreign acquisition also tend to be more negative in the high change countries. This suggests that the costs of post-acquisition restructuring are higher in countries that experienced more structural economic change.

In order to put the results in Table 11 in the context of the broader literature on foreign entry into banking and economic and institutional conditions in the host country it is useful to re-run the regressions with indicators that reflect improvements in creditor rights or the investment climate more generally. I do this in Table 12. As indicator of a better investment climate in general, I use the Heritage Foundation's index of economic freedom. Furthermore, I use the indicator of creditor rights developed by Haselmann et al. (2006). According to the model in Sengupta (2007), better creditor rights and especially a better regime for collateral should benefit

foreign-owned banks. Haselmann et al. (2006) find that an improvement in the collateral regime is associated with higher loan growth for foreign-owned banks.[17] As before, countries in table 12 are categorized on the basis of change in the indicators in the years before 1998, with "high Δ" indicating that the indicator changed more than the median level of change (see table A2 for a summary of variables).[18]

Larger improvements in the Heritage Foundation indicator is associated with higher trend effects for foreign-owned banks while more change in the two measures from Haselmann et al. (2006) is associated with lower trend effects for foreign-owned banks. Because many of the models of foreign entry into banking focus on the amount of lending rather than on costs or profits, I also ran the model with banks' market share in terms of loans outstanding as a dependent variable. The results were essentially the same.

6. Discussion

Overall the results support the hypothesis that foreign acquisition leads to better performance of banks and that a higher degree of structural change is associated with larger benefits of foreign acquisition. These findings are consistent with a role of foreign acquirers as suppliers of banking skills that contribute to higher screening capacity. At the same time, we find little if any evidence in favor of a model that pictures foreign-owned banks as informationally challenged. Also, our results are not in line with a model in which credit constraints on the side of domestically owned banks are the primary explanation for a post-crisis surge in foreign acquisitions.

There are several ways in which the results could be further strengthened. For example, it would be useful to include banks from other regions in order to have more variation in structural change. As the econometric model includes a number of separate trends, it would also be useful to expand the length of the sample period. I am working to add additional ownership information and extend the sample to about ten years. This would also enable the implementation of more flexible tests to detect bias due to endogeneity in ownership (as in Brown et al. 2006). Such tests are especially important because the *Bankscope* data do not include many variables that can be

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[17] The creditor rights indicator in Haselmann et al. (2006) is composed of an indicator for the bankruptcy regime and an indicator for the regime for use and enforcement of collateral. I do not use the bankruptcy indicator because it does not change sufficiently to achieve a useful split between high change and low change countries.

[18] Using the current value of each of the indicators, or the change over the course of the sample period instead does not affect the result.

used as instruments for ownership. I tried several approaches to instrumental variables estimation, but the instruments were either too weak or did not pass exogeneity tests. Poghosyan and Boroviçka (2006) use a number of financial ratios as instruments for ownership. While these appear to pass the relevant tests several of the instrument, such as the cost-to-income ratio and net interest revenues, are themselves measures of performance. *A priori* this makes it difficult to believe that they are correlated with ownership but not with performance variables that are dependent variables.

In light of the literature on foreign entry into banking, one question that may be lingering is: does the divergence in performance between foreign-owned and domestically owned banks reflect cherry picking by the foreign-owned ones that crowds out the domestic ones? Several papers argue that foreign entry reduces profitability for domestic banks and raises their risk profile because foreign-owned banks cherry pick the best clients and crowd out the domestic ones (Dell'Ariccia and Marquez 2004; Detragiache et al. 2006; Sengupta 2006; Gormley 2008). Detragiache et al. (2006) find evidence in support of their model and Claessens et al. (2001) also find that foreign entry reduces profit margins for domestically owned banks. However, Mian (2006), who finds that foreign-owned banks avoid opaque clients, finds no evidence that domestic banks suffer lower returns as a result.

With regard to the CEE region, there is some evidence that cherry picking played a role in the market for corporate credit (Bonin et al. 1998). Yet overall, it appears that foreign ownership has contributed to the development of the credit market and provided more people with access to banking services in the CEE region. The Detragiache et al. model implies that foreign entry slows down the growth in financial depth. By contrast, Fries and Taci (2002) find that the presence of foreign banks in CEE countries has a beneficial and causal effect on credit growth of both domestic and foreign-owned banks. De Haas et al. (2007) show that foreign-owned banks actively contribute to the development of mortgage lending and do not lend less to SMEs. In some unreported and preliminary regressions, I did not find robust evidence that the presence of foreign banks affected the performance of domestically owned banks either way.

The model of Detragiache et al. (2006) as well as that of Sengupta (2007) or of Dell'Ariccia and Marquez (2004) implicitly or explicitly focus on greenfield entry rather than on foreign acquisitions. Several others have pointed out that there are important differences between greenfield and acquisitions in terms of their impact on competition (Claeys and Hainz 2007;

Lehner and Schnitzer 2008). In addition, the strategic objectives of the typical foreign-acquired bank are different from the objectives of a typical foreign greenfield bank. Greenfield entry makes sense if a bank wants to focus on large clients for whom a lot of hard information is available (Detragiache et al. 2006; Gormley 2008). However, following the acquisition of a bank with a large branch network in a country that is underbanked, it makes more sense to focus on an expansion of the client base to consumers and SMEs who were not using bank services before. This is an area for future research.

7. Conclusion

This paper develops a rationale for foreign acquisition of banks following structural economic change. We argued that structural change makes many of the skills of existing banks obsolete. Assuming that foreign-owned banks can provide access to resources in the form of knowledge, this leads to an increase in the value of a bank under foreign ownership as compared to its value under domestic ownership. As a result, foreign acquisitions become more likely and foreign-owned banks should outperform domestically owned ones. While the application in this paper is focused on the banking sector, the underlying principles – that a structural shock induces obsolescence of knowledge diminishing domestic ownership advantages as compared to foreign ownership advantages – are applicable to other industries. This opens the door for the analysis of the relationship between foreign acquisitions and economic conditions in the host country within a dynamic framework.

Table 1: Bank Ownership (by year and by country)

Year	Observations	Ownership				Changes in ownership	
		domestic private	state	foreign by acquisition	foreign greenfield	privatized	acquired by foreigners
1997	211	100	49	14	48	3	4
1998	211	88	48	21	54	4	9
1999	217	76	44	36	61	8	16
2000	220	72	38	49	61	7	15
2001	210	64	31	57	58	5	10
2002	212	61	22	67	62	8	11
2003	209	63	18	67	61	4	4
2004	155	43	9	57	46	2	3

Country	Observations	Ownership				Changes in ownership	
		domestic private	state	foreign by acquisition	foreign greenfield	privatized	acquired by foreigners
Bulgaria	163	45	35	42	41	6	8
Croatia	237	118	44	45	30	6	11
Czech Republic	142	22	26	33	61	5	7
Estonia	43	17	5	18	3	2	3
Hungary	181	41	7	48	85	2	5
Latvia	113	77	8	20	8	0	2
Lithuania	66	47	8	11	0	2	3
Poland	275	84	20	77	94	3	14
Romania	169	39	24	31	75	6	8
Slovakia	108	12	30	28	38	6	8
Slovenia	148	65	52	15	16	3	3

Table 2: Bank Size and Performance (by year and ownership)

Year	Observations	Assets	ROA	Cost / Assets	Expenditure / Income
		Median, USD mln	Median, %	Median, %	Median, %
A: Domestically Owned (state or private)					
1997	145	253	1.22	10.26	75.62
1998	135	311	0.82	12.31	83.71
1999	120	232	0.93	10.90	83.91
2000	108	201	0.92	10.39	86.37
2001	94	224	0.86	9.04	82.25
2002	83	217	1.15	8.16	77.53
2003	81	297	1.09	7.06	77.21
2004	52	585	1.20	6.13	78.12
B: Foreign-owned (acquisition or greenfield)					
1997	62	265	1.05	10.65	0.63
1998	75	325	1.04	11.59	0.74
1999	97	383	0.92	10.19	0.76
2000	109	473	1.18	9.60	0.76
2001	114	493	1.11	8.68	0.74
2002	128	584	1.10	7.59	0.73
2003	126	787	1.06	6.33	0.71
2004	102	1396	1.24	5.43	0.70
C: Ratio Foreign-owned / Domestically Owned					
1997		1.05	0.86	1.04	0.84
1998		1.04	1.27	0.94	0.88
1999		1.65	0.99	0.93	0.91
2000		2.35	1.29	0.92	0.88
2001		2.20	1.29	0.96	0.90
2002		2.69	0.96	0.93	0.94
2003		2.65	0.97	0.90	0.92
2004		2.39	1.04	0.88	0.89

Notes The USD value of assets is calculated using the exchange rate recorded in *Bankscope*. ROA is Return on Assets. Cost is calculated as interest plus operating expenditure, which includes personnel and administrative expenditures as well as loan-loss provisions and write-offs. Expenditure is operating expenditure and Income is total operating income which is net interest income plus net fee / commission income and net trading income. Source: Own calculations based on *Bankscope* data.

Table 3: Bank Ownership and Performance (median regression)

Dependent Variable:	log Assets	ROA	Cost / Assets	Expenditure / Income
Ownership				
Domestic Private	-1.264	0.200	-0.002	-0.057
	[0.161]***	[0.134]	[0.002]	[0.021]***
Foreign-owned by Acquisition	0.276	0.310	-0.008	-0.081
	[0.214]	[0.141]**	[0.003]***	[0.025]***
Foreign Greenfield	-1.315	0.440	-0.022	-0.162
	[0.182]***	[0.149]***	[0.003]***	[0.024]***
Observations	1631	1631	1631	1630
Test: Domestic Private = Foreign by Acquisition	0.00	0.30	0.00	0.24
Test: Domestic Private = Foreign Greenfield	0.68	0.03	0.00	0.00
Test: Foreign by Acquisition = Foreign Greenfield	0.00	0.25	0.00	0.00

Notes The excluded ownership category is state-owned. All regressions include country x year fixed effects. Bootstrapped standard errors in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%

Table 4: Ownership and Performance over Time

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent Variable:	ROA	ROA	ROA	ROA	ROA	ROA	Exp / Inc	Exp / Inc	Exp / Inc	Exp / Inc	Exp / Inc	Exp / Inc
Estimator:	OLS	OLS	OLS	FD	FD	FD	OLS	OLS	OLS	FD	FD	FD
Ownership												
Domestic Private	0.384	0.314	0.509	0.364	0.366	0.395	-0.108	-0.125	-0.124	-0.003	-0.003	0.000
	[0.267]	[0.339]	[0.295]*	[0.567]	[0.556]	[0.537]	[0.048]**	[0.059]**	[0.055]**	[0.098]	[0.096]	[0.092]
Foreign by Acquisition	0.034	0.027	0.183	-0.663	-0.902	-0.813	-0.086	-0.083	-0.070	0.152	0.185	0.176
	[0.275]	[0.282]	[0.265]	[0.534]	[0.527]*	[0.531]	[0.052]*	[0.057]	[0.053]	[0.096]	[0.094]*	[0.090]*
Foreign Greenfield	0.242	0.547	1.340				-0.161	-0.179	-0.241			
	[0.318]	[0.398]	[0.367]***				[0.056]***	[0.071]**	[0.068]***			
Ownership x Time												
Domestic Private		0.025	0.003		0.132	0.116		0.007	0.009		-0.020	-0.026
		[0.073]	[0.074]		[0.116]	[0.081]		[0.012]	[0.013]		[0.022]	[0.019]
Foreign by Acquisition		-0.003	-0.020		0.460	0.389		0.001	0.001		-0.068	-0.062
		[0.070]	[0.067]		[0.151]***	[0.141]***		[0.011]	[0.008]		[0.026]***	[0.024]**
Foreign Greenfield		-0.104	-0.223		0.393	0.180		0.007	0.020		-0.072	-0.054
		[0.090]	[0.080]***		[0.146]***	[0.104]*		[0.015]	[0.014]		[0.028]***	[0.023]**
Initial Performance (Dependent Variable)												
Performance in year 0			0.262						0.239			
			[0.078]***						[0.092]**			
Performance in year 0 x Time			-0.026			-0.156			-0.021			-0.174
			[0.020]			[0.014]***			[0.018]			[0.021]***

Continued next page

Table 4: Ownership and Performance over Time (continued)

Dependent Variable:	ROA	ROA	ROA	ROA	ROA	ROA	Exp / Inc	Exp / Inc	Exp / Inc	Exp / Inc	Exp / Inc	Exp / Inc
Estimator:	OLS	OLS	OLS	FD	FD	FD	OLS	OLS	OLS	FD	FD	FD
my Controls												
GDP per Capita	-0.063	-0.066	-0.079	0.019	0.005	0.003	-0.032	-0.033	-0.034	-0.024	-0.022	-0.020
(in thousands of USD)	[0.127]	[0.127]	[0.126]	[0.117]	[0.118]	[0.118]	[0.025]	[0.025]	[0.025]	[0.022]	[0.022]	[0.022]
Producer Prices (% Change)	-0.029	-0.030	-0.033	0.000	0.000	0.000	0.005	0.005	0.004	0.000	0.000	0.000
	[0.021]	[0.021]	[0.020]	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]	[0.003]	[0.000]	[0.000]	[0.000]
Lending Interest Rate	0.001	0.002	-0.010	-0.008	-0.012	-0.009	-0.001	-0.001	0.001	0.004	0.005	0.005
	[0.018]	[0.018]	[0.014]	[0.016]	[0.016]	[0.015]	[0.003]	[0.003]	[0.002]	[0.003]	[0.003]	[0.003]
GDP (% Real Growth)	0.018	0.019	0.003	0.012	0.008	0.013	-0.007	-0.007	-0.005	-0.003	-0.002	-0.003
	[0.034]	[0.034]	[0.036]	[0.029]	[0.030]	[0.030]	[0.006]	[0.006]	[0.006]	[0.005]	[0.005]	[0.005]
Bank Reform	1.144	1.152	1.194	1.879	1.893	1.865	-0.209	-0.208	-0.187	-0.338	-0.341	-0.338
	[0.534]**	[0.539]**	[0.569]**	[0.590]***	[0.588]***	[0.588]***	[0.094]**	[0.095]**	[0.092]**	[0.102]***	[0.102]***	[0.102]***
Constant	-1.839	-1.913	-2.480	-0.132	-0.373	-0.066	1.563	1.573	1.319	0.054	0.093	0.222
	[1.562]	[1.556]	[1.562]	[0.194]	[0.214]*	[0.250]	[0.261]***	[0.261]***	[0.277]***	[0.037]	[0.040]**	[0.046]***
Observations	1273	1273	1208	1188	1188	1188	1273	1273	1208	1188	1188	1188
Number of banks	232	232	232	231	231	231	232	232	232	231	231	231
R-squared	0.06	0.07	0.14	0.05	0.05	0.08	0.13	0.13	0.20	0.06	0.06	0.09

Notes ROA is Return on Assets. Exp / Inc is Operating Expenditure / Operating Income. Operating expenditure includes personnel and administrative expenditures as well as loan-loss provisions and write-offs, and operating income, which is net interest income plus net fee / commission income and net trading income. OLS is for ordinary least squares regression and FD stands for first differences. Ownership is defined as a dummy that equals 1 if a specific type of owner has control of a bank. The omitted ownership category is state-ownership. The Ownership x Time trends are defined as the ownership dummy times the years since 1997 or the years since foreign acquisition (in the case of foreign acquired banks). Initial ownership is defined as the value of the dependent variable in the first year a bank appears in the data (the first year is excluded from the regressions). Bank-level accounting data is from *Bankscope* and economy-level data comes from the *Economist Intelligence Unit* and the EBRD. Bank Reform is an EBRD indicator of progress with regard to liberalization of the banking sector as well as the modernization of the regulation for this sector and the extent to which banking services are available (theoretically it ranges from 1, for no progress, to 4.333, for convergence to advanced economy standards; in the data, the range is 2.333 to 4).
All regressions include country and year fixed effects and the OLS regressions also include a country specific trend. Robust standard errors, clustered by bank, in brackets.
* significant at 10%, ** significant at 5%, *** significant at 1%

Table 5: Ownership and Performance: Acquired vs. non-acquired banks

	(1)	(2)	(3)	(4)
Dependent Variable:	ROA	ROA	Exp / Inc	Exp / Inc
Banks Included:	All	Domestic	All	Domestic
Ownership				
Domestic Private - To be Foreign-owned	0.403	1.589	0.000	0.001
	[0.569]	[1.242]	[0.096]	[0.225]
Foreign by Acquisition	-0.818		0.177	
	[0.541]		[0.091]*	
Ownership x Time				
Domestic Private - To be Foreign-owned	-0.094	-0.067	0.005	-0.004
	[0.235]	[0.265]	[0.034]	[0.040]
Domestic Private - Remaining Domestic	0.072	0.071	-0.025	-0.027
	[0.057]	[0.067]	[0.013]*	[0.015]*
State-owned - To be Foreign-owned	-0.179	-0.088	0.012	0.005
	[0.196]	[0.187]	[0.045]	[0.047]
Foreign by Acquisition	0.328		-0.058	
	[0.105]***		[0.016]***	
Foreign Greenfield	0.114		-0.050	
	[0.077]		[0.016]***	
Observations	1188	583	1188	583
Number of banks	231	231	231	231
R-squared	0.08	0.10	0.10	0.12

Notes ROA is Return on Assets. Exp / Inc is Operating Expenditure / Operating Income.
Operating expenditure includes personnel and administrative expenditures as well as loan-loss
provisions and write-offs, and operating income, which is net interest income plus net fee /
commission income and net trading income. All equations are estimated in first differences.
Ownership is defined as a dummy that equals 1 if a specific type of owner has control of a bank.
The omitted ownership category is state-ownership. The Ownership x Time trends are defined as
the ownership dummy times the years since 1998 or the years since foreign acquisition (in the
case of foreign acquired banks).
All regressions include the economy controls reported in Table 4 as well as country and year
fixed effects. Robust standard errors, clustered by bank, in brackets. * significant at 10%, **
significant at 5%, *** significant at 1%

Table 6: Ownership and Performance: Initial Ownership

	ROA	Exp / Inc
	FD	FD
Ownership		
Domestic Private	0.266	0.033
	[0.655]	[0.105]
Foreign by Acquisition	-0.957	0.206
	[0.585]	[0.095]**
Ownership x Time		
Domestic Private	0.274	-0.066
	[0.227]	[0.036]*
Foreign by Acquisition	0.554	-0.097
	[0.193]***	[0.031]***
Foreign Greenfield	0.176	-0.053
	[0.104]*	[0.023]**
Initial Ownership x Time		
Initial Ownership: Domestic Private	-0.164	0.041
	[0.204]	[0.029]
Initial Ownership: Foreign by Acquisition	-0.342	0.067
	[0.188]*	[0.028]**
Observations	1188	1188
Number of banks	231	231
R-squared	0.08	0.10

Notes ROA is Return on Assets. Expenditure is operating expenditure which includes personnel and administrative expenditures as well as loan-loss provisions and write-offs, and Income is total operating income, which is net interest income plus net fee / commission income and net trading income. All regressions are estimated in First Differences. Ownership is defined as a dummy that equals 1 if a specific type of owner has control of a bank. The omitted ownership category is state-ownership. Initial Ownership is defined as a dummy that equals 1 if a bank was controlled by the state or domestic private owners in 1997. The (Initial) Ownership x Time trends are defined as the ownership dummy times the years since 1997 or the years since foreign acquisition (in the case of foreign acquired banks). All regressions include the controls reported in table 2 as well as country and year fixed effects. Robust standard errors, clustered by bank, in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%

Table 7: Ownership and Performance over Time: Subsamples

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable:	ROA	ROA	ROA	ROA	Exp / Inc	Exp / Inc	Exp / Inc	Exp / Inc
Subsample:	No Greenfield	No Greenfield & De Novo	Universal Cluster 1	Universal Cluster 4	No Greenfield	No Greenfield & De Novo	Universal Cluster 1	Universal Cluster 4
Ownership								
Domestic Private	0.312	0.352	-0.829	0.770	0.015	0.006	0.216	-0.125
	[0.547]	[0.568]	[0.818]	[0.679]	[0.095]	[0.096]	[0.096]**	[0.139]
Foreign by Acquisition	-1.160	-0.896	-1.655	-0.226	0.229	0.183	0.425	-0.012
	[0.553]**	[0.580]	[1.081]	[0.748]	[0.096]**	[0.096]*	[0.128]***	[0.147]
Ownership x Time								
Domestic Private	0.095	0.023	0.213	0.287	-0.021	-0.008	0.007	-0.040
	[0.084]	[0.096]	[0.248]	[0.169]*	[0.018]	[0.018]	[0.046]	[0.042]
Foreign by Acquisition	0.376	0.309	-0.254	0.847	-0.061	-0.048	0.013	-0.081
	[0.143]***	[0.137]**	[0.431]	[0.281]***	[0.025]**	[0.024]**	[0.059]	[0.055]
Foreign Greenfield			-0.269	0.288			0.026	-0.073
			[0.390]	[0.258]			[0.068]	[0.059]
Observations	878	709	278	478	878	709	278	478
Number of banks	167	141	92	141	167	141	92	141
R-squared	0.10	0.11	0.21	0.09	0.12	0.11	0.25	0.08

Notes ROA is Return on Assets. Exp / Inc is Operating Expenditure / Operating Income. Operating expenditure includes personnel and administrative expenditures as well as loan-loss provisions and write-offs, and operating income, which is net interest income plus net fee / commission income and net trading income. All models are estimated in first differences. Ownership is defined as a dummy that equals 1 if a specific type of owner has control of a bank. The omitted ownership category is state-ownership. The Ownership x Time trends are defined as the ownership dummy times the years since 1997 or the years since foreign acquisition (in the case of foreign acquired banks). The "No Greenfield" subsample excludes all foreign greenfield banks. The "Universal" clusters consist of banks grouped together using a clustering procedure on the basis of the ratios of deposits, loans, fixed assets and personnel expenses to total assets (See text, Appendix 1 and Table A1).

All regressions include the controls reported in Table 4 as well as country and year fixed effects. Robust standard errors, clustered by bank, in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%

Table 8 Clusters by Ownership

Cluster	Observations	Domestic Private	State	Privati-zations	Foreign-owned	Foreign acquisitions	Foreign Greenfield
1	388	154	85	18	86	27	63
	100%	*40%*	*22%*	*5%*	*22%*	*7%*	*16%*
2	328	79	31	2	74	7	144
	100%	*24%*	*9%*	*1%*	*23%*	*2%*	*44%*
3	255	58	25	1	31	5	141
	100%	*23%*	*10%*	*0%*	*12%*	*2%*	*55%*
4	622	270	108	20	167	32	77
	100%	*43%*	*17%*	*3%*	*27%*	*5%*	*12%*

Notes Clusters are formed using k-medians clustering on the basis of deposits, loans, fixed assets, overheads and fee / commission income to total assets (see text for a discussion of the clustering procedure)

Table 9 Bank Characteristics and Performance by Cluster

Panel A: Average and Medium Values by Cluster

Cluster	Observations	Assets (USD mln) Median	Deposits / Assets Median, %	Loans / Assets Median, %	Fixed Assets / Assets Median, %	Overheads / Assets Median, %	Fee Income / Assets Median, %	ROA Median, %	Cost / Assets Median, %	Expenditure / Income Median, %
1	388	421	76.26	31.47	3.86	4.26	1.61	1.11	8.50	77.27
2	328	348	49.24	67.81	2.34	3.25	1.27	1.33	8.25	70.73
3	255	265	30.04	37.46	2.19	3.21	0.75	0.73	8.84	76.47
4	622	469	68.87	53.86	4.11	4.20	1.73	1.11	9.30	77.83
		Mean	Mean, %	Mean, %	Mean, %	Mean, %	Mean, %	Mean, %	Mean, %	Mean, %
1	388	2078	73.89	29.27	6.19	6.03	2.39	0.89	12.03	91.67
2	328	1092	45.11	69.04	3.01	3.91	1.56	1.10	9.34	82.87
3	255	592	28.56	36.66	4.10	4.84	0.98	0.61	10.10	84.07
4	622	1605	68.11	54.14	5.24	4.99	2.07	0.92	10.88	83.74

Panel B: Median Regression of Characteristics on Cluster Dummies

	Assets (USD bln)	Deposits / Assets	Loans / Assets	Fixed Assets / Assets	Overheads / Assets	Fee Income / Assets	ROA	Cost / Assets	Expenditure / Income
Dummy: Cluster 2	-0.067	-0.269	0.364	-0.016	-0.01	-0.003	0.23	-0.003	-0.064
	[0.072]	[0.011]***	[0.009]***	[0.003]***	[0.002]***	[0.001]***	[0.104]**	[0.004]	[0.024]***
Dummy: Cluster 3	-0.156	-0.461	0.06	-0.017	-0.01	-0.009	-0.37	0.003	-0.008
	[0.059]***	[0.014]***	[0.012]***	[0.003]***	[0.003]***	[0.001]***	[0.120]***	[0.004]	[0.020]
Dummy: Cluster 4	0.049	-0.072	0.224	0.002	-0.001	0.001	0.01	0.008	0.006
	[0.063]	[0.007]***	[0.006]***	[0.003]	[0.002]	[0.001]	[0.079]	[0.004]**	[0.018]
Constant	0.421	0.761	0.315	0.039	0.043	0.016	1.1	0.085	0.773
	[0.051]***	[0.007]***	[0.005]***	[0.003]***	[0.002]***	[0.001]***	[0.065]***	[0.003]***	[0.015]***
Equality Tests (P-values)									
Test: Cluster 2 = Cluster 3	0.050	0.000	0.000	0.460	0.840	0.000	0.000	0.090	0.020
Test: Cluster 2 = Cluster 4	0.090	0.000	0.000	0.000	0.000	0.000	0.020	0.000	0.000
Test: Cluster 3 = Cluster 4	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.450
Observations	1593	1593	1593	1593	1593	1593	1593	1593	1592

Notes Coefficients represent the results of a median regression of cluster dummies on the dependent variable. Clusters are formed using k-medians clustering on the basis of deposits, loans, fixed assets, personnel expenses and fee / commission income to total assets (see text for a discussion of the clustering procedure). Standard errors in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%

Table 10: Ownership, Structural Change and Performance over Time

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:		ROA			Expenditure / Income	
Ownership						
Domestic Private	-0.346	0.622	-0.326	0.161	-0.031	0.158
	[0.882]	[0.540]	[0.888]	[0.150]	[0.093]	[0.150]
Foreign by Acquisition	-0.724	-0.545	-0.444	0.298	0.134	0.265
	[0.819]	[0.533]	[0.856]	[0.117]**	[0.091]	[0.119]**
Ownership x Time						
Domestic Private	0.127	-0.292	-0.284	-0.028	0.052	0.051
	[0.083]	[0.176]*	[0.174]	[0.019]	[0.044]	[0.044]
Foreign by Acquisition	0.352	-0.307	-0.361	-0.055	0.072	0.058
	[0.144]**	[0.265]	[0.255]	[0.025]**	[0.054]	[0.049]
Foreign Greenfield	0.171	-0.228	-0.230	-0.052	0.056	0.055
	[0.106]	[0.207]	[0.205]	[0.023]**	[0.048]	[0.047]
Ownership x Structural Change						
Domestic Private	0.024		0.023	-0.005		-0.005
	[0.022]		[0.022]	[0.004]		[0.004]
Foreign by Acquisition	0.005		-0.003	-0.004		-0.003
	[0.020]		[0.021]	[0.003]		[0.003]
Ownership x Time x Structural Change						
Domestic Private		0.011	0.011		-0.002	-0.002
		[0.005]**	[0.005]**		[0.001]*	[0.001]*
Foreign by Acquisition		0.018	0.020		-0.003	-0.003
		[0.008]**	[0.007]***		[0.002]**	[0.001]**
Foreign Greenfield		0.011	0.011		-0.003	-0.003
		[0.005]*	[0.005]**		[0.001]**	[0.001]**
Observations	1132	1132	1132	1132	1132	1132
Number of banks	221	221	221	221	221	221
R-squared	0.09	0.09	0.09	0.10	0.10	0.10

Notes ROA is Return on Assets. Exp / Inc is Operating Expenditure / Operating Income. Operating expenditure includes personnel and administrative expenditures as well as loan-loss provisions and write-offs, and operating income, which is net interest income plus net fee / commission income and net trading income. All models are estimated in first differences. Ownership is defined as a dummy that equals 1 if a specific type of owner has control of a bank. The omitted ownership category is state-ownership. The Ownership x Time trends are defined as the ownership dummy times the years since 1997 or the years since foreign acquisition (in the case of foreign acquired banks). Structural Change is measured as the average annual percentage-point changes in industry shares of workers between 1995 and 1998 (depending on the years available in the data, which come from the ILO).All regressions include the controls reported in table 2 as well as country and year fixed effects. Robust standard errors, clustered by bank, in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%

Table 11: Ownership and ROA: Countries With Low Structural Change vs. Countries With High Structural Change

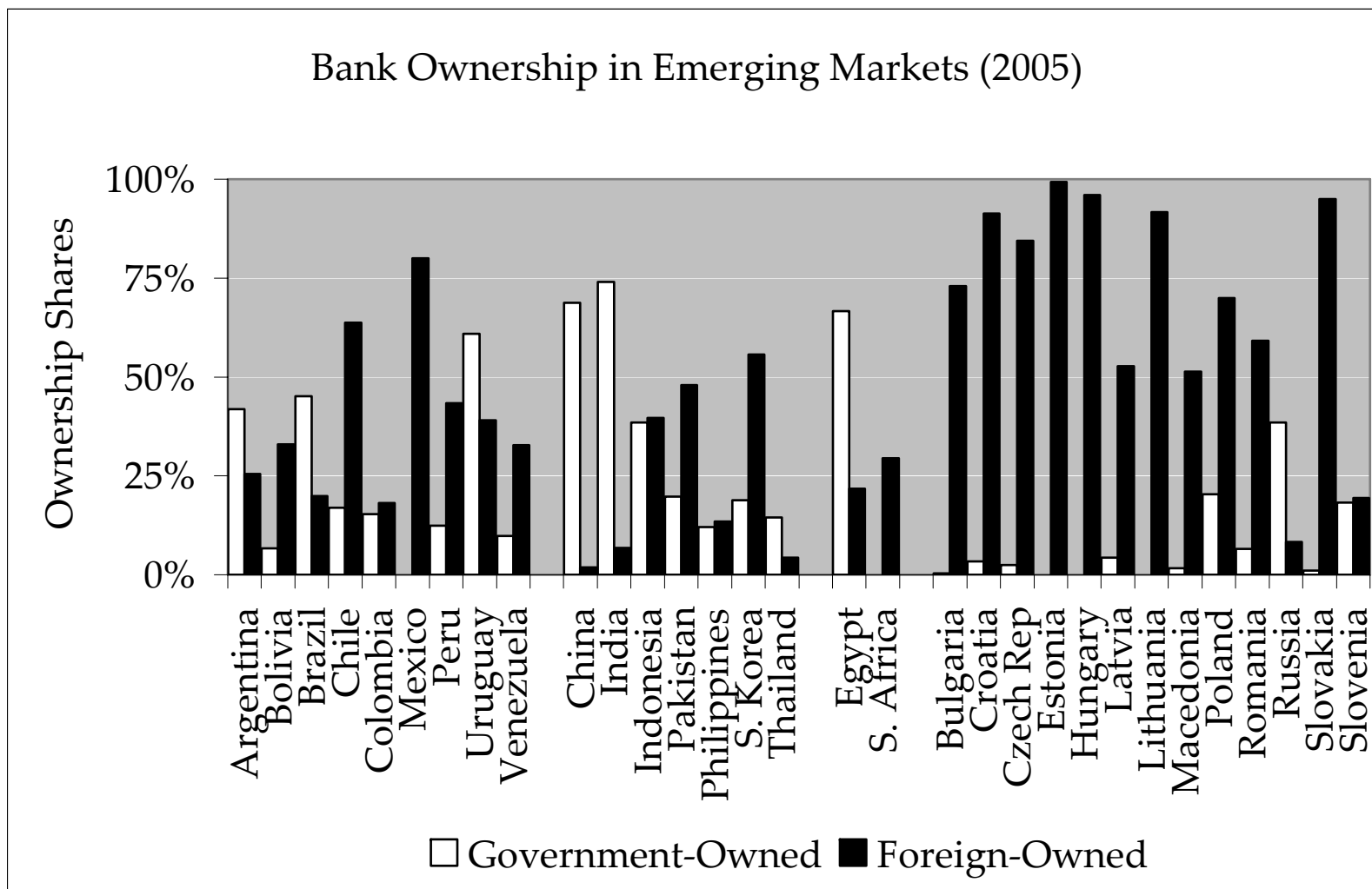|	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Measure of Structural Change:	Δexport shares (industry)		Δexport shares (country)		Δfirm shares (industry)		Δemployment shares (industry)		Δoutput shares (industry)		Δinvestment shares (industry)	
	low Δ	high Δ	low Δ	high Δ	low Δ	high Δ	low Δ	high Δ	low Δ	high Δ	low Δ	high Δ
Ownership												
Domestic Private	0.148	0.433	0.351	0.500	1.309	-0.613	0.089	0.598	-0.670	0.799	0.908	0.482
	[0.593]	[1.107]	[0.541]	[0.845]	[0.874]	[1.067]	[0.652]	[0.867]	[1.363]	[0.879]	[1.338]	[0.847]
Foreign by Acquisition	-0.617	-1.032	-0.068	-1.448	-0.072	-2.015	-0.724	-0.737	-1.014	-0.696	-0.142	-1.555
	[0.706]	[0.816]	[0.531]	[0.772]*	[0.756]	[1.257]	[0.704]	[0.759]	[1.628]	[0.763]	[1.097]	[1.059]
Ownership x Time												
Domestic Private	0.124	0.226	0.106	0.205	0.138	-0.001	0.081	0.208	0.209	0.079	0.083	0.003
	[0.101]	[0.147]	[0.099]	[0.144]	[0.150]	[0.206]	[0.118]	[0.116]*	[0.204]	[0.144]	[0.155]	[0.179]
Foreign by Acquisition	0.316	0.491	0.215	0.544	0.425	0.248	0.304	0.548	0.182	0.506	0.392	0.593
	[0.145]**	[0.264]*	[0.134]	[0.262]**	[0.235]*	[0.297]	[0.183]*	[0.213]**	[0.257]	[0.228]**	[0.280]	[0.301]*
Foreign Greenfield	0.190	0.153	0.156	0.161	0.168	0.021	0.194	0.235	0.035	0.180	0.145	0.128
	[0.109]*	[0.217]	[0.112]	[0.188]	[0.162]	[0.236]	[0.147]	[0.144]	[0.243]	[0.160]	[0.176]	[0.188]
Observations	756	432	678	510	474	291	565	623	350	530	378	257
Number of banks	152	79	138	93	94	53	111	120	65	104	79	46
R-squared	0.06	0.16	0.07	0.13	0.10	0.20	0.07	0.15	0.20	0.09	0.10	0.11

Notes ROA is Return on Assets. All models are estimated in first differences. Ownership is defined as a dummy that equals 1 if a specific type of owner has control of a bank. The omitted ownership category is state-ownership. The Ownership x Time trends are defined as the ownership dummy times the years since 1997 or the years since foreign acquisition (in the case of foreign acquired banks). Countries with high structural change are those countries where a given measure of structural change is above the median, countries with low structural change are all others. The measures of Structural Change reflect the change in industry shares of exports, the total number of firms in a country, employment, output or value added. All variables are calculated as average change in the percentage share of 3-digit industries in a country's economy over the two to three years before 1998 (employment shares are based on 2-digit industries). All regressions include the controls reported in table 2 as well as country and year fixed effects. Robust standard errors, clustered by bank, in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%

Table 12: Ownership and ROA: Countries With Low Structural Change vs. Countries With High Structural Change

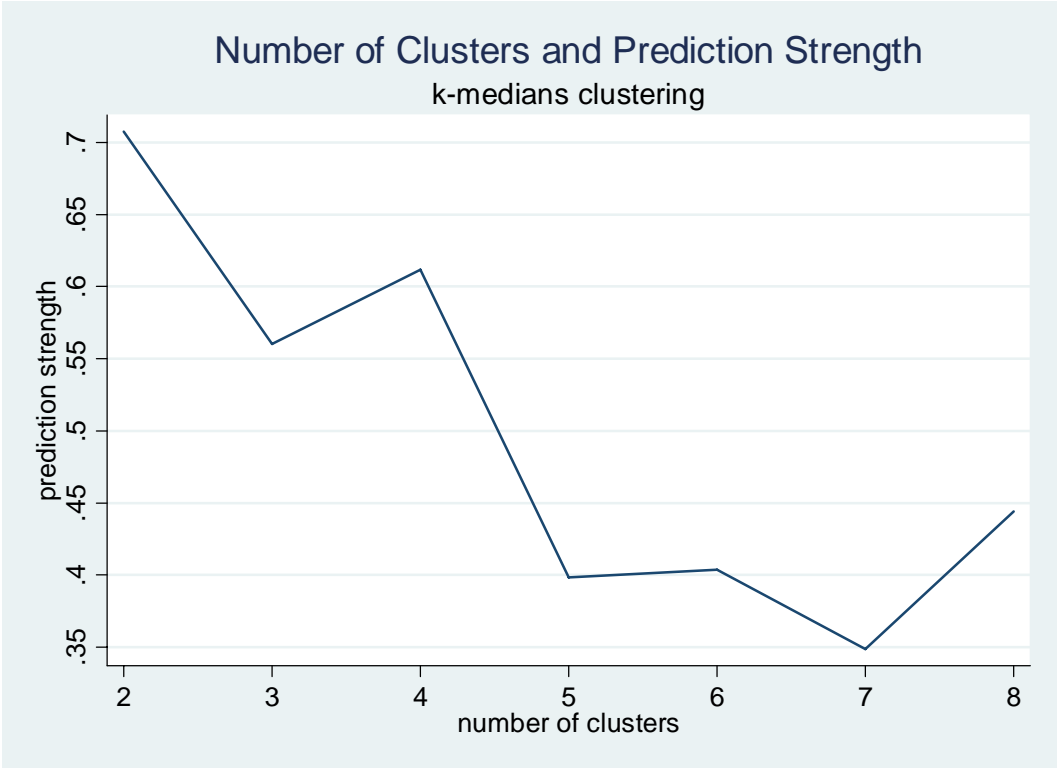| Measure of Structural Change:	Δ Economic Freedom (Heritage)		Δ Creditor Rights (HPV)		Δ Collateral Regime (HPV)	
	low Δ	high Δ	low Δ	high Δ	low Δ	high Δ
Ownership						
Domestic Private	0.774	0.112	0.550	0.241	0.293	0.473
	[0.896]	[0.741]	[0.838]	[0.633]	[0.708]	[0.830]
Foreign by Acquisition	-0.462	-0.761	-0.879	-0.879	-0.514	-0.749
	[0.946]	[0.596]	[1.439]	[0.550]	[0.682]	[0.759]
Ownership x Time						
Domestic Private	0.020	0.225	0.195	0.060	0.174	0.058
	[0.150]	[0.099]**	[0.135]	[0.091]	[0.100]*	[0.125]
Foreign by Acquisition	0.271	0.539	0.582	0.338	0.503	0.329
	[0.181]	[0.230]**	[0.331]*	[0.157]**	[0.233]**	[0.160]**
Foreign Greenfield	0.179	0.091	0.292	0.131	0.156	0.223
	[0.143]	[0.156]	[0.208]	[0.120]	[0.148]	[0.145]
Observations	571	617	257	931	569	619
Number of banks	112	119	49	182	114	117
R-squared	0.09	0.10	0.05	0.10	0.05	0.19

Notes ROA is Return on Assets. All models are estimated in first differences. Ownership is defined as a dummy that equals 1 if a specific type of owner has control of a bank. The omitted ownership category is state-ownership. The Ownership x Time trends are defined as the ownership dummy times the years since 1997 or the years since foreign acquisition (in the case of foreign acquired banks). Countries with high structural change (high Δ) are those countries where a given measure of structural change is above the median, countries with low structural change are all others. The measures of Structural Change reflect the change in the year immediately preceding 1998 in: the Economic Freedom Score and the Property Rights Score from the Heritage Foundation Index of Economic Freedom, the Creditor Rights Index and the Index for the Collateral Regime from Haselmann, Pistor and Vig (2006) All regressions include the controls reported in table 2 as well as country and year fixed effects. Robust standard errors, clustered by bank, in brackets. * significant at 10%, ** significant at 5%, *** significant at 1%

Figure 1

Bank Ownership in Emerging Markets (2005)

Source: World Bank Survey of Bank Regulation and Supervision. http://go.worldbank.org/SCH5XTN5U0

Figure 2

Number of Clusters and Prediction Strength
k-medians clustering

Note See text and Appendix 1

Clustering procedure

Cluster analysis is a non-parametric method that is used to identify groups of similar observations in data sets (Kaufman and Rousseeuw 1990)..

In the context of the banking industry Amel and Rhoades (1988) use cluster analysis to categorize banks into "strategic groups" – groups of banks with a similar business strategy. Similarities in the business strategy are operationalized as similarities in the composition of the balance sheet. Brown and Glennon (2000) use clustering in a study of bank-efficiency and also form clusters on the basis of balance sheet items. Their objective – similar to mine – is to make sure that banks in each cluster are expected to have the same cost-function.

Implementation of a clustering procedure involves three choices: (i) the variables used to measure similarity between observations, (ii) the clustering method and (iii) the number of clusters to be identified.

With regard to the first issue, I used five financial ratios that characterize banks in a way that is related to the theoretical approach in this paper. In particular, I have argued that universal banks with large branch networks are different from other banks. With large branch networks, I expect these banks to have easy access to deposits as well as relatively high fixed assets and overheads (including personnel expenses). Because retail customers make relatively small deposits and borrow small amounts, retail business will be associated with a relatively high number of staff per unit of sales. In addition to these variables I use banks' lending and ability to generate fee income as clustering variables. I don't have strong priors as to whether universal banks lend more or less or have more fee income, but lending is obviously an important variable and fee income has been mentioned by others as an important distinguishing characteristic of banks (Bonin et al. 2005b). In order to make variables comparable across banks and countries, I normalize all variables by assets. Hence, I use the ratio of loans, deposits, fixed assets, overheads and fee income to assets as clustering variables. After normalizing all variables by assets, I calculate z-scores of the ratios for each of the bank, i.e. I subtract the mean of each ratio and divide by the standard deviation. The normalization serves to ensure that all variables have the same scale such that none of them dominates the distance between variables in the clustering algorithm.

As to the clustering method, I chose so-called k-medians clustering (also called "partitioning around medoids" (Kaufman and Rousseeuw 1990)). This method is similar to the more common k-means clustering method. The objective is to maximize the difference between clusters (or rather the medoids of each cluster) while minimizing the differences between observations within a cluster. The difference between k-medians and k-means clustering is that k-medians is based on the absolute distance between observations whereas k-means clustering is based on the Euclidean distance. As a result, k-medians clustering is less sensitive to the influence of extreme observations.

Both k-medians and k-means clustering are non-hierarchical methods, which means that the algorithms "correct mistakes". With a hierarchical clustering method one initially assigns observations to clusters on the basis of one variable, say the deposits-to-assets ratio, and then moves on to the next clustering variable. However, two observations that are assigned to different clusters on the basis of the deposits-to-assets ratio can never end up in the same cluster even if they are "closer" on average than two variables that had slightly more similar deposit-to-

asset ratios. The k-medians algorithm initially picks k medoids randomly, assigns observations to clusters based on their distance to the medoids, calculates the medoids of each of the resulting clusters and then reassigns observations on the basis of the new medoids until some criterion function has been satisfied.

In and of itself, the k-medians algorithm produces as many clusters as specified, but does not determine how many clusters there are in the data. To establish the number of clusters in the data, I rely on the concept of "prediction strength" developed by Tibshirani and Walther (2005). Prediction strength is calculated in four steps. First, we randomly select half of the observations and perform k-medians clustering on this half. Second, we use the medoids from the first half to form clusters in the remaining half of the observations (i.e. we do k-medians clustering with pre-determined medoids rather than letting the data determine the medoids). Third, we perform k-medians clustering on the same observations without pre-determined medoids. Fourth, we calculate prediction strength on the basis of the proportion of pairs of observations in the second half of the data that are in the same cluster both with and without pre-determined medoids. If the number of clusters k is greater than the true number of clusters, the "extra" medoids formed by the data are likely to be different from one half of the observations to the other. This lowers prediction strength. Therefore, the right number of clusters is the maximum number of clusters for which prediction strength is reasonably high (Tibshirani and Walther 2005). Figure 2 shows that this number is 4 in our data set.

In addition to the information in Tables 8 and 9, Table A1 gives more detailed information on the distribution of observations over the clusters. The table shows that, banks from all countries are represented in clusters 1 and 4 and have a reasonably good distribution over forms of ownership with the exception of the three Baltic countries and Slovenia. As we would expect from Table 8, the distribution of observations is substantially less well distributed for clusters 2 and 3. For example, we have a relatively high number of observations from the Czech Republic in cluster 3, while cluster 2 has a high number of observations from Croatia and Hungary.

(Hymer 1976 (1960))
(Desai, Foley and Forbes 2007)
(Brown and Dinç 2005)
(Siegel 2007)
(Bogaard and Svejnar 2008)

Table A1: Clusters by Country and by Ownership

		Bulgaria	Croatia	Czech Rep	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Slovakia	Slovenia
Cluster 1												
Observations		62	21	47	5	25	64	15	31	67	35	16
Of which:	Domestic Private	9	12	12	5	12	56	15	13	15	4	1
	State	20	5	8	0	6	5	0	6	16	6	13
	Privatizations	4	2	4	0	0	0	0	2	2	4	0
	Foreign-owned	20	4	24	0	5	3	0	7	10	13	0
	Foreign acquisitions	6	2	5	0	1	1	0	3	5	4	0
	Foreign Greenfield	13	0	3	0	2	0	0	5	26	12	2
Cluster 2												
Observations		23	78	17	14	58	21	5	50	15	18	29
Of which:	Domestic Private	4	31	1	0	11	8	0	8	0	3	13
	State	1	15	2	4	0	0	0	0	1	7	1
	Privatizations	0	0	0	2	0	0	0	0	0	0	0
	Foreign-owned	5	11	1	10	12	8	5	15	1	0	6
	Foreign acquisitions	0	1	0	2	0	1	0	3	0	0	0
	Foreign Greenfield	13	21	13	0	35	5	0	27	13	8	9
Cluster 3												
Observations		20	16	51	7	25	10	3	80	22	15	6
Of which:	Domestic Private	6	2	8	4	1	6	3	22	3	2	1
	State	5	5	5	0	0	0	0	5	1	4	0
	Privatizations	0	0	0	0	0	0	0	0	0	1	0
	Foreign-owned	3	5	3	0	5	1	0	7	4	2	1
	Foreign acquisitions	1	1	1	0	0	0	0	1	0	1	0
	Foreign Greenfield	6	4	35	3	19	3	0	46	14	7	4
Cluster 4												
Observations		56	121	27	17	37	18	43	114	65	27	97
Of which:	Domestic Private	26	72	1	8	12	7	29	41	21	3	50
	State	9	19	11	1	1	3	8	9	6	3	38
	Privatizations	2	4	1	0	2	0	2	1	4	1	3
	Foreign-owned	14	25	5	8	16	8	6	48	16	13	8
	Foreign acquisitions	1	7	1	1	3	0	3	7	3	3	3
	Foreign Greenfield	7	5	10	0	8	0	0	16	22	8	1

Notes Clusters are formed using k-medians clustering on the basis of deposits, loans, fixed assets, personnel expenses and fee / commission income to total assets (see text for a discussion of the clustering procedure)

Table A2: Summary of Key variables

A: baselime model	Observations	Mean	Standard Deviation
Return on Assets (%)	1631	0.907	2.435
Expenditure-to-income ratio (%)	1630	0.854	0.528
GDP per Capita (USD)	1631	4965	2548
GDP Growth (Real, %)	1631	4.08	2.75
Producer Prices (Annual % Change)	1631	15.60	83.18
Lending Interest Rate	1458	13.47	13.38
Transition Indicator (Bank Reform)	1631	3.26	0.42

B: Structural Change Indicators

country	Employment Shares	Export Shares (Industry)	Export Shares (Country)	Firms (Industry)	Output (Industry)	Investment (Industry)	Index of Economic Freedom	Creditor Rights	Collateral Regime
Bulgaria	9.6%	39.1%	26.3%	7.5%	13.0%	52.1%	-3	2	2
Croatia	19.8%	24.9%	12.4%				4	2	0
Czech Republic	25.7%	20.1%	9.5%	9.7%	11.6%	23.3%	0	0	0
Estonia	89.6%	36.9%	15.4%	7.5%	11.7%		7	2	2
Hungary	33.4%	26.8%	13.3%		10.7%		0	2	2
Latvia	35.9%	41.1%	22.2%	9.3%	11.5%		8	1	0
Lithuania		33.4%	21.6%	16.9%	15.0%	60.7%	10	2	2
Poland	39.9%	20.9%	13.4%	7.6%	21.4%	30.4%	1	0	0
Romania	49.4%	29.5%	17.9%	7.2%	12.4%	14.0%	8	2	0
Slovakia	43.9%	25.4%	14.8%	11.3%	11.4%	34.3%	0	0	0
Slovenia	58.5%	17.2%	10.5%				10	0	0

Notes Return on Assets and the Expenditure-to-Income ratio are from *Bankscope*. The Economy level controls (GDP per capita, GDP growth Propducer Prices, Lending Interest and the Transition Indicator for Bank reform are all from the Economist Intelligence Unit (except for the transition indicator which is from the EBRD). The indicators of structural change are measured at the country level. The industry (and country) shares of employment, exports, firms, investments and outputs are calculated as the absolute value of changes in the industry shares of each of the variables over the years 1995 to 1998. Employment shares are calculated from ILO data, the export shares from the Feenstra / NBER data and the firm, output and investment shares from the UNIDO Industrial Statistics Database. Changes in the Heritage Foundation's index of economic freedom reflect changes over the 1996 to 1998 period (higher score is more freedom). The indicators for creditor rights and the collateral regime are from Haselmann, Pisto and Vig (2006). The numbers in the table reflect increases in the scores over the period 1994 to 1997.

References

Abarbanell, J. S. and J. P. Bonin (1997). "Bank Privatization in Poland: The Case of Bank Slaski." Journal of Comparative Economics **25**(1): 31-61.

Berger, A. N. and L. J. Mester (1997). "Inside the Black Box: What Explains Differences in the Efficiencies of Financial Institutions?" Journal of Banking & Finance **21**(7): 895-947.

Bertrand, M., E. Duflo and S. Mullainathan (2004). "How Much Should We Trust Differences-in-Differences Estimates?" Quarterly Journal Of Economics **119**(1): 249-275.

Blazejewski, S. and W. Dorow (2003). "Managing Organizational Politics for Radical Change: The Case of Beiersdorf-Lechia S.A., Poznan." Journal of World Business **38**(3): 204.

Bogaard, H. (2008). Economic Transformation, Foreign Acquisition of Banks and Lending, University of Michigan.

Bogaard, H. and J. Svejnar (2008). Post-Acquisition Restructuring, Hrm Policies and Performance: Insider Econometrics in a Multi-Unit Firm, University of Michigan.

Bokros, L. (2001). A Perspective on Financial Sector Development in Central and Eastern Europe. Financial Transition in Europe and Central Asia. A. Fleming, L. Bokros and C. Votava**:** 13-27.

Bonin, J. P., I. Hasan and P. Wachtel (2005a). "Bank Performance, Efficiency and Ownership in Transition Countries." Journal of Banking & Finance **29**: 31--53.

Bonin, J. P., I. Hasan and P. Wachtel (2005b). "Privatization Matters: Bank Efficiency in Transition Countries." Journal of Banking & Finance **29**(8-9): 2155.

Bonin, J. P., K. Mizsei, I. Székely and P. Wachtel (1998). Banking in Transition Economies, Developing Market Oriented Banking Sectors in Eastern Europe. Cheltenham, UK, Northampton, MA, USA, Edward Elgar.

Broecker, T. (1990). "Credit-Worthiness Tests and Interbank Competition." Econometrica **58**(2): 429-452.

Brown, C. O. and I. S. Dinç (2005). "The Politics of Bank Failures: Evidence from Emerging Markets." Quarterly Journal of Economics **120**(4): 1413.

Brown, J. D., J. S. Earle and A. Telegdy (2006). "The Productivity Effects of Privatization: Longitudinal Estimates from Hungary, Romania, Russia, and Ukraine." Journal Of Political Economy **114**(1): 61-99.

Buch, C. M. (1997). "Opening up for Foreign Banks: How Central and Eastern Europe Can Benefit." Economics Of Transition **5**(2): 339-366.

Buch, C. M. and G. DeLong (2004). "Cross-Border Bank Mergers: What Lures the Rare Animal?" Journal Of Banking & Finance **28**(9): 2077-2102.

Claessens, S., A. Demirguc-Kunt and H. Huizinga (2001). "How Does Foreign Entry Affect Domestic Banking Markets?" Journal of Banking & Finance **25**(5): 891--911.

Claeys, S. and C. Hainz (2007). Acquisition Versus Greenfield: The Impact of the Mode of Foreign Bank Entry on Information and Bank Lending Rates, SSRN.

Cottarelli, C., G. Dell'Ariccia and I. Vladkova-Hollar (2005). "Early Birds, Late Risers, and Sleeping Beauties: Bank Credit Growth to the Private Sector in Central and Eastern Europe and in the Balkans." Journal Of Banking & Finance **29**(1): 83-104.

De Haas, R. and I. Naaborg (2005). Does Foreign Bank Entry Reduce Small Firms' Access to Credit? Evidence from European Transition Economies, SSRN.

de Haas, R. and I. Naaborg (2006). "Foreign Banks in Transition Countries: To Whom Do They Lend and How Are They Financed?" Financial Markets, Institutions & Instruments **15**(4): 159.

Dell'Ariccia, G. and R. Marquez (2004). "Information and Bank Credit Allocation." Journal Of Financial Economics **72**(1): 185-214.

Desai, M. A., C. F. Foley and K. J. Forbes (2007). "Financial Constraints and Growth: Multinational and Local Firm Responses to Currency Depreciations." Rev. Financ. Stud.: 017.

Detragiache, E., T. Tressel and P. Gupta (2006). Foreign Banks in Poor Countries: Theory and Evidence, SSRN.

Djankov, S. and P. Murrell (2002). "Enterprise Restructuring in Transition: A Quantitative Survey." Journal of economic literature **XL**(September 2002): 739-792.

Drees, B. and C. Pazarbasiog1o (1995). The Nordic Banking Crises: Pitfalls in Financial Liberalization?, SSRN.

Filatotchev, I., N. Dyomina, M. Wright and T. Buck (2001). "Effects of Post-Privatization Governance and Strategies on Export Intensity in the Former Soviet Union." Journal Of International Business Studies **32**(4): 853.

Filatotchev, I., M. Wright, K. Uhlenbruck, L. Tihanyi and R. E. Hoskisson (2003). "Governance, Organizational Capabilities, and Restructuring in Transition Economies." Journal of World Business **38**(4): 331.

Focarelli, D. and A. F. Pozzolo (2005). "Where Do Banks Expand Abroad? An Empirical Analysis." Journal of Business **78**(6): 2435.

Focarelli, D. and A. F. Pozzolo (2008). "Cross-Border M&as in the Financial Sector: Is Banking Different from Insurance?" Journal Of Banking & Finance **32**(1): 15-29.

Fries, S. and A. Taci (2005). "Cost Efficiency of Banks in Transition: Evidence from 289 Banks in 15 Post-Communist Countries." Journal of Banking & Finance **29**(1): 55--81.

Frydman, R., C. Gray, M. Hessel and A. Rapaczynski (1999). "When Does Privatization Work? The Impact of Private Ownership on Corporate Performance in the Transition Economies." Quarterly Journal Of Economics **114**(4): 1153-1191.

Gleason, K., J. E. McNulty and A. K. Pennathur (2005). "Returns to Acquirers of Privatizing Financial Services Firms: An International Examination." Journal Of Banking & Finance **29**(8-9): 2043-2065.

Goldsmith, C. and B. Cerni Slovenia's Communist Past Shadows Its Capitalist Present March 29, 2007

Gormley, T. A. (2008). Costly Information, Foreign Entry, and Credit Access, SSRN.

Grigorian, D. A. and V. Manole (2002). Determinants of Commercial Bank Performance in Transition: An Application of Data Envelopment Analysis, IMF**:** 28.

Gruben, W. C. and R. P. McComb (2003). "Privatization, Competition, and Supercompetition in the Mexican Commercial Banking System." Journal of Banking & Finance **27**(2): 229.

Guillén, M. F. and A. E. Tschoegl (2000). "The Internationalization of Retail Banking: The Case of Spanish Banks in Latin America." Transnational Corporations **9**(3): 63-97.

Haber, S. (2005). "Mexico's Experiments with Bank Privatization and Liberalization, 1991-2003." Journal Of Banking & Finance **29**(8-9): 2325-2353.

Hanousek, J., E. Kocenda and J. Svejnar (2007). "Origin and Concentration - Corporate Ownership, Control and Performance in Firms after Privatization." Economics Of Transition **15**(1): 1-31.

Hasan, I. and K. Marton (2003). "Development and Efficiency of the Banking Sector in a Transitional Economy: Hungarian Experience." Journal of Banking & Finance **27**(12): 2249.

Haselmann, R. F. (2006). "Strategies of Foreign Banks in Transition Economies." Emerging markets review **7**(4): 283-299.

Haselmann, R. F., K. Pistor and V. Vig (2006). How Law Affects Lending, SSRN.

Heckman, J. J., H. Ichimura and P. E. Todd (1997). "Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme." Review Of Economic Studies **64**(4): 605-654.

Henisz, W. J. (2000). "The Institutional Environment for Multinational Investment." Journal Of Law Economics & Organization **16**(2): 334-364.

Hymer, S. (1976 (1960)). The International Operations of National Firms: A Study of Direct Investment. Cambridge, MA, MIT Press.

Javorcik, B. S. (2004). "The Composition of Foreign Direct Investment and Protection of Intellectual Property Rights: Evidence from Transition Economies." European Economic Review **48**(1): 39-62.

Jotev, P. (2001). "Financial Sector Restructuring in Bulgaria, 1997-2001." Financial Transition In Europe And Central Asia: 73-76.

Kaufman, L. and P. J. Rousseeuw (1990). Finding Groups in Data: An Introduction to Cluster Analysis. New York, Wiley Interscience.

Kogut, B. and U. Zander (1993). "Knowledge of the Firm and the Evolutionary-Theory of the Multinational-Corporation." Journal of International Business Studies **24**(4): 625-645.

Kraft, E., R. Hofler and J. Payne (2006). "Privatization, Foreign Bank Entry and Bank Efficiency in Croatia: A Fourier-Flexible Function Stochastic Cost Frontier Analysis." Applied Economics **38**(17): 2075-2088.

Kraft, E. and D. Tirtiroglu (1998). "Bank Efficiency in Croatia: A Stochastic-Frontier Analysis." Journal of Comparative Economics **26**(2): 282.

Lanine, G. and R. V. Vennet (2007). "Microeconomic Determinants of Acquisitions of Eastern European Banks by Western European Banks." Economics Of Transition **15**(2): 285-308.

Lehner, M. and M. Schnitzer (2008). "Entry of Foreign Banks and Their Impact on Host Countries." Journal of Comparative Economics **36**(3): 430-452.

Majnoni, G., R. Shankar and E. Varhegyi (2003). The Dynamics of Foreign Bank Ownership: Evidence from Hungary, SSRN.

Maurer, M. C. R. (2008). Foreign Bank Entry, Institutional Development and Credit Access: Firm-Level Evidence from 22 Transition Countries, SSRN.

Meyer, K. and I. Bjerg Moller (1998). "Managing Deep Restructuring:: Danish Experiences in Eastern Germany." European Management Journal **16**(4): 411.

Mian, A. (2006). "Distance Constraints: The Limits of Foreign Lending in Poor Economies." Journal Of Finance **61**(3): 1465-1505.

Micco, A., U. Panizza and M. Yanez (2007). "Bank Ownership and Performance. Does Politics Matter?" Journal Of Banking & Finance **31**(1): 219-241.

Nikiel, E. M. and T. P. Opiela (2002). "Customer Type and Bank Efficiency in Poland: Implications for Emerging Market Banking." Contemporary Economic Policy **20**: 255--271.

Perez-Batres, L. A. and L. Eden (2008). "Is There a Liability of Localness? How Emerging Market Firms Respond to Regulatory Punctuations." Journal of International Management **14**(3): 232.

Poghosyan, T. and J. Borovicka (2006). Banking Effciency and Foreign Ownership in Transition: Is There an Evidence of A "Cream-Skimming" Effect?, CERGE-EI, Prague**:** 35.

Sengupta, R. (2006). "Foreign Entry and Bank Competition." Journal of Financial Economics (JFE), Forthcoming.

Sengupta, R. (2007). "Foreign Entry and Bank Competition." Journal of Financial Economics **84**(2): 502.

Siegel, J. (2007). "Contingent Political Capital and International Alliances: Evidence from South Korea." Administrative Science Quarterly **52**(4): 621.

Spence, A. M. (1979). "Investment Strategy and Growth in a New Market." Bell Journal Of Economics **10**(1): 1-19.

Stiglitz, J. E. and A. Weiss (1981). "Credit Rationing in Markets with Imperfect Information." American Economic Review **71**(3): 393-410.

Tibshirani, R. and G. Walther (2005). "Cluster Validation by Prediction Strength." Journal Of Computational And Graphical Statistics **14**(3): 511-528.

Tschoegl, A. E. (1987). "International Retail Banking as a Strategy - an Assessment." Journal Of International Business Studies **18**(2): 67-88.

Tschoegl, A. E. (2005). Financial Crises and the Presence of Foreign Banks. Systemic Financial Crises; Containment and Resolution. P. Honohan and L. Laeven. New York, Cambridge University Press**:** 197-231.

von Thadden, E. L. (2002). "An Incentive Problem in the Dynamic Theory of Banking." Journal Of Mathematical Economics **38**(1-2): 271-292.

Wheeler, D. and A. Mody (1992). "International Investment Location Decision - the Case of United-States Firms." Journal Of International Economics **33**(1-2): 57-76.

Yildirim, H. S. and G. C. Philippatos (2007). "Efficiency of Banks: Recent Evidence from the Transition Economies of Europe, 1993-2000." European Journal of Finance **13**(2): 123--143.

Zaheer, S. (1995). "Overcoming the Liability of Foreignness." Academy of Management Journal **38**(2): 341-363.

Zaheer, S. and E. Mosakowski (1997). "The Dynamics of the Liability of Foreignness: A Global Study of Survival in Financial Services." Strategic Management Journal **18**(6): 439-463.