

# Bank Ownership and Loan Growth in Eastern Europe: The Impact of the Financial Crisis

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## Introduction

In the 1990s banking in Eastern Europe went through a period of privatization during which foreign participation in banking in the region rose significantly.<sup>1</sup> Examining this transition, a large body of research has sought to investigate the impact of bank privatization and foreign ownership. Past research suggests that bank privatization is associated with higher bank efficiency. Furthermore, research has suggested that foreign-owned banks are more efficient and provide better service than domestic banks.<sup>2</sup>

However, analyses on bank lending patterns during the global financial crisis suggest that foreign banks had significantly lower loan growth than both domestic private banks and public banks during the financial crisis (specifically during 2008 and 2009).<sup>3</sup> This result calls into question the robustness of previous conclusions about privatization and foreign ownership.

Our research investigates this relationship between bank ownership and lending during the financial crisis in Eastern Europe with emphasis on privately owned banks. Specifically, we add a new dimension to the research by attempting to account for the actions of six large multinational European banks that are prevalent in these countries (“the Big Six”).

## Data

Our dataset contains bank level and country level data on banks from 2004 to 2010 in eight Eastern European countries: Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia, and Slovenia. Our country level data come from Eurostat while our bank level data come from Bankscope. Our dataset contains 256 banks with 1003 observations from which we extract 216 banks with 868 observations. For our analyses we exclude a small number of public banks and branches as well as financial entities that differ markedly from deposit taking banks (such as car financing companies, building societies, and mortgage banks).

## Methods

In order to specify our model we recreated the results from Cull and Martinez Peria (2013). These results however only include data up to 2009. We also examined the same model after adding in newly available data on 2010 and found similar results.

Our model is based on that of Cull and Martinez Peria (2013) with loan growth as our dependent variable. After restructuring the ownership variable into three categories (Domestic<sup>a</sup>, Other Foreign, or Big Six) our main explanatory variables are ownership dummy variables and crisis year (2008, 2009, and 2010) dummy variables. Our model also includes ownership crisis-year interactions, bank characteristics, bank characteristic-year interactions, and country fixed effects. We also add in GDP growth in order to examine a demand effect. Our model is a pooled OLS regression with clustered robust standard errors of the following equation:

$$\Delta L_{i,t,j} = \beta_1 F_{i,t,j} + \beta_2 S_{i,t,j} + \beta_3 GDP_{t,j} + \beta_4 2008_t + \beta_5 2009_t + \beta_6 2010_t + \beta_7 (F_{i,t,j} * 2008_t) + \beta_8 (S_{i,t,j} * 2008_t) + \beta_9 (F_{i,t,j} * 2009_t) + \beta_{10} (S_{i,t,j} * 2009_t) + \beta_{11} (F_{i,t,j} * 2010_t) + \beta_{12} (S_{i,t,j} * 2010_t) + X_{i,t-1,j} + \alpha_j + \varepsilon_{i,t,j}$$

Where  $\Delta L_{i,t,j}$  : loan growth for bank  $i$  at time  $t$  in country  $j$

$F_{i,t,j}$  and  $S_{i,t,j}$  : ownership dummy variables that take the value 1 for an “Other Foreign” or “Big Six” bank respectively and takes the value 0 otherwise

$GDP_{t,j}$ : GDP growth in country  $j$  at time  $t$

$2008_t$ ,  $2009_t$ , and  $2010_t$ : Crisis Year dummies, take the value 1 when year is 2008, 2009, or 2010 respectively, 0 otherwise

$X_{i,t-1,j}$ : a matrix of bank characteristics lagged one year (assets, equity ratio, ROAA, and loan to deposit ratio)

$\alpha_j$  : country fixed effects

$\varepsilon_{i,t,j}$ : randomly distributed error term

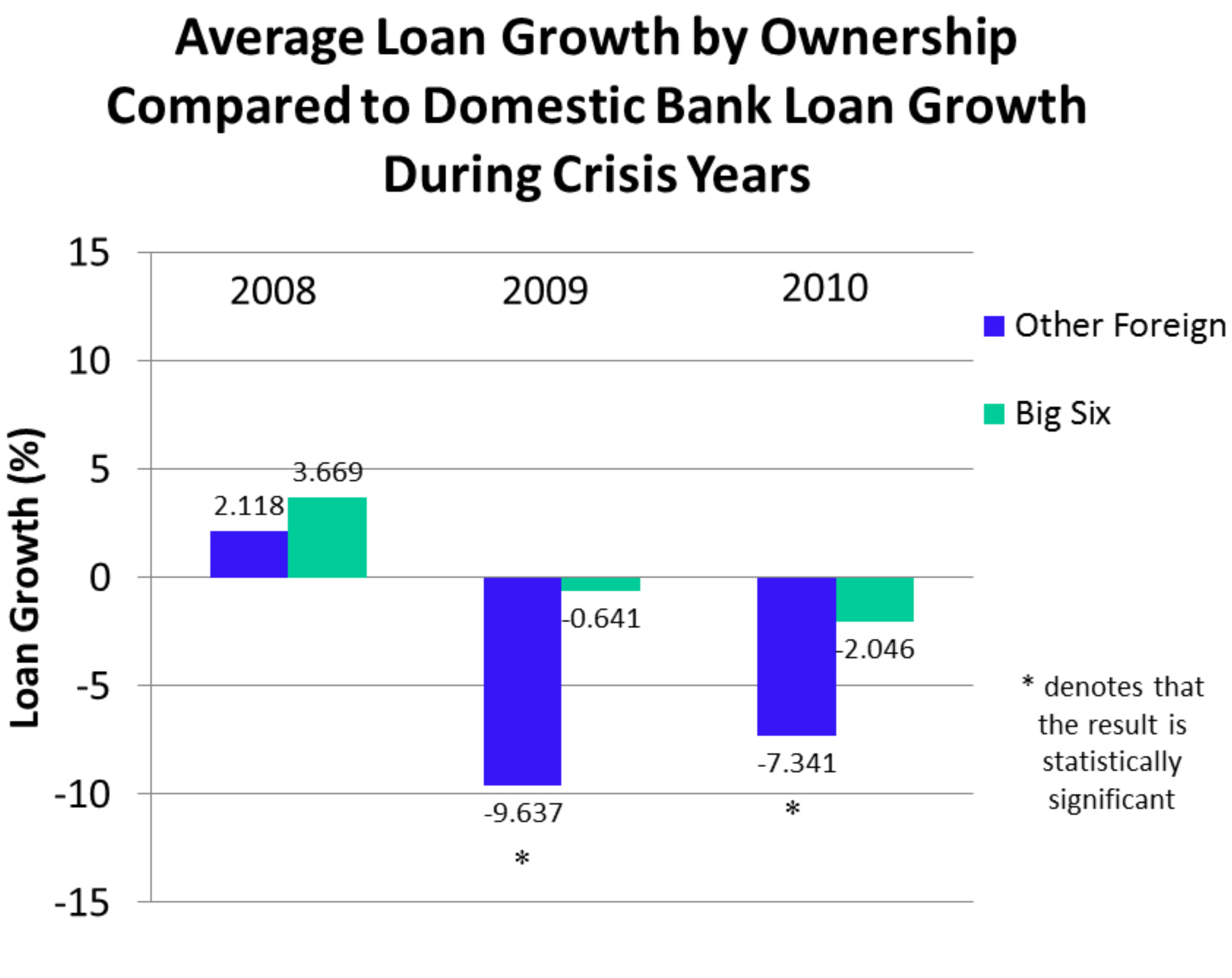
<sup>a</sup> for our analyses we categorize Országos Takarékpénztár (OTP) and Nova Ljubljanska banka (NLB) as domestic in all eight countries since they are regional banks

## Results

### Determinants of Loan Growth

Variables	Model 1	Model 2	Model 3	Model 4
Other Foreign Ownership	1.248 [0.562]	0.251 [0.113]	6.066* [1.668]	5.473 [1.466]
Big Six Ownership	1.839 [0.872]	-1.196 [-0.558]	-0.291 [-0.085]	-2.650 [-0.711]
GDP Growth (%)	2.809*** [14.479]	3.272*** [6.508]	3.513*** [7.056]	3.964*** [7.515]
Log (Assets)	-3.128*** [-3.638]	-0.425 [-0.497]	-0.215 [-0.251]	0.930 [0.753]
Equity/ Assets (%)	-0.318* [-1.708]	-0.042 [-0.215]	-0.039 [-0.192]	-0.198 [-0.718]
Loans/Deposits (%)	-0.040 [-0.033]	1.082 [0.871]	1.231 [0.986]	4.465 [1.644]
ROAA	2.292** [2.416]	0.140 [0.151]	-0.093 [-0.097]	-0.155 [-0.105]
Crisis 2008		-18.929*** [-8.488]	-17.954*** [-4.797]	-8.819 [-0.332]
Crisis 2009		4.566 [0.741]	14.835** [2.036]	64.593** [1.981]
Crisis 2010		-23.121*** [-6.749]	-15.253*** [-3.568]	22.203 [0.733]
Other Foreign*Crisis 2008			-3.700 [-0.720]	-3.357 [-0.645]
Other Foreign*Crisis 2009			-16.541*** [-2.806]	-15.111** [-2.543]
Other Foreign*Crisis 2010			-14.847*** [-2.815]	-12.814** [-2.252]
Big Six*Crisis 2008			3.017 [0.606]	6.319 [1.160]
Big Six*Crisis 2009			-5.195 [-0.959]	2.009 [0.328]
Big Six*Crisis 2010			-4.657 [-1.097]	0.604 [0.115]
Constant	58.852*** [4.696]	26.724** [2.121]	19.946 [1.540]	0.723 [0.038]
Bank Characteristic Crisis Year Interactions	No	No	No	Yes
Observations	868	868	868	868
R-squared	0.241	0.350	0.361	0.371

T-statistics in brackets, \*p<.10, \*\*p<.05, \*\*\*p<.01



## Discussion

Our primary finding is that while “Big Six” bank loan growth did not significantly differ during the crisis years from domestic bank loan growth, other foreign bank loan growth was significantly lower than domestic bank loan growth. This result suggests that during the crisis, “Big Six” banks acted in a notably different way than other foreign owned banks in terms of lending.

There is also a significant negative association between the crisis year dummy variables and loan growth, with the exception of the 2009 variable, demonstrating that the crisis years are associated with lower loan growth. The 2009 variable does not exhibit a negative association because our model contains GDP growth which acts as a confounding variable for this year.

Our results show a positive significant correction between GDP growth, our demand-side indicator, and loan growth indicating that overall market demand and loan growth move in the same direction.

Our bank characteristic- crisis year interactions (not shown on regression table) indicate a negative correlation between assets and loan growth during the crisis. This suggests that banks with a larger asset base loaned at a slower rate during the crisis. This result is only statistically significant for 2009. Additionally, we see a negative significant correlation between the loan-to-deposit 2010 interactive term, suggesting that banks with a larger deposit base had higher loan growth in 2010.

We also conducted a series of robustness checks by including financial entities that were initially taken out of the dataset and by examining our results without trimming independent variables. Our main results on the impact of ownership do not differ markedly in these estimates.

## Conclusion and Future Research

Our results indicate that during the crisis years, “Big Six” banks acted in a different way than other foreign banks with regard to lending. While other foreign bank loan growth was significantly lower than domestic, “Big Six” bank loan growth was not. Our results testify the importance of distinguishing “Big Six” banks as different from other foreign banks when analyzing the lending patterns of foreign banks.

Further research may extend our work to examine the impact of more years, the inclusion of more country level data, or the influence of the Vienna Initiative on our current results.

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### References:

<sup>1</sup>Bonin , John P., Iftekhar Hasan, and Paul Wachtel. "Privatization matters: Bank efficiency in transition countries." *Journal of banking and finance* 29.8 (2005): 2155-2178.

<sup>2</sup>Bonin, John P., Iftekhar Hasan, and Paul Wachtel. "Bank performance, efficiency and ownership in transition countries." *Journal of Banking & Finance* 29.1 (2005): 31-53.

<sup>3</sup>Cull, Robert, and Maria Soledad Martinez Peria. "Bank Ownership and Lending Patterns during the 2008-2009 Financial Crisis: Evidence from Latin America and Eastern Europe." *World Bank Policy Research Working Paper* 6195 (2013).