

The effects of foreign and government ownership on bank lending behavior during a crisis in Central and Eastern Europe

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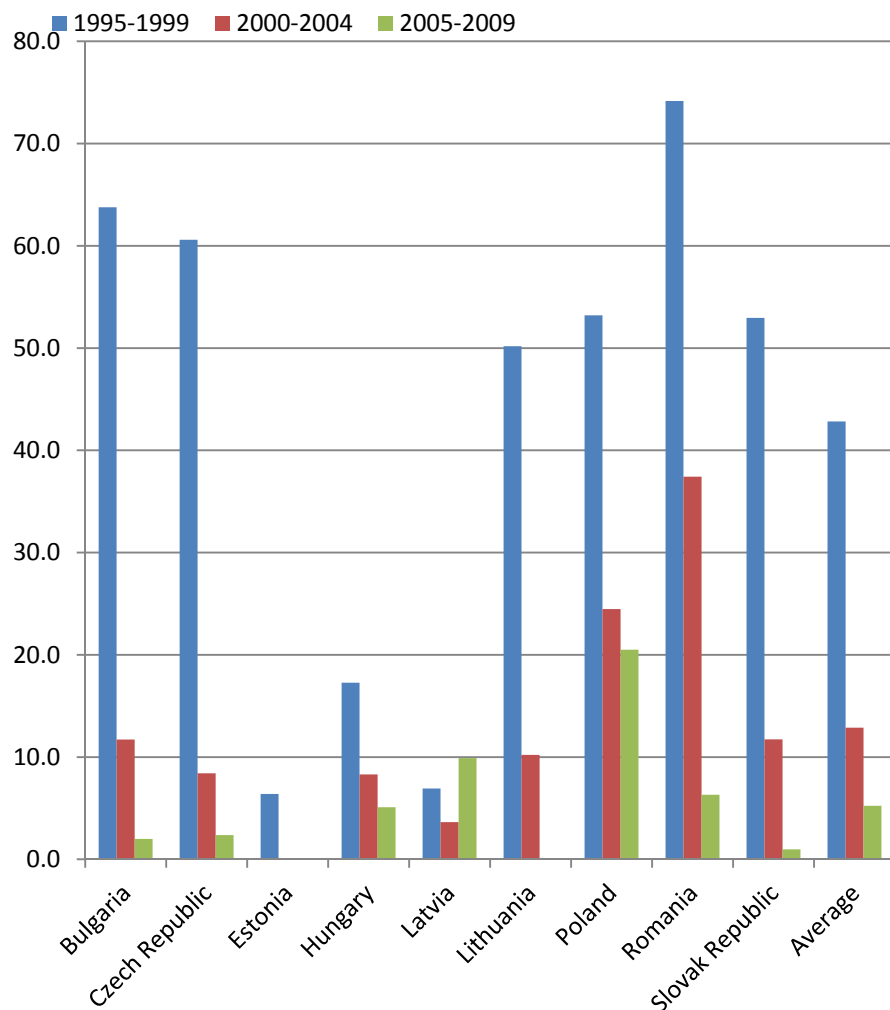
Motivation: Recent Financial Crisis

During the recent financial crisis multinational banks scaled down their operations in host countries due to problems in their home markets.

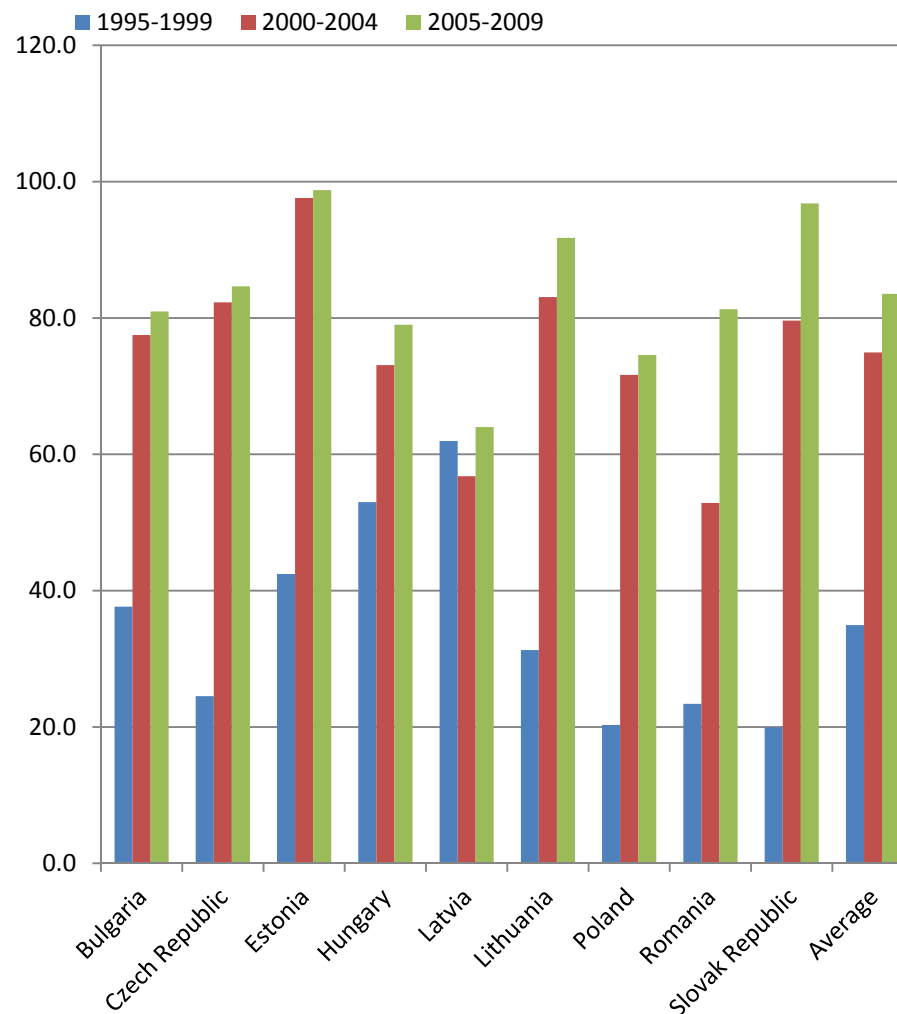
But what happened with government –owned banks?

Motivation: Central and Eastern Europe

Share of government-owned banks as % of total assets



Share of foreign-owned banks as % of total assets



Research on foreign-owned banks

Positive impact on banking efficiency

(Hasan and Merton, 2003;; Drakos, 2003; Bonin et al., 2005; Fries and Taci, 2005)

Positive impact on financial stability

(Demigrüç-Kunt et al., 1998; Levine, 1999; Barth, 2001)

Positive impact on access to credit (incl. SME)

(Berger and others 2001 Unite and Sullivan, 2003; Martinez Peria and Mody ,2004)

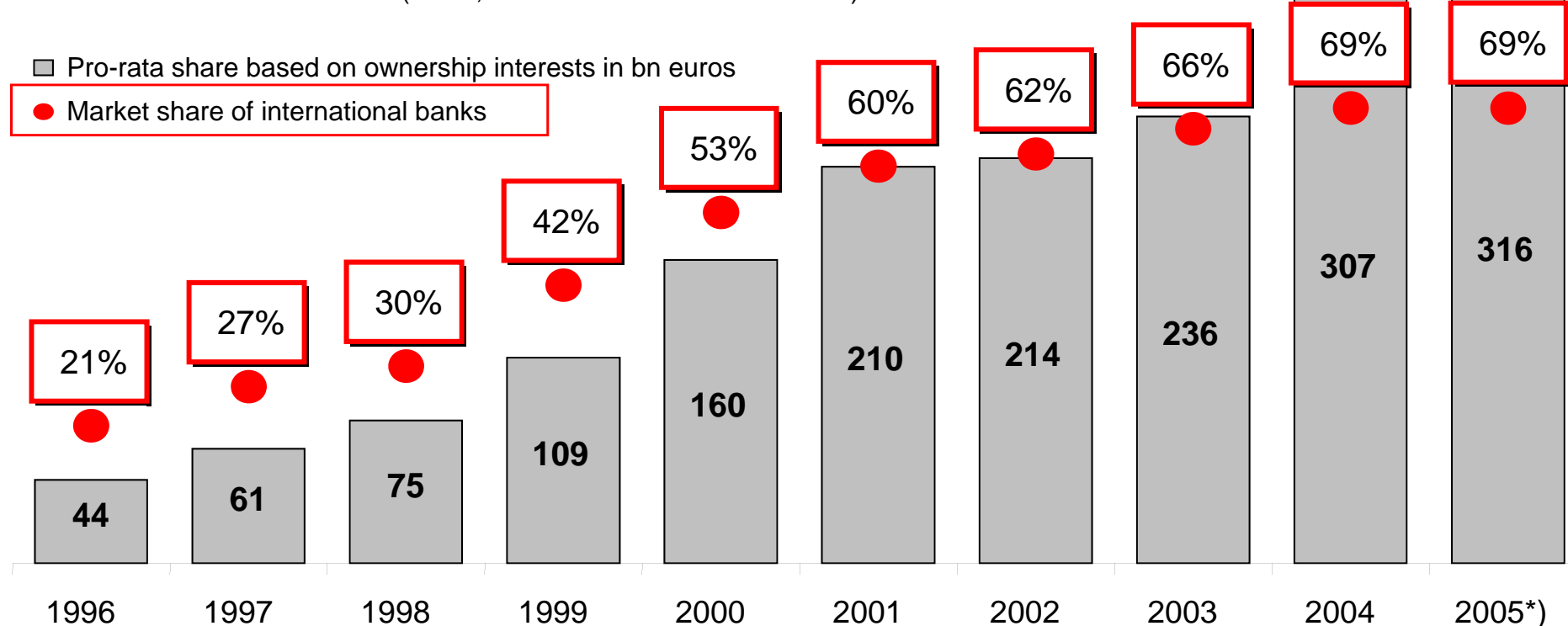
Stabilizes economies during local banking crises

(De Haas and Van Lelyveld 2006/2010)

Result foreign-bank penetration in CEE

Total assets and share of international banks

(CEE*, bn euros and in % of all banks)



* EU new member states, EU candidate countries, Albania, Macedonia, Serbia and Montenegro, Bosnia-Herzegovina, Ukraine

Source: BA-CA Economics Department

In the CEE the share of foreign banks increased since 1996 from 21% to a current 69%

Exacerbates local business and credit cycles

Boom in Emerging Europe: 2004-2007

(De Haas, Korniyenko, Loukoianova, and Pivovarsky 2012)

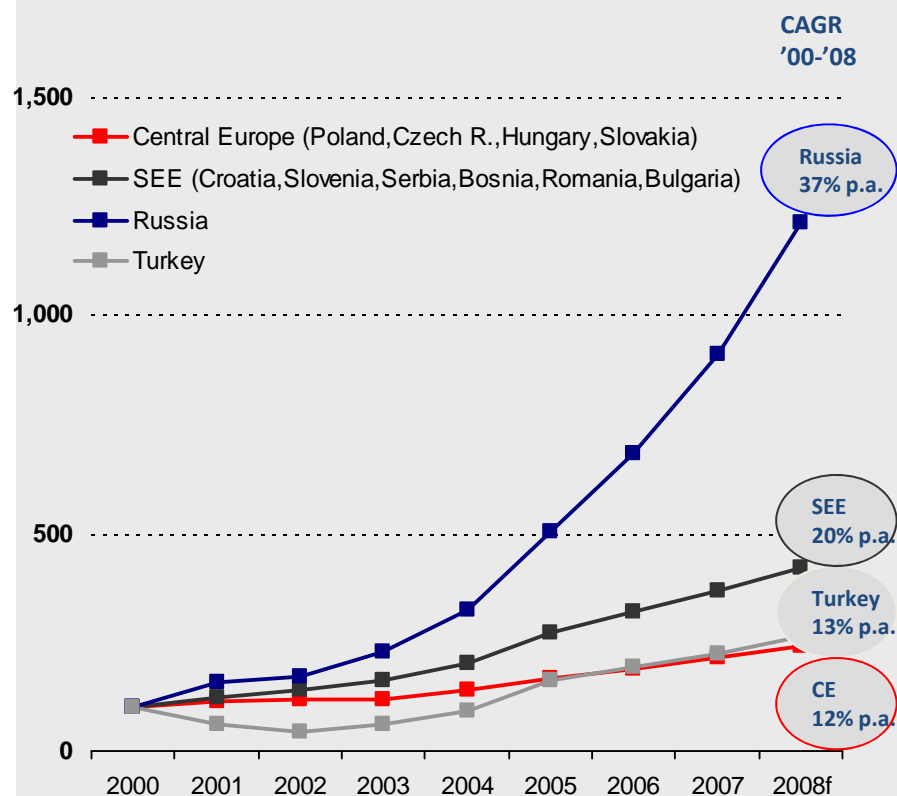
Transmits financial shocks across borders

- from Japan to the U.S.
(Peek and Rosengren, 1997,2000)
- from Western to CEE
(Popov and Udell, 2010; Ongena, Peydro, Van Horen, 2013)
- Globally
(Allen et al. 2012; De Haas and Van Lelyveld, 2013)

Development of credit to GDP

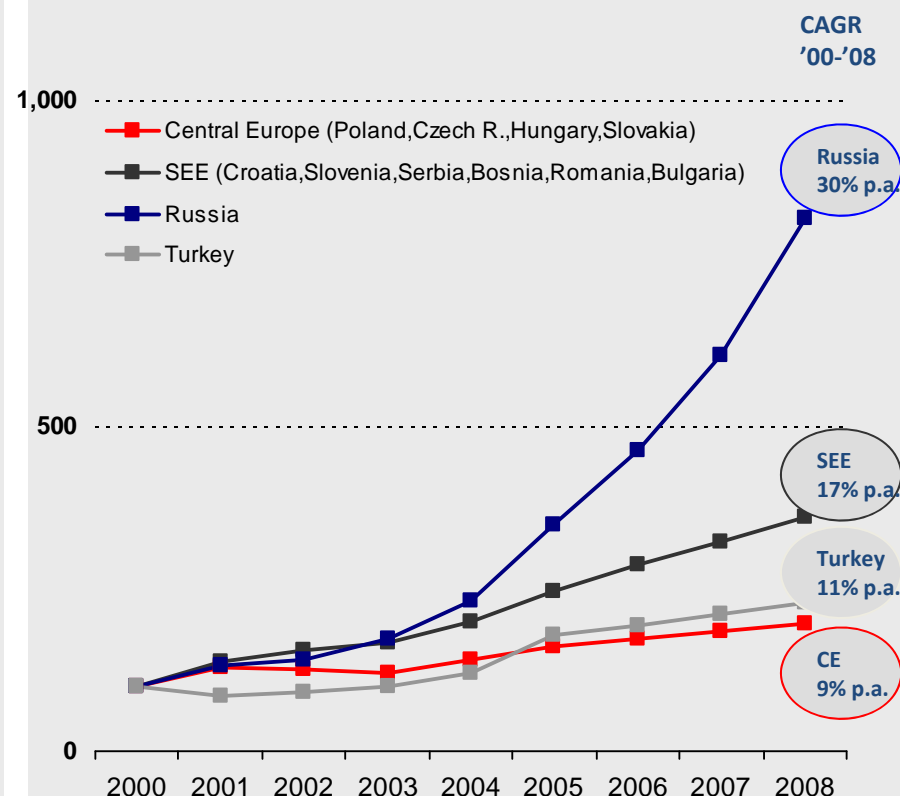
Total CEE loans' volumes growth⁽¹⁾

(2000 = 100, in € terms)



Total CEE deposits' volumes growth⁽¹⁾

(2000 = 100, in € terms)



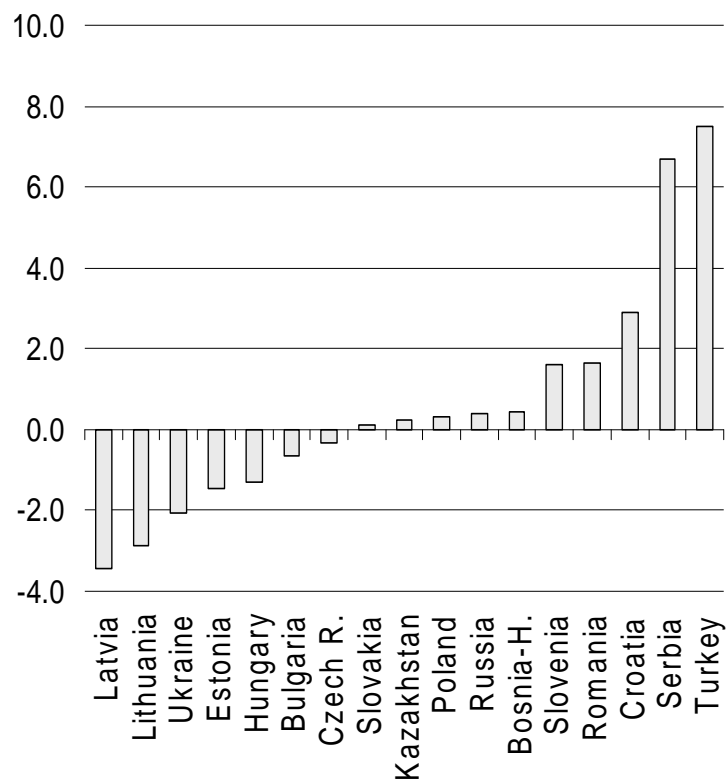
Sources: Unicredit-NE Research Network based on local Central Banks' data

(1) Total loans/deposits include general gov't, non-financial corporations, households and when available NPISHs and Non-MFIs

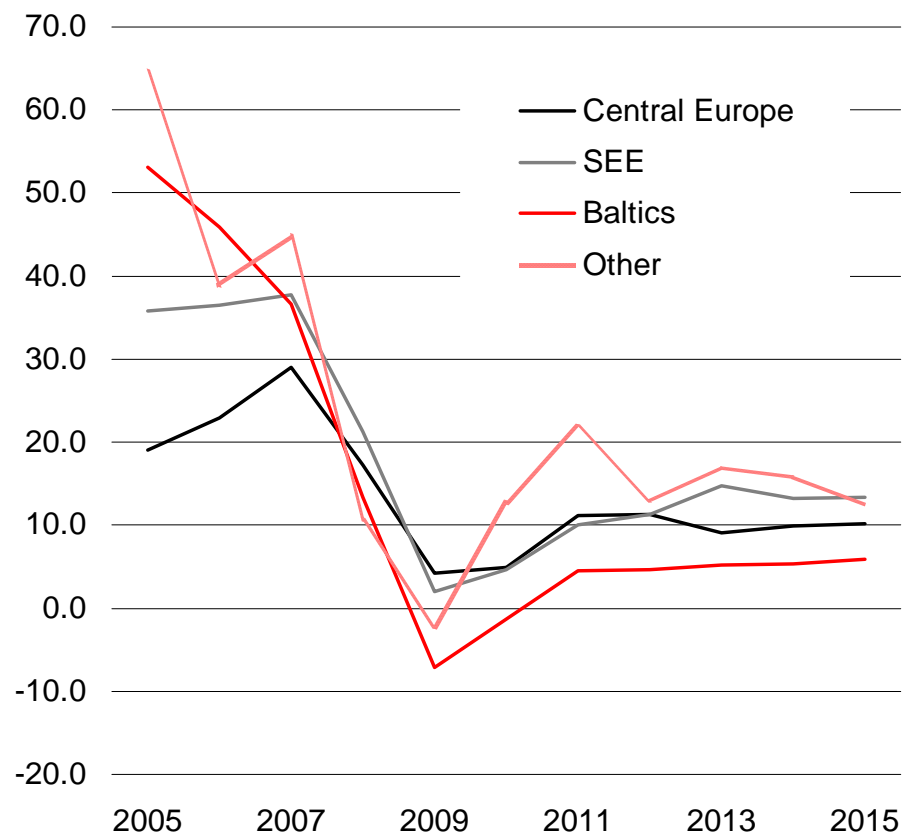
Credit crunch of 2009

Credit crunch visible since 2009

(Total loans - YTD change Apr 2010, adjusted for FX movements)



Total loans' volumes (% yoy growth)¹



(1) Central Europe: HU, CZ, PL, SI, SK; SEE: RO, BG, HR, SRB, BH; Other: RU, TK, UA, KZ

Research hypothesis

Hypothesis 1: Foreign banks' credit growth is relatively insensitive or can even expand during host country crisis periods.

Hypothesis 2: Foreign banks' credit growth is negatively related to home country crisis and parent bank financial performance.

Research on government-owned banks

Government banks tend to increase their lending or decrease interest rates on loans during election years

(Sapienza, 2004; Dinc, 2005; Jackowicz et al. 2012)

Lending of state-owned banks is less responsive to macroeconomic shocks than that of private banks

(Micco and Panizza, 2006; Allen et al., 2012)

Research hypothesis

Hypothesis 3: Government-owned banks increase credit levels in order to compensate for the decline of foreign bank lending during crisis periods.

Research on foreign and domestic bank lending

**Domestically-owned and foreign-owned banks
behave similarly during a crisis**

(Dages et al., 2000; Peek and Rosengren, 2000)

Research hypothesis

Hypothesis 4: Banks' financial characteristics are more important in determining credit growth than ownership or parent bank financial performance during a host and home crisis period.

Empirical design

To answer research questions, we estimate dynamic panel models.

The dependent variable

The real growth rate of total loans

Explanatory variables

The lagged dependent variable

A set of variables illustrating banks characteristic

A set of variables encoding the ownership structure of these banks

Time x country dummies

A set of variables describing fundamentals of parent companies

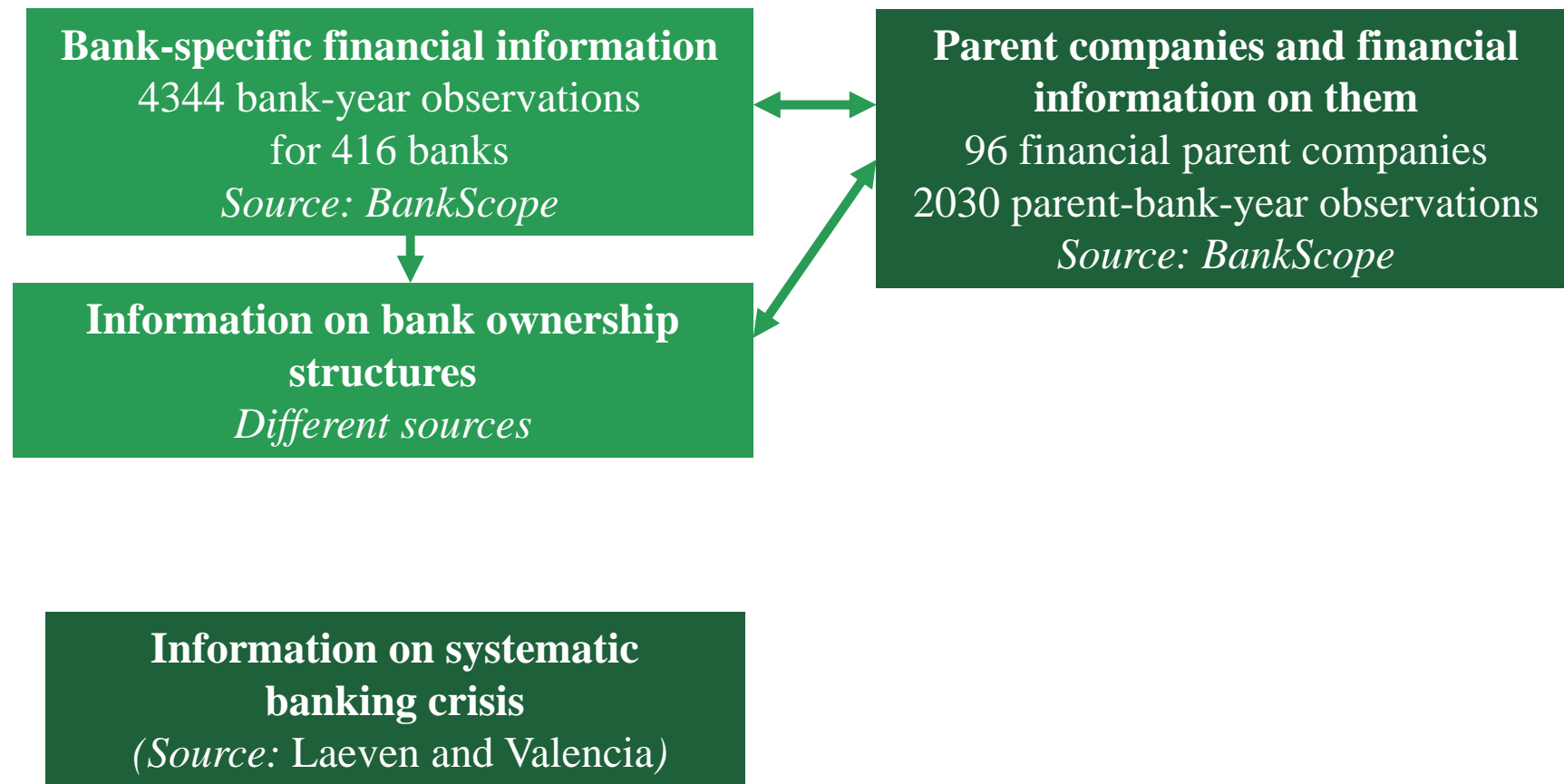
A set of macroeconomic variables reflecting the attractiveness of expanding credit in

Dummies for domestic crisis

Dummies for global crisis

Data set

We compiled a new and comprehensive data set. Our study spans the period from 1994 to 2010 and concerns banks operating in eleven Central European countries.



Domestic banks and foreign-owned banks

	Domestic		Foreign		difference	t-value
	Mean	N	Mean	N		
Panel A: Sample Period 1994-2010						
Δ Loans	0.188	1692	0.235	1934	-0.466	-3.412
Δ Deposits	0.283	1592	0.265	1778	0.018	1.254
Liquidity	0.170	1704	0.140	1896	0.030	6.585
Profitability	0.125	1777	0.011	2045	0.001	1.054
Solvency	0.161	2033	0.132	2220	0.029	7.140
Size	0.030	1958	0.033	2037	-0.004	-2.054
Panel B: Sample Period 1994-2007						
Δ Loans	0.205	1480	0.287	1494	-0.8214	-5.236
Δ Deposits	0.300	1461	0.291	1492	0.009	0.560
Liquidity	0.171	1561	0.140	1598	0.031	6.400
Profitability	0.137	1556	0.141	1582	-0.000	-0.415
Solvency	0.163	1806	0.136	1752	0.027	5.894
Size	0.029	1740	0.029	1588	-0.000	-0.007
Panel C: Sample Period 2008-2010						
Δ Loans	0.071	212	0.057	440	0.014	0.650
Δ Deposits	0.095	131	0.127	286	-0.032	-0.930
Liquidity	0.158	143	0.138	298	0.020	1.332
Profitability	0.003	221	0.002	463	0.002	0.769
Solvency	0.141	227	0.115	468	0.026	3.036
Size	0.035	218	0.049	449	-0.013	-2.574

Baseline results

	FE (1)	RE (2)	GMM (3)	FE (4)	RE (5)	GMM (6)	FE (7)	RE (8)	GMM (9)
Δ Loans	-0.004 (0.020)	0.034 (0.022)	0.116*** (0.026)	-0.010 (0.020)	0.031 (0.022)	0.114*** (0.026)	-0.057* (0.030)	0.067** (0.034)	0.072** (0.036)
Δ Deposit	0.433*** (0.034)	0.447*** (0.028)	0.428*** (0.037)	0.428*** (0.034)	0.445*** (0.028)	0.427*** (0.037)	0.490*** (0.044)	0.523*** (0.038)	0.479*** (0.049)
Liquidity	-0.327*** (0.101)	-0.219*** (0.070)	-0.286*** (0.076)	-0.326*** (0.102)	-0.214*** (0.070)	-0.280*** (0.077)	-0.341** (0.138)	-0.032 (0.066)	-0.177** (0.086)
Profitability	2.333*** (0.427)	2.202*** (0.368)	1.540*** (0.337)	2.360*** (0.429)	2.188*** (0.371)	1.526*** (0.339)	1.459** (0.637)	0.822 (0.502)	0.683 (0.558)
Solvency	-0.044 (0.160)	-0.140 (0.142)	-0.139 (0.102)	-0.083 (0.159)	-0.131 (0.143)	-0.129 (0.106)	0.040 (0.364)	0.017 (0.234)	0.040 (0.211)
Size	-0.430 (0.323)	-0.210 (0.134)	-0.045 (0.097)	-0.393 (0.297)	-0.216 (0.138)	-0.055 (0.098)	0.394 (0.398)	-0.126 (0.147)	0.059 (0.145)
Government				-0.034 (0.037)	-0.005 (0.028)	0.001 (0.021)			
Foreign				0.072** (0.035)	0.037* (0.021)	0.021 (0.016)			
$Profitability_{parent}$							-2.340* (1.207)	-0.452 (0.645)	-0.814 (0.812)
$Solvency_{parent}$							4.813* (2.563)	2.231 (1.818)	3.949* (2.198)
$Size_{parent}$							0.037 (0.104)	-0.025 (0.038)	-0.040 (0.047)
GDP growth	1.424***	1.313***	1.102***	1.444***	1.330***	1.112***	1.032***	0.810***	0.758**

Domestic systematic banking crisis

	FE (1)	RE (2)	GMM (3)	FE (4)	RE (5)	GMM (6)	FE (7)	RE (8)	GMM (9)
Δ Loans	-0.004 (0.020)	0.034 (0.022)	0.114 ^{***} (0.026)	-0.010 (0.020)	0.031 (0.022)	0.113 ^{***} (0.026)	-0.009 (0.020)	0.032 (0.022)	0.115 ^{***} (0.026)
Δ Deposit	0.433 ^{***} (0.034)	0.447 ^{***} (0.028)	0.427 ^{***} (0.037)	0.428 ^{***} (0.034)	0.445 ^{***} (0.028)	0.426 ^{***} (0.037)	0.428 ^{***} (0.034)	0.446 ^{***} (0.028)	0.427 ^{***} (0.037)
Liquidity	-0.327 ^{***} (0.101)	-0.219 ^{***} (0.070)	-0.289 ^{***} (0.076)	-0.327 ^{***} (0.102)	-0.214 ^{***} (0.070)	-0.283 ^{***} (0.077)	-0.337 ^{***} (0.100)	-0.217 ^{***} (0.069)	-0.286 ^{***} (0.076)
Profitability	2.334 ^{***} (0.428)	2.198 ^{***} (0.367)	1.540 ^{***} (0.336)	2.360 ^{***} (0.430)	2.184 ^{***} (0.370)	1.529 ^{***} (0.339)	2.280 ^{***} (0.426)	2.079 ^{***} (0.365)	1.463 ^{***} (0.337)
Solvency	-0.045 (0.158)	-0.141 (0.142)	-0.145 (0.102)	-0.082 (0.158)	-0.132 (0.143)	-0.136 (0.105)	-0.053 (0.157)	-0.119 (0.140)	-0.128 (0.102)
Size	-0.428 (0.324)	-0.207 (0.134)	-0.041 (0.097)	-0.393 (0.299)	-0.214 (0.137)	-0.053 (0.099)	-0.408 (0.307)	-0.182 (0.137)	-0.016 (0.099)
Government				-0.034 (0.037)	-0.005 (0.028)	0.003 (0.021)	-0.026 (0.041)	0.005 (0.030)	0.010 (0.023)
Foreign				0.072 ^{**} (0.036)	0.037 [*] (0.021)	0.021 (0.016)	0.055 (0.036)	0.018 (0.021)	0.003 (0.017)
Crisis _d	-0.004 (0.026)	-0.010 (0.024)	-0.044 (0.027)	0.001 (0.026)	-0.008 (0.024)	-0.044 (0.027)	-0.061 [*] (0.037)	-0.066 (0.041)	-0.116 ^{***} (0.039)
Government x Crisis _d							0.016 (0.050)	-0.012 (0.053)	0.013 (0.053)
Foreign x Crisis _d							0.125 ^{***} (0.045)	0.134 ^{***} (0.048)	0.153 ^{***} (0.046)
GDP growth	1.406 ^{***}	1.269 ^{***}	0.949 ^{***}	1.450 ^{***}	1.295 ^{***}	0.960 ^{***}	1.460 ^{***}	1.318 ^{***}	0.960 ^{***}

Global financial crisis

	FE	RE	GMM	FE	RE	GMM	FE	RE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Δ Loans	-0.004 (0.020)	0.034 (0.022)	0.116 ^{***} (0.026)	-0.010 (0.020)	0.031 (0.022)	0.114 ^{***} (0.026)	-0.010 (0.020)	0.031 (0.022)	0.113 ^{***} (0.025)
Δ Deposit	0.433 ^{***} (0.034)	0.447 ^{***} (0.028)	0.428 ^{***} (0.037)	0.428 ^{***} (0.034)	0.445 ^{***} (0.028)	0.427 ^{***} (0.037)	0.428 ^{***} (0.034)	0.445 ^{***} (0.028)	0.426 ^{***} (0.037)
Liquidity	-0.327 ^{***} (0.101)	-0.219 ^{***} (0.070)	-0.286 ^{***} (0.076)	-0.326 ^{***} (0.102)	-0.214 ^{***} (0.070)	-0.280 ^{***} (0.077)	-0.330 ^{***} (0.102)	-0.216 ^{***} (0.069)	-0.285 ^{***} (0.076)
Profitability	2.333 ^{***} (0.427)	2.202 ^{***} (0.368)	1.540 ^{***} (0.337)	2.360 ^{***} (0.429)	2.188 ^{***} (0.371)	1.526 ^{***} (0.339)	2.357 ^{***} (0.430)	2.175 ^{***} (0.370)	1.520 ^{***} (0.340)
Solvency	-0.044 (0.160)	-0.140 (0.142)	-0.139 (0.102)	-0.083 (0.159)	-0.131 (0.143)	-0.129 (0.106)	-0.068 (0.164)	-0.142 (0.142)	-0.144 (0.105)
Size	-0.430 (0.323)	-0.210 (0.134)	-0.045 (0.097)	-0.393 (0.297)	-0.216 (0.138)	-0.055 (0.098)	-0.368 (0.289)	-0.201 (0.138)	-0.040 (0.097)
Government				-0.034 (0.037)	-0.005 (0.028)	0.001 (0.021)	-0.030 (0.038)	-0.012 (0.029)	-0.010 (0.022)
Foreign				0.072 ^{**} (0.035)	0.037 [*] (0.021)	0.021 (0.016)	0.085 ^{**} (0.037)	0.048 ^{**} (0.023)	0.032 [*] (0.018)
Crisis _g	-0.065 (0.050)	0.011 (0.056)	-0.095 ^{**} (0.045)	-0.116 ^{**} (0.054)	-0.079 (0.050)	-0.094 ^{**} (0.045)	-0.084 (0.055)	-0.059 (0.052)	-0.063 (0.048)
Government x Crisis _g							0.109 (0.071)	0.126 ^{**} (0.059)	0.139 ^{***} (0.053)
Foreign x Crisis _g							-0.073 ^{***} (0.028)	-0.061 ^{**} (0.027)	-0.067 ^{**} (0.027)
GDP growth	1.424 ^{***}	1.313 ^{***}	1.102 ^{***}	1.444 ^{***}	1.330 ^{***}	1.112 ^{***}	1.440 ^{***}	1.321 ^{***}	1.103 ^{***}

Global financial crisis and parent effect

	FE (1)	RE (2)	GMM (3)	FE (4)	RE (5)	GMM (6)
Δ Loans	-0.057* (0.030)	0.067** (0.034)	0.072** (0.036)	-0.058* (0.030)	0.067** (0.034)	0.071* (0.036)
Δ Deposit	0.490*** (0.044)	0.523*** (0.038)	0.479*** (0.049)	0.489*** (0.044)	0.523*** (0.038)	0.478*** (0.049)
Liquidity	-0.341** (0.138)	-0.032 (0.066)	-0.177** (0.086)	-0.342** (0.138)	-0.033 (0.066)	-0.176** (0.087)
Profitability	1.459** (0.637)	0.822 (0.502)	0.683 (0.558)	1.506** (0.624)	0.819 (0.502)	0.689 (0.558)
Solvency	0.040 (0.364)	0.017 (0.234)	0.040 (0.211)	0.020 (0.364)	0.016 (0.234)	0.033 (0.212)
Size	0.394 (0.398)	-0.126 (0.147)	0.059 (0.145)	0.383 (0.399)	-0.127 (0.147)	0.055 (0.144)
Crisis _g	-0.469*** (0.126)	-0.306*** (0.110)	-0.161*** (0.058)	-0.443*** (0.158)	-0.319** (0.134)	-0.213* (0.115)
Profitability _{parent}	-2.340* (1.207)	-0.452 (0.645)	-0.814 (0.812)	-2.199 (1.358)	-0.757 (0.939)	-1.197 (1.225)
Solvency _{parent}	4.813* (2.563)	2.231 (1.818)	3.949* (2.198)	5.655* (3.144)	4.211 (2.829)	5.856* (3.300)
Size _{parent}	0.037 (0.104)	-0.025 (0.038)	-0.040 (0.047)	0.028 (0.107)	-0.027 (0.044)	-0.048 (0.055)
Profitability _{parent} x Crisis _g				-0.491 (1.658)	0.315 (1.184)	0.764 (1.390)
Solvency _{parent} x Crisis _g				-2.222 (4.108)	-4.136 (3.278)	-4.254 (3.711)
Size _{parent} x Crisis _g				0.018 (0.094)	0.007 (0.072)	0.038 (0.084)

Domestic and global financial crisis

	FE	RE	GMM	FE	RE	GMM	FE	RE	GMM
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Δ Loans	-0.004 (0.020)	0.034 (0.022)	0.115 ^{***} (0.026)	-0.010 (0.020)	0.030 (0.022)	0.113 ^{***} (0.026)	-0.011 (0.020)	0.031 (0.022)	0.113 ^{***} (0.026)
Δ Deposit	0.432 ^{***} (0.034)	0.446 ^{***} (0.028)	0.428 ^{***} (0.036)	0.427 ^{***} (0.034)	0.444 ^{***} (0.028)	0.427 ^{***} (0.036)	0.427 ^{***} (0.034)	0.444 ^{***} (0.028)	0.427 ^{***} (0.037)
Liquidity	-0.324 ^{***} (0.101)	-0.217 ^{***} (0.069)	-0.286 ^{***} (0.075)	-0.324 ^{***} (0.102)	-0.212 ^{***} (0.069)	-0.280 ^{***} (0.076)	-0.324 ^{***} (0.102)	-0.209 ^{***} (0.069)	-0.278 ^{***} (0.076)
Profitability	2.329 ^{***} (0.427)	2.188 ^{***} (0.366)	1.536 ^{***} (0.337)	2.357 ^{***} (0.429)	2.174 ^{***} (0.369)	1.522 ^{***} (0.339)	2.364 ^{***} (0.430)	2.172 ^{***} (0.369)	1.523 ^{***} (0.339)
Solvency	-0.046 (0.160)	-0.138 (0.142)	-0.137 (0.102)	-0.085 (0.159)	-0.129 (0.143)	-0.126 (0.106)	-0.087 (0.160)	-0.128 (0.143)	-0.125 (0.106)
Size	-0.441 (0.325)	-0.220 [*] (0.133)	-0.049 (0.096)	-0.404 (0.298)	-0.226 [*] (0.137)	-0.059 (0.098)	-0.411 (0.298)	-0.227 [*] (0.137)	-0.058 (0.098)
Government				-0.034 (0.037)	-0.006 (0.028)	0.000 (0.021)	-0.032 (0.038)	-0.007 (0.028)	-0.002 (0.021)
Foreign				0.072 ^{**} (0.036)	0.037 [*] (0.021)	0.021 (0.016)	0.075 ^{**} (0.036)	0.037 [*] (0.022)	0.020 (0.017)
Crisis _{d,g}	0.042 (0.032)	0.080 ^{**} (0.035)	0.072 ^{**} (0.030)	0.043 (0.032)	0.082 ^{**} (0.035)	0.073 ^{**} (0.030)	0.062 [*] (0.036)	0.075 [*] (0.042)	0.057 [*] (0.033)
Government x Crisis _{d,g}							0.069 (0.053)	0.097 (0.071)	0.101 (0.066)
Foreign x Crisis _{d,g}							-0.050 (0.055)	0.000 (0.053)	0.014 (0.035)
GDP growth	1.519 ^{***}	1.495 ^{***}	1.242 ^{***}	1.543 ^{***}	1.518 ^{***}	1.254 ^{***}	1.530 ^{***}	1.513 ^{***}	1.250 ^{***}

Conclusions

The results show that a mixed composition within the banking sector is advisable, consisting of government-owned, private domestic, and foreign-owned banks.

Bank-specific characteristics are important in explaining credit growth during periods of financial troubles.

Supervisory organizations should not only concentrate on keeping a mixed-ownership structure of the banking sector, but also control the financial situation of the domestic and foreign banks in the sector.