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Macroeconomic and Institutional Determinants of Banking Profitability: Evidence from Russia

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XVII International Academic Conference
on Economics and Social Development

April 20, 2016

- To focus simultaneously on macroeconomic and institutional parameters [Karas et al., 2010; Belousova & Kozyr, 2016]
- To analyze headquarter location and branch networks [Styrin, 2005; Solanko & Fungáčová, 2008]
- To check the influence of ownership types on banking profitability [Karas et al., 2010; Mamonov & Vernikov, 2015]
- To analyze the recent period of time: from 2004 to 2015

MACROECONOMIC FACTORS

Main focus:

- ✓ Dietsch & Lozano-Vivas (2000)
- ✓ Chafai et al. (2001)
- ✓ Belousova & Kozyr (2016)

Control variables:

- ✓ Athanasoglou et al. (2008)
- ✓ Mamonov (2011)
- ✓ Bonin & Louie (2015)

INSTITUTIONAL FACTORS

State ownership:

- ✓ La Porta et al. (2002)
- ✓ Bonin et al. (2005)
- ✓ Karas et al. (2010)
- ✓ Mamonov & Vernikov (2015)

Foreign ownership:

- ✓ Berger et al. (2000)
- ✓ Weill (2003)
- ✓ Karas et al. (2010)
- ✓ Mamonov & Vernikov (2015)

Bank's location:

- ✓ Berger & De Young (1997)
- ✓ Solanko & Fungáčová (2008)

$$\begin{aligned} \ln\left(\frac{\Pi_{nit}}{W_{3it}} + \theta\right) &= \alpha_0 + \alpha_1 \ln(y_{1it}) + \alpha_2 \ln(y_{2it}) + \alpha_3 \ln\left(\frac{W_{1it}}{W_{3it}}\right) + \\ &+ \alpha_4 \ln\left(\frac{W_{2it}}{W_{3it}}\right) + \frac{1}{2} \sum_{n=1}^2 \sum_{m=1}^2 \alpha_5 \ln(y_{nit}) \ln(y_{mit}) + \frac{1}{2} \sum_{n=1}^2 \sum_{m=1}^2 \alpha_6 \ln\left(\frac{W_{nit}}{W_{3it}}\right) \ln\left(\frac{W_{mit}}{W_{3it}}\right) + \\ &+ \frac{1}{2} \sum_{n=1}^2 \sum_{m=1}^2 \alpha_7 \ln(y_{nit}) \ln\left(\frac{W_{mit}}{W_{3it}}\right) + \alpha_8 \ln z_{nit} + (\eta_1, \dots, \eta_k)MF + (\mu_1, \dots, \mu_j)IF + \varepsilon_{it} - SU_{it} \end{aligned}$$

Π_i – profitability indicators (ROA и ROE)

y_n – output variables

w_n – input variables

Z_n – control variables

MF – macroeconomic variables (inflation, exchange rate, intermediation ratio, cargo transportation index)

IF – institutional variables (state-owned banks, foreign-owned banks, multiregional banks and center located banks)

Data sources

Banking data	Mobile Information Agency “Banking and Finance” database
Macroeconomic data	Federal State Statistics Service and Russian Central Bank web-sites
Types of ownership data	Vernikov (2015)
Headquarter location and branch networks data	Bank’s web-sites

Baseline results

VARIABLES	ROA Based+IF	ROA IF+MF	ROE Based+IF	ROE IF+MF
Securities	-0.0116 (0.0404)	0.0836** (0.0378)	-0.0277 (0.0437)	0.0720* (0.0405)
State-owned	0.0701 (0.072)	0.142** (0.067)	0.0886 (0.077)	0.139* (0.071)
Foreign-owned	-0.165** (0.069)	-0.158** (0.064)	-0.128* (0.074)	-0.107* (0.058)
Multiregional	0.160** (0.067)	0.266*** (0.063)	0.214*** (0.073)	0.293*** (0.068)
Center located	-0.0751* (0.042)	-0.0794** (0.039)	-0.0887* (0.046)	-0.0960** (0.042)
Inflation		0.371*** (0.013)		0.411*** (0.014)
Exchange rate		1.516*** (0.088)		1.542*** (0.094)
Intermediation ratio		1.341*** (0.21)		3.667*** (0.22)
Cargo index		4.309*** (0.287)		4.332*** (0.308)

Robustness check: regional structure

VARIABLES	ROA multiregional	ROA center located	ROA regional	ROE multiregional	ROE center located	ROE regional
Securities	0.264 (0.236)	0.122*** (0.047)	0.0894 (0.077)	0.264 (0.253)	0.132*** (0.05)	0.0541 (0.082)
.....
State-owned	0.210 (0.169)	0.218** (0.095)	0.0101 (0.120)	0.214 (0.182)	0.224** (0.102)	0.0117 (0.127)
Foreign-owned	-0.0613 (0.167)	-0.140* (0.0730)	-0.597 (0.434)	0.0057 (0.179)	-0.088* (0.0424)	-0.754 (0.462)
Inflation	0.352*** (0.036)	0.377*** (0.018)	0.362*** (0.024)	0.386*** (0.039)	0.421*** (0.019)	0.399*** (0.025)
Exchange rate	1.700*** (0.288)	1.488*** (0.114)	1.726*** (0.165)	1.603*** (0.309)	1.538*** (0.123)	1.782*** (0.175)
Intermediation ratio	1.176** (0.553)	1.339*** (0.284)	1.765*** (0.378)	3.403*** (0.593)	3.673*** (0.305)	4.053*** (0.402)
Cargo index	4.001*** (0.769)	4.123*** (0.391)	4.360*** (0.509)	4.095*** (0.825)	4.215*** (0.420)	4.368*** (0.542)

Robustness check: ownership structure

VARIABLES	ROA state-owned	ROA foreign	ROA private	ROE state-owned	ROE foreign	ROE private
Securities	0.284 (0.206)	0.269** (0.119)	0.0998** (0.0425)	0.166 (0.229)	0.267** (0.131)	0.0875* (0.0452)
.....
Multiregional	0.432* (0.233)	0.389 (0.434)	0.271*** (0.0697)	0.508** (0.258)	0.728 (0.478)	0.294*** (0.0742)
Center located	0.152 (0.155)	0.252 (0.408)	-0.113*** (0.0418)	0.183 (0.172)	0.506 (0.450)	-0.131*** (0.0445)
Inflation	0.354*** (0.0411)	0.342*** (0.0387)	0.375*** (0.0149)	0.400*** (0.0456)	0.384*** (0.0426)	0.415*** (0.0158)
Exchange rate	1.271*** (0.288)	1.850*** (0.253)	1.615*** (0.100)	1.280*** (0.319)	1.905*** (0.278)	1.636*** (0.107)
Intermediation ratio	1.534** (0.741)	3.030*** (0.659)	1.212*** (0.229)	3.748*** (0.822)	5.131*** (0.725)	3.556*** (0.244)
Cargo index	4.642*** (0.965)	3.423*** (0.873)	4.362*** (0.319)	5.060*** (1.071)	3.894*** (0.960)	4.283*** (0.340)

Conclusion and future research

Conclusion

- Ownership type:
 - ✓ State-owned banks are the most profitable for the sample and for the center located banking sub-group, in particular
 - ✓ Foreign banks are the least profitable for the sample and for the center located banking sub-group, in particular
- Regional structure and branch networks:
 - ✓ Multiregional banks are the most profitable for the sample and for the state-owned and private banking sub-groups, in particular
 - ✓ Center located banks are the least profitable for the sample and for the private banking sub-group, in particular
- Macroeconomic factors:
 - ✓ Macroeconomic factors increase significance of other variables
 - ✓ Sensitivity to macroeconomic factors depends on ownership type and regional structure

Future research

- Portfolio diversification (Mamonov & Solntsev, 2008; Aleskerov et al., 2009)
- GDP proxies: Russian Railways Cargo index



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Appendix (baseline model)

VARIABLES	ROA based	ROA with macro	ROE based	ROE with macro
Loans	0.240*** (0.0702)	0.304*** (0.0653)	0.225*** (0.0760)	0.248*** (0.0700)
Securities	-0.0116 (0.0404)	0.0836** (0.0378)	-0.0277 (0.0437)	0.0720* (0.0405)
.....
Assets	-0.226* (0.130)	-0.211* (0.121)	-0.200 (0.140)	-0.289** (0.129)
Assets ²	0.00650* (0.0038)	0.00423 (0.0036)	0.00508 (0.0041)	0.00585 (0.0038)
State-owned	0.0701 (0.072)	0.142** (0.067)	0.0886 (0.077)	0.139* (0.071)
Foreign-owned	-0.165** (0.069)	-0.158** (0.064)	-0.128* (0.074)	-0.107* (0.058)
Multiregional	0.160** (0.067)	0.266*** (0.063)	0.214*** (0.073)	0.293*** (0.068)
Center located	-0.0751* (0.042)	-0.0794** (0.039)	-0.0887* (0.046)	-0.0960** (0.042)
Inflation		0.371*** (0.013)		0.411*** (0.014)
Exchange rate		1.516*** (0.088)		1.542*** (0.094)
Intermediation ratio		1.341*** (0.21)		3.667*** (0.22)
Cargo index		4.309*** (0.287)		4.332*** (0.308)
Constant	6.292***	-18.81***	8.043***	-17.34***

Appendix (regional structure)

VARIABLES	ROA with macro	ROA multiregional	ROA center located	ROA regional	ROE with macro	ROE multiregional	ROE center located	ROE regional
Securities	0.0836** (0.038)	0.264 (0.236)	0.122*** (0.047)	0.0894 (0.077)	0.0720* (0.041)	0.264 (0.253)	0.132*** (0.05)	0.0541 (0.082)
.....
Assets	-0.334*** (0.115)	-0.343 (0.364)	-0.100 (0.181)	-0.184 (0.357)	-0.289** (0.129)	-0.235 (0.390)	-0.190 (0.195)	-0.0724 (0.381)
Assets ²	0.0043 (0.0033)	0.00697 (0.0098)	0.0012 (0.0054)	0.0022 (0.011)	0.0059 (0.0038)	0.0041 (0.011)	0.0031 (0.0058)	-0.0023 (0.012)
State-owned	0.130** (0.056)	0.210 (0.169)	0.218** (0.095)	0.0101 (0.120)	0.139* (0.071)	0.214 (0.182)	0.224** (0.102)	0.0117 (0.127)
Foreign-owned	-0.194*** (0.0531)	-0.0613 (0.167)	-0.140* (0.0730)	-0.597 (0.434)	-0.107* (0.058)	0.0057 (0.179)	-0.088* (0.0424)	-0.754 (0.462)
Multiregional	0.135** (0.0536)				0.293*** (0.068)			
Center located	-0.0616* (0.0329)				-0.096** (0.042)			
Inflation	0.348*** (0.011)	0.352*** (0.036)	0.377*** (0.018)	0.362*** (0.024)	0.411*** (0.014)	0.386*** (0.039)	0.421*** (0.019)	0.399*** (0.025)
Exchange rate	1.931*** (0.076)	1.700*** (0.288)	1.488*** (0.114)	1.726*** (0.165)	1.542*** (0.094)	1.603*** (0.309)	1.538*** (0.123)	1.782*** (0.175)
Intermediation ratio	1.526*** (0.175)	1.176** (0.553)	1.339*** (0.284)	1.765*** (0.378)	3.667*** (0.22)	3.403*** (0.593)	3.673*** (0.305)	4.053*** (0.402)
Cargo index	3.235*** (0.247)	4.001*** (0.769)	4.123*** (0.391)	4.360*** (0.509)	4.332*** (0.308)	4.095*** (0.825)	4.215*** (0.420)	4.368*** (0.542)
Constant	-15.64***	-17.84***	-18.76***	-20.27***	-17.34***	-16.36***	-17.51***	-20.35***

Appendix (type of ownership)

VARIABLES	ROA with macro	ROA state-owned	ROA foreign	ROA private	ROE with macro	ROE state-owned	ROE foreign	ROE private
Securities	0.0836** (0.0378)	0.284 (0.206)	0.269** (0.119)	0.0998** (0.0425)	0.0720* (0.0405)	0.166 (0.229)	0.267** (0.131)	0.0875* (0.0452)
.....
Assets	-0.334*** (0.115)	-1.314*** (0.469)	1.232** (0.581)	0.0348 (0.168)	-0.289** (0.129)	-1.308** (0.521)	1.280** (0.638)	-0.0316 (0.179)
Assets ²	0.0043 (0.0033)	0.0313** (0.0123)	-0.0362** (0.0167)	-0.00316 (0.00509)	0.0059 (0.0038)	0.0307** (0.0136)	-0.0381** (0.0184)	-0.00194 (0.00542)
State-owned	0.130** (0.056)				0.139* (0.071)			
Foreign-owned	-0.194*** (0.0531)				-0.107* (0.058)			
Multiregional	0.135** (0.0536)	0.432* (0.233)	0.389 (0.434)	0.271*** (0.0697)	0.293*** (0.068)	0.508** (0.258)	0.728 (0.478)	0.294*** (0.0742)
Center located	-0.0616* (0.0329)	0.152 (0.155)	0.252 (0.408)	-0.113*** (0.0418)	-0.096** (0.042)	0.183 (0.172)	0.506 (0.450)	-0.131*** (0.0445)
Inflation	0.348*** (0.011)	0.354*** (0.0411)	0.342*** (0.0387)	0.375*** (0.0149)	0.411*** (0.014)	0.400*** (0.0456)	0.384*** (0.0426)	0.415*** (0.0158)
Exchange rate	1.931*** (0.076)	1.271*** (0.288)	1.850*** (0.253)	1.615*** (0.100)	1.542*** (0.094)	1.280*** (0.319)	1.905*** (0.278)	1.636*** (0.107)
Intermediation ratio	1.526*** (0.175)	1.534** (0.741)	3.030*** (0.659)	1.212*** (0.229)	3.667*** (0.22)	3.748*** (0.822)	5.131*** (0.725)	3.556*** (0.244)
Cargo index	3.235*** (0.247)	4.642*** (0.965)	3.423*** (0.873)	4.362*** (0.319)	4.332*** (0.308)	5.060*** (1.071)	3.894*** (0.960)	4.283*** (0.340)
Constant	-15.64***	-9.356	-29.88***	-21.13***	-17.34***	-10.69	-31.55***	-19.34***