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## Ownership Structure and Obstacle to Finance under Control of Institutional Environment and Bond Market Development

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# Aim of Research

**Aim of our paper** is to investigate **the role of financial (bond) market, legal institutions and specific firm characteristics** to get a better understanding of the nature of **financing constraints** during the recent years and the last financial crisis.

We consider a wide range of factors that make it difficult for firms to attract financing.

The empirical research considers both the **concentration of the company's ownership** (controlling owner) and the **presence of foreign participants** in the equity capital

# Our Contribution to Literature

## Original features of our study:

- 1) **Consolidation of several databases** - firm-level data from **BEEPS** and country-level indicators from the **World Bank** database, **Bloomberg** and **Heritage Foundation**.
- 2) **Sample of post-soviet countries** which tend to have **weak regulatory oversight** and enforcement, weak investor protection. These characteristics result in **a higher cost of capital and firms' financing constraints**, limited access for small firms to financial services.
- 3) **Research hypotheses and the methodology** (probability models with tests for marginal effects). We consider influence of a **controlling owner on obstacle to financing** under institution's control and bond market development.

# Hypotheses of Our Study

**(H1):** Development of the financial market and, in particular, the public debt market, significantly facilitates access to financial resources.

**(H2):** In countries with developed bond markets and institutions the access to financing is much simpler.

# Variables

Variable	Description
k30new	Dependent variable (dummy) - barriers to access to finance: 0 – minor or moderate obstacle to finance, 1 – major or very severe obstacle
big	Firm's size dummy: 0 – $\leq 100$ employees, 1 – otherwise
dcrisis	Dummy of the global financial crisis of 2008-2009: 1 – the crisis, 0 – otherwise
big_cr	Multiplicative variable = $big * dcrisis$
share25	Dummy: 1 – no blocking share (25%), 0 – otherwise
share75	Dummy: 1 – one owner with the share more than 75%, 0 – otherwise
share100	Dummy: 1 – the only owner, 0 – otherwise
b2b	Share of foreign owner in the firm's equity
d_k21	Dummy of external audit: 1 – external auditor, 0 – otherwise
gdpgr	Real GDP growth (%)
dtrade	Dummy characterizing use of trade credits
d_europe	Dummy of European countries: 1 – a European country, 0 – otherwise
d_eqaq53	Dummy: 1 – if the firm received government subsidies, 0 – otherwise
lcy_outstand_gdp	Volume of outstanding LCY corporate bond markets (% GDP)
lcy_outstand_gdp2	Square of $lcy\_outstand\_gdp$
ief	Heritage Foundation's Index of Economic Freedom
group1	Dummy: 1 – a country with volume of LCY corporate bond market (% GDP) $\geq$ median value and $ief \geq$ median value, 0 – otherwise
group1_cr	Multiplicative variable = $group1 * dcrisis$

# Probability Models

$$p = F(Z) = \frac{1}{1 + e^{-Z}} \quad f(Z) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}Z^2}$$

$$Z = \beta_1 + \beta_2 \cdot big + \beta_3 \cdot big\_cr + \beta_4 \cdot ownership + \beta_5 \cdot d\_k21 + \\ + \beta_6 \cdot dcrisis + \beta_7 \cdot ief + \beta_8 \cdot group1 + \beta_9 \cdot group1\_cr$$

$$Z = \beta_1 + \beta_2 \cdot big + \beta_3 \cdot big\_cr + \beta_4 \cdot ownership + \beta_5 \cdot b2b + \beta_6 \cdot d\_k21 + \\ + \beta_7 \cdot gdpgr + \beta_8 \cdot dtrade + \beta_9 \cdot dcrisis + \beta_{10} \cdot lcy\_outstand\_gdp + \\ + \beta_{11} \cdot lcy\_outstand\_gdp^2 + \beta_{12} \cdot ief$$

# Descriptive Statistics on the Sample

Variable	Number of observations	Median value	Standard deviation	Minimal value	Maximal value
k30new	27105	0.2203	0.4145	0	1
big	27881	0.1752	0.3801	0	1
share25	26266	0.0232	0.1506	0	1
share75	26266	0.6389	0.4803	0	1
share100	26266	0.5549	0.4970	0	1
b2b	27582	5.8739	21.6772	0	100
d_k21	27136	0.3950	0.4889	0	1
gdpgr	27826	2.5307	4.0218	-14.8	13.0
dtrade	12840	0.1221	0.3274	0	1
d_europe	27886	0.6143	0.4868	0	1
dcrisis	27881	0.4240	0.4942	0	1
d_eacaq53	27546	0.0845	0.2781	0	1
lcy_outstand_gdp	27881	2.3492	3.2691	0	16.6
ief	27881	48.1858	22.5682	0	77.9

# Results. No Blocking share (25%)

Dependent : k30new	Logit results		Logit marginal effects		Probit results		Probit marginal effects	
	Coef.	Rob.std.err	Coef.	Rob.std.err	Coef.	Rob.std. err	Coef.	Rob.std. err
big	-0.3179 ***	0.1112	-0.0571 ***	0.0120	-0.1768 ***	0.0616	-0.0541 ***	0.0188
big_cr	0.3002 **	0.1292	0.0539 **	0.0232	0.1683 **	0.0729	0.0515 **	0.0223
share25	-0.1755	0.1418	-0.0315	0.0255	-0.1063	0.0825	-0.0325	0.0253
b2b	-0.0052 ***	0.0010	-0.0009 ***	0.0002	-0.0030 ***	0.0006	-0.0009 ***	0.0002
d_k21	-0.1181 ***	0.0453	-0.0212 ***	0.0081	-0.0700 ***	0.0265	-0.0214 ***	0.0081
gdpgr	0.0257 ***	0.0053	0.0046 ***	0.0009	0.0147 ***	0.0030	0.0045 ***	0.0009
dtrade	0.2321 ***	0.0757	0.0417 ***	0.0136	0.1344 ***	0.0437	0.0411 ***	0.0134
dcrisis	0.6143 ***	0.0603	0.1103 ***	0.0107	0.3591 ***	0.0349	0.1099 ***	0.0106
lcy_outstand_gdp	0.0848 ***	0.0151	0.0152 ***	0.0027	0.0498 ***	0.0089	0.0152 ***	0.0027
lcy_outstand_gdp2	-0.0033 ***	0.0013	-0.0006 ***	0.0002	-0.0019 ***	0.0007	-0.0006 ***	0.0002
ief	-0.0067 ***	0.0013	-0.0012 ***	0.0002	-0.0038 ***	0.0007	-0.0012 ***	0.0002
_cons	-1.2698 ***	0.0649			-0.7753 ***	0.0377		
Num of obs	11 525		11 525		11 525		11 525	
Pseudo R2	0.019		0.019		0.019		0.019	
Log likelihood	-6254.383		-6254.383		-6254.326		-6254.326	



# Results. Concentrated Control (75%)

Dependent k30new	Logit results		Logit marginal effects		Probit results		Probit marginal effects	
	Coef.	Rob.std.err	Coef.	Rob.std.err	Coef.	Rob.std. err	Coef.	Rob.std. err
big	-0.3132 ***	0.1112	-0.0562 ***	0.02	-0.1741 ***	0.0616	-0.0533 ***	0.0188
big_cr	0.2983 **	0.1292	0.0536 **	0.0232	0.1676 **	0.0729	0.0513 **	0.0223
share75	0.0922 **	0.0455	0.0165 **	0.0082	0.0568 **	0.0267	0.0174 **	0.0082
b2b	-0.0052 ***	0.001	-0.0009 ***	0.0002	-0.003 ***	0.0006	-0.0009 ***	0.0002
d_k21	-0.1179 ***	0.0453	-0.0212 ***	0.0081	-0.0696 ***	0.0265	-0.0213 ***	0.0081
gdpgr	0.0255 ***	0.0053	0.0046 ***	0.0009	0.0146 ***	0.003	0.0045 ***	0.0009
dtrade	0.2365 ***	0.0757	0.0425 ***	0.0136	0.1366 ***	0.0438	0.0418 ***	0.0134
dcrisis	0.6181 ***	0.0604	0.111 ***	0.0107	0.3618 ***	0.035	0.1107 ***	0.0106
lcy_outstand _gdp	0.0861 ***	0.0152	0.0155 ***	0.0027	0.0507 ***	0.0089	0.0155 ***	0.0027
lcy_outstand _gdp2	-0.0034 ***	0.0013	-0.0006 ***	0.0002	-0.002 ***	0.0007	-0.0006 ***	0.0002
ief	-0.0067 ***	0.0013	-0.0012 ***	0.0002	-0.0039 ***	0.0007	-0.0012 ***	0.0002
_cons	-1.3342 ***	0.0716			-0.8149 ***	0.0416		
Num. of obs	11 525		11 525		11 525		11 525	
Pseudo R2	0.019		0.019		0.019		0.019	
Log likelihood	-6253.114		-6253.114		-6252.898		-6252.898	

# Results. Full Control of One person (100%)

Dependent : k30new	Logit results		Logit marginal effects		Probit results		Probit marginal effects	
	Coef.	Rob.std.err	Coef.	Rob.std.err	Coef.	Rob.std. err	Coef.	Rob.std. err
big	-0.3108 ***	0.1112	-0.0556 ***	0.012	-0.1726 ***	0.0616	-0.0528 ***	0.0188
big_cr	0.2986 **	0.1292	0.0536 **	0.0232	0.1677 **	0.0730	0.0513 **	0.0223
share100	0.1029 **	0.0444	0.0185 **	0.008	0.0632 **	0.0261	0.0193 **	0.008
b2b	-0.0051 ***	0.0010	-0.0009 ***	0.0002	-0.0029 ***	0.0006	-0.0009 ***	0.0002
d_k21	-0.1163 ***	0.0453	-0.0208 ***	0.0081	-0.0687 ***	0.0265	-0.021 ***	0.0081
gdpr	0.0256 ***	0.0053	0.0046 ***	0.0009	0.0147 ***	0.0030	0.0045 ***	0.0009
dtrade	0.2377 ***	0.0757	0.0427 ***	0.0136	0.1376 ***	0.0438	0.0421 ***	0.0134
dcrisis	0.6232 ***	0.0605	0.1119 ***	0.0107	0.3651 ***	0.0351	0.1117 ***	0.0106
lcy_outstand _gdp	0.0864 ***	0.0152	0.0155 ***	0.0027	0.0509 ***	0.0089	0.0156 ***	0.0027
lcy_outstand _gdp2	-0.0034 ***	0.0013	-0.0006 ***	0.0002	-0.0020 ***	0.0007	-0.0006 ***	0.0002
ief	-0.0068 ***	0.0013	-0.0012 ***	0.0002	-0.0039 ***	0.0007	-0.0012 ***	0.0002
_cons	-1.33 ***	0.0649			-0.8150 ***	0.0407		
Num. of obs	11 525		11 525		11 525		11 525	
Pseudo R2	0.019		0.019		0.019		0.019	
Log likelihood	-6252.485		-6252.485		-6252.220		-6252.220	

# Main Findings

- ✓ Barriers to access to financing are lower for big companies. The financial crisis makes it difficult to attract financing for both big and small companies.
- ✓ Presence of an external auditor and developed institutions are favorable factors for access to financing.
- ✓ A dispersed ownership structure increases the availability of financing.
- ✓ Participation of foreign owners in the equity facilitates access to financing.
- ✓ Trade loans and traditional financial resources are substitutes.
- ✓ High GDP growth rates are negatively related to the possibility of attracting financing.

# Main Findings

✓ An original conclusion is that the **volume of LCY corporate bonds** outstanding (% GDP) demonstrates a significant **nonlinear influence** (a parabola with branches down) on barriers to access to financing.

Our interpretation is that at the initial stage of the bond market development big companies issue a large share of loans, and SMBs have difficulties to attract financing.

A well-developed LCY corporate bond market allows all participants to find financial resources.

# Conclusions

- ✓ We investigated influence of different factors, including concentration of the company's ownership and the presence of foreign participants in the equity capital on barriers to attract funding for a wide sample of countries of the former socialist camp for 2007-2012. For testing hypotheses we applied logit and probit models.
- ✓ High concentration of company's ownership increases barriers to obtain financing.
- ✓ Barriers to attract financing are lower for big companies, but during the financial crisis the effect of the size flattens.
- ✓ Influence of LCY corporate bonds outstanding (% GDP) is significant and nonlinear.
- ✓ Our results suggest that the impact of bond market development and that of ownership structure may be even more prominent for firms of post soviet countries.