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New firms' bankruptcy: does local banking market matter?

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Aim of the paper

Investigates the role of local banking market with a focus on local financial development and banking concentration on new firm's probability of bankruptcy.

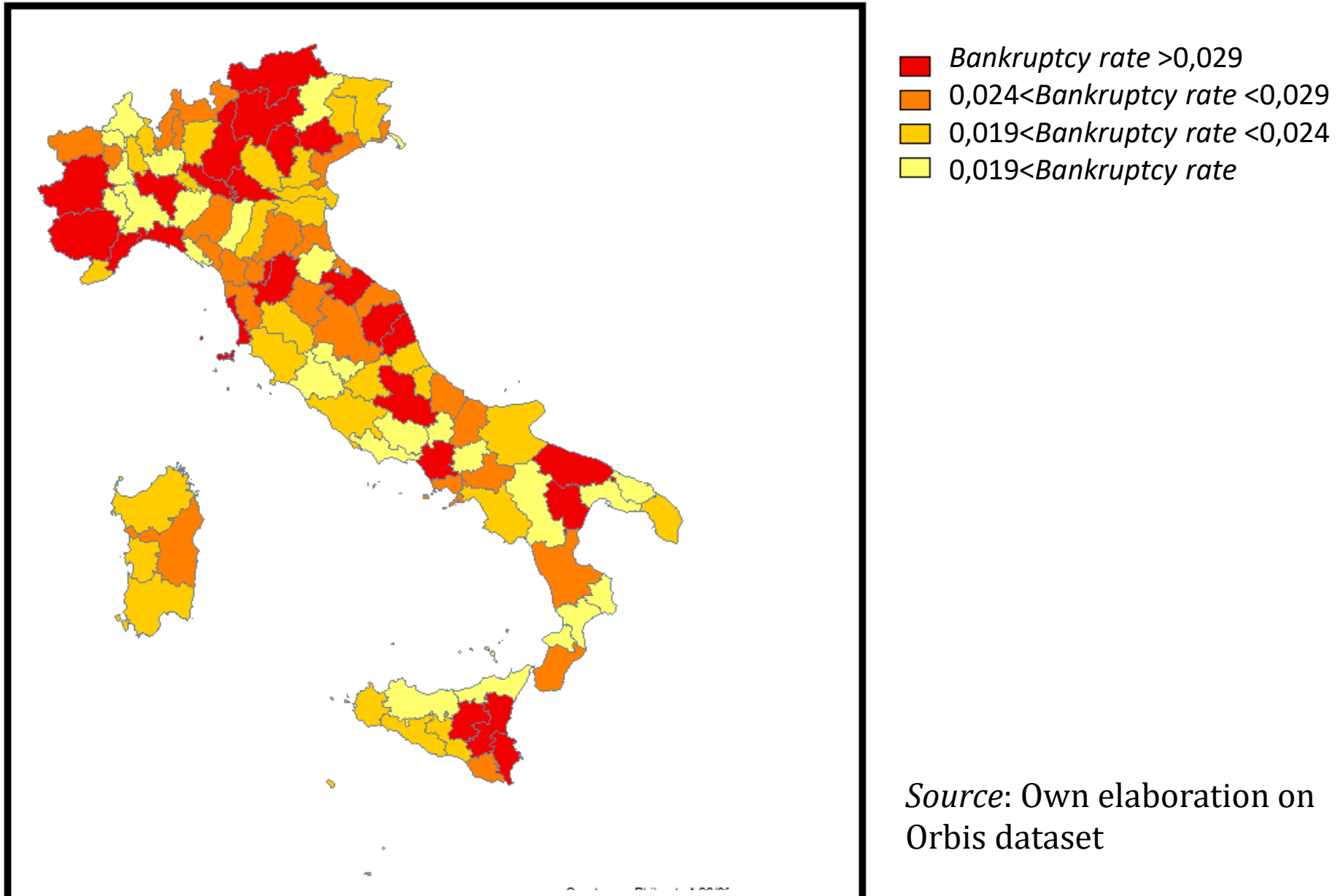


The post creation period is the moment where the local financial context may provide the more valuable support to new firms.

Structure of presentation:

- 1) Literary review and hypothesis
- 2) The model
- 3) Dataset and variables
- 4) Empirical results
- 5) Conclusions

Bankruptcy rate across Italian Provinces : new firms established in 2008-2012 (2 years after incorporation)



Originality of the paper


1) *FOCUS ON THE RELATIONSHIP BETWEEN INSOLVENCY AND THE ORGANISATION OF LOCAL CREDIT MARKET*

Credit rationing and institutional features varies across regions (Bonnet et al., 2005; Andriani 2013 and 2015)

2) *FOCUS ON NEW FIRMS' SURVIVAL*

New and young companies are the primary source of job creation in economies (Haltiwanger et al. 2013), and contribute to economic dynamism (Wiens and Jackson 2015).

3) *THE USE OF MULTILEVEL APPROACH*

Firms in the same territory share the same external environment and consequently they are more similar to each other than firms operating in different geographical areas.  The assumption of independence of standard error is violated

Literary review

Firm's bankruptcy

- *Accounting and Finance literature :*

internal features of a company (financial and non-financial information) to assess its likelihood of failure (Altman 1968, Altman et al. 2010).

A small number of studies analyzed the influence of institutional features of the local context to understand the exit behavior across geographical regions (Fotopoulos and Louri 2009, Glauben et al. 2006 Buehler et al. 2010).

- **What remains to be done?**

The role of financial development at the local level in shaping the probability of new firm's success

Literary review and hypothesis

Local Financial development and new firm's bankruptcy

Definition of Local Financial Development:

“the ease with which subjects in need of external funds can access them and the premium they have to pay for these funds” and “enables a more efficient allocation of capital reducing borrowing and financing constraints” (Guiso et al. 2004).

Local financial development:

- is related to growth (Guiso et al. 2004; Gagliardi 2009)
- affects firm's financial activities in different fields (Cariola et al. 2010, Deloof and La Rocca 2014)

H1a: a higher level of local financial development reduces new firm's probability of bankruptcy

- Difficulty for small new firms to access financial services due to greater information and transaction costs  Financial development ameliorates these frictions and exerts a positive impact on small firms (Cestone and White 2003, Guiso et al 2004).

H1b: the effect of local financial development on new firms' probability of bankruptcy is stronger for small firms.

Literary review and hypothesis

Local banking concentration and new firm's bankruptcy

1) Structure-Conduct-Performance paradigm

A higher concentration deters firm creation, limits economic growth, and causes a higher rate of unemployment (Black and Strahan, 2002, Cetorelli and Strahan 2006).

+ Concentration  + risk of failure for borrowers

2) Information approach

A higher concentration allows

- banks to develop information systems,
- borrowers to have a better access to credit (Dell'Ariccia and Marquez 2006).

+ Concentration  - risk of failure for borrowers

- Contribution of Petersen and Rajan (1995) about young firms

H2a: a higher local banking concentration reduces bankruptcy probability for new firms.

Competition in the bank market → different effect on the credit volume of small and medium sized enterprises (Beck et al. 2004, Bonaccorsi di Patti and Gobbi 2001, Sääskilahti 2016)

H2b: The influence of concentration on the probability of new firms' bankruptcy is higher for smaller companies

Sample and data

Sample composed by firms legally incorporated in Italy from 2008 to 2012 → 94,418 observations.

1) First level data

Firms' data → Orbis database compiled by Bureau Van Dijk (BvD).

2) Second level data

- Data on economic development, population, and crime rates in the 103 Italian provinces → Italian National Institute of Statistics (ISTAT),
- Data on local banking market → Bank of Italy.

The Logit Multilevel Model

Multilevel approach → efficient estimates of coefficients:

- controls for spatial dependence and corrects standard errors of variables;
- considers group-level variance through the incorporation of random coefficients;
- allows the simultaneous existence of two distinct levels: 1) FIRM; 2) PROVINCE (NUTS3 LEVEL)

$$p_{ij} = \Pr(Y_{ij} = 1) = F\left[\alpha + \sum_{h=1}^r \beta_h X_{hij} + \sum_{k=1}^s \gamma_k Z_{kj} + (u_j + e_{ij})\right]$$

- $F(_)$ is the logistic cumulative distribution function;
- X_{hij} are the individual variables (where h is the number of covariates and i is the firm located in the j -th province);
- Z_{kj} are the local variables (where k is the number of local covariates and j the province);
- u_j and e_{ij} , are the so called second and first level residuals.

Dependent variable

Y is a dummy variable = 1 if the firm has undertaken the juridical procedure of bankruptcy because of permanent financial distress 2 years after incorporation, and =0 otherwise.

Explanatory variables

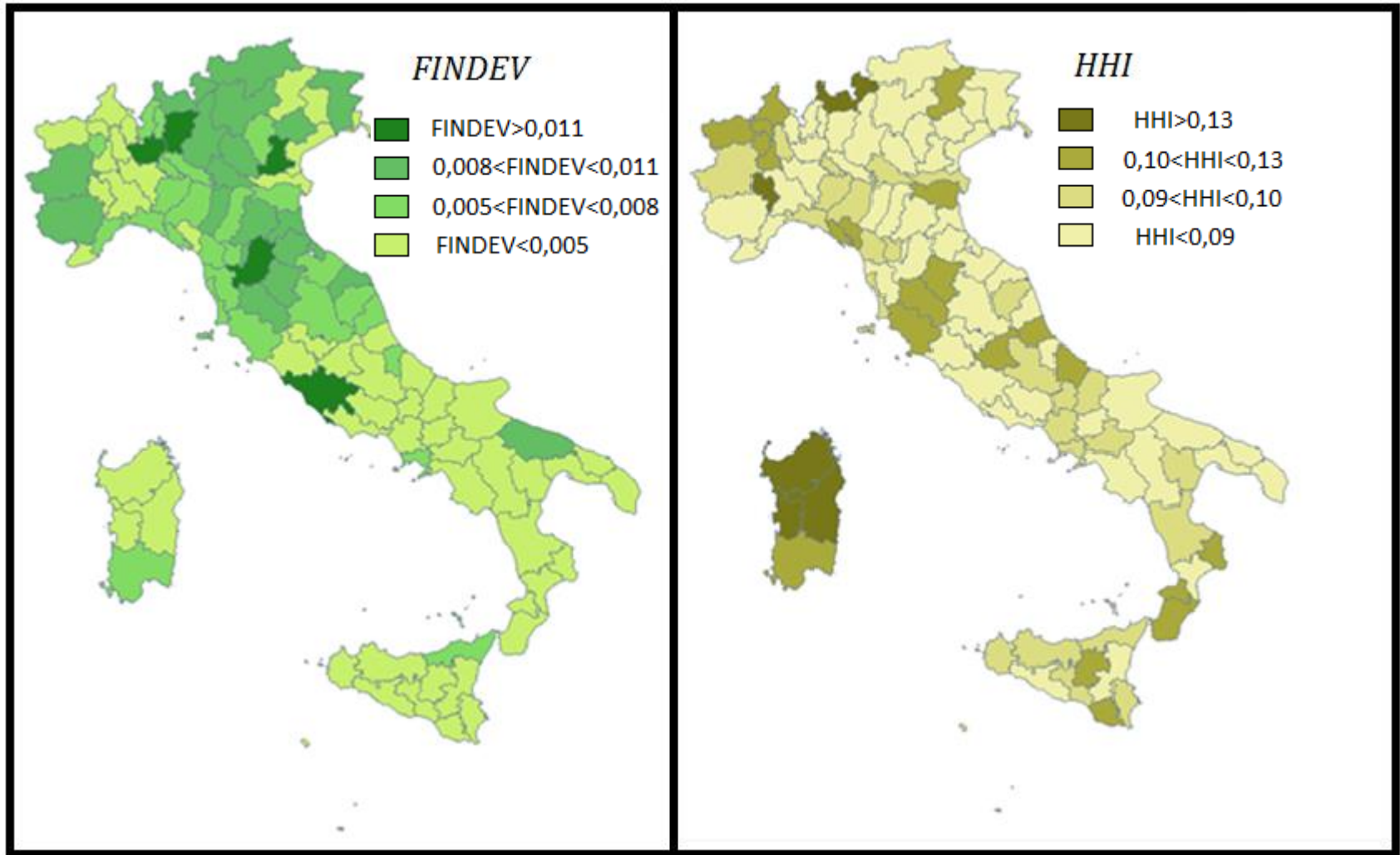
Variables at firm level (1st level)

<i>Size</i>	$\text{Ln}(\text{Total Assets})$
<i>Stdebt</i>	Loans/TA
<i>Ltdebt</i>	Ltd/TA
<i>ROA</i>	Ebit/TA
<i>Tangibility</i>	$\text{Tangible assets}/\text{TA}$
<i>Intangible</i>	$\text{Intangible assets}/\text{TA}$
<i>DifferentTaxShield</i>	$(\text{Ebitda}-\text{Ebit})/\text{TA}$
<i>WCTA</i>	WC/TA
<i>Interestcov</i>	Ebitda/IP
<i>Majority_sh</i>	Dummy variable =1 if there's a majority shareholder
<i>Sole_proprietorship</i>	Dummy variable =1 if there's a unique shareholder

Local variables at provincial level (2nd level)

<u><i>Financial Development</i></u>	Privat Credit/GDP
<u><i>HHI</i></u>	Herfindhal-Hirschman index on bank branches
<i>Crime</i>	Average n of crime reported by police to the judicial authority per 1000 inhabitants
<i>Gdp per capita</i>	Measure of macroeconomic conditions in the different provinces

Level of financial development and Bank concentration



Source: Own elaboration on Banca d'Italia's dataset

The effect of local banking market on new firms' bankruptcy:

	(1)	(2)	(3)
	Whole sample	Small new firms sub-group sample	Large new firms sub-group sample
Local Variables (2nd level)			
FinDev	-4.700***	-6.578***	-3.646**
HHI	-1.241	-0.794	-2.592**
GDPperCapita	-0.00221	-0.00414	-0.000946
Crime	0.00348	0.00558	-9.78e-05
Firm's variable (1st level)	YES	YES	YES
Year of incorporation FE	YES	YES	YES
Sector FE	YES	YES	YES
North/South FE	YES	YES	YES
Constant	-2.479***	-2.524***	-2.420***
Variance			
Firms	3.29	3.29	3.29
Province	0.051	0.055	0.037
LR test	58.70***	27.33***	8.73***
Log-likelihood	-11049.287	-6335.5944	-4632.3457
Observations	94,418	47,209	47,209
Number of groups	103	103	103

Robustness checks (whole sample)

	(1)	(2)	(3)
	2sls	Bankruptcy up to 1 year	Bankruptcy up to 3 years
Local variables (2 nd level)			
FinDev	-0.0904**	-3.563	-6.004***
HHI	-0.0132	0.347	-1.340**
GDPperCapita	-9.20e-05	0.000340	0.000415
Crime	0.000117	0.0336	0.00373
Firm's variables (1 st level)	YES	YES	YES
Year of incorporation FE	YES	YES	YES
Sector FE	YES	YES	YES
North/South FE	YES	YES	YES
Constant	0.0523***	-4.309***	-1.912***
Variance			
Firm		3.29	3.29
Province		0.107	0.059
LR Test		15.55***	168.29***
Log-likelihood		-2575.936	-20531.5
Observations	94,418	94,418	94,418
Number of groups		103	103

Main results

- Financial development at the local level reduces new firm's probability of bankruptcy, this effect is stronger for small new firms
- Local banking concentration brings to a lower probability of bankruptcy for large new firms.
- These effects are stronger over time.

Policy maker and management implications

- The regulation of bank sector at the local level plays a key role in firm's early stage life and a more stable financing relationship could represent an advantage for new established firms.
- Agencies supporting business creation, should define specific criteria in the selection of investments projects and the subsequent attribution of credit in order to give life to a stable lending relationship.

Thank you for your attention!

References

- Altman EI (1968) Financial ratios, discriminant analysis & the prediction of corporate bankruptcy. *The Journal of Finance*, 23(4): 589–609
- Altman EI, Balan D, Forero J, Rijken H, and Watt M (2010) *The Z-Metrics Approach to Assessing the Probability of Default of Corporate Debt*. Available www.msci.com and from www.stern.nyu.edu/~ealtman
- Andriani L (2013) Is Acting Prosocially Beneficial for the Credit Market? *Review of Social Economy*, 72(3): 354-378.
- Andriani L (2015) *Institutional Conformity and Regional Credit Market Failures: Evidence from the Italian Industrial Districts*. Working Papers in Management, Birkbeck, Department of Management, BWPMA 1503, November.
- Beck T, Demirguc-Kunt A, and Maksimovic V (2004) Financial and Legal Constraints to Firm Growth: Does Firm Size Matter? *Journal of finance*, 60(1): 137-177.
- Black SE, Strahan PE (2002) Entrepreneurship and Bank Credit Availability, *The Journal of Finance*, 57(6): 2807–2833
- Bonaccorsi di Patti E, Gobbi G (2001) The changing structure of local credit markets: Are small businesses special? *Journal of Banking and Finance*, 25(12): 2209–2237
- Bonnet J, Cieply S, and Dejardin M (2005) Financial Constraints on New Firms: Looking for Regional Disparities. *Brussels Economic Review*, 48(3): 217-245
- Buehler S, Kaiser C, and Jaeger F (2012) The geographic determinants of bankruptcy: evidence from Switzerland. *Small Business Economics*, 39(1): 231–251
- Cariola A, La Rocca M, and La Rocca T (2010) The Influence of Local Institutional Differences on the Capital Structure of SMEs: Evidence from Italy. *International Small Business Journal*, 28(3): 234-257.
- Cestone G, White L (2003) Anticompetitive Financial Contracting: The Design of Financial Claims. *The Journal of finance*, 58(5): 2109–2141. September, The Kauffman Foundation.

- Cetorelli N, Strahan PE, (2006) [Finance as a Barrier to Entry: Bank Competition and Industry Structure in Local U.S. Markets](#). *Journal of Finance*, American Finance Association 61(1): 437-461.
- Dell'Ariccia G, Marquez R (2006) [Lending Booms and Lending Standards](#), *Journal of Finance*, 61(5): 2511-2546
- Deloof M, La Rocca M (2014) [Local Financial Development and the Trade Credit Policy of Italian SMEs](#). *Small Business Economics*, 44(4): 905-924
- Fotopoulos G, Louri H (2000) Location and survival of new entry. *Small Business Economics* 14(4): 311–321.
- Gagliardi F (2009) "[Financial development and the growth of cooperative firms](#), *Small Business Economics*, 32(4): 439-464.
- Glauben T, Tietje H, and Weiss C (2006) Agriculture on the move: Exploring regional differences in farm exit rates in Western Germany. *Review of Regional Research* 26(1): 103–118.
- Guiso L, Sapienza P, and Zingales L (2004) Does local financial development matter? *Quarterly Journal of Economics* 119(3): 929–969.
- Haltiwanger J, Jarmin RS, Miranda J (2013) Who Creates Jobs? Small versus Large versus Young. *Review of Economics and Statistics*, 95(2), 347-361.
- Petersen MA, Rajan RG (1995) The effect of credit market competition on lending relationships. *Quarterly Journal of Economics*, 110(2): 407–443
- Sääskilahti J (2016) Local bank competition and small business lending after the onset of the financial crisis. [Journal of Banking & Finance](#), 69(1): 37–51.
- Wiens J, Jackson C (2015) *The Importance of Young Firms for Economic Growth*, 13th of September, The Kauffman Foundation.

Descriptives

	Active firms (n=91654)			Bankrupt firms (n=2464)			t-test Mean Comparison
Variable	Mean	Median	STD dev	Mean	Median	STD dev	
FinDev	0.034	0.113	0.034	0.026	0.114	0.037	8.061***
HHI	0.100	0.094	0.041	0.101	0.096	0.040	-1.182
Crime	10.338	9.725	4.152	10.332	9.575	4.321	0.073
GDPpercapita	22.617	21.966	9.822	22.575	21.966	9,530	0.208
Size	4.807	4.770	1.344	4.482	4.469	1.323	11.843***
Stdebt	0.053	0.000	0.131	0.061	0.000	0.150	-3.212 **
Ltdebt	0.038	0.000	0.129	0.030	0.000	0.115	3.124***
Tangibility	0.144	0.058	0.195	0.125	0.041	0.177	4.760***
Intangible	0.088	0.029	0.145	0.103	0.040	0.149	-4.829***
ROA	0.021	0.024	0.297	-0.119	-0.004	0.499	22.585***
WCTA	0.072	0.029	0.355	0.045	0.000	0.359	3.709***
Interestcov	512.50	12.932	11226	18.536	2.161	4905.2	2.179**
DifferentTaxShield	0.063	0.019	0.854	0.042	0.020	0.141	1.197
Majority_sh	0.404	0.000	0.491	0.48	0.000	0.480	4.324***
Sole_propr	0.188	0.000	0.391	0.401	0.000	0.401	-1.694*

Correlation Matrix

	VIF	FinDev	HHI	Crime	GDPper capita	Size	Stdebt	Ltdebt	ROA	Tangibility	Intangible	DifferentTaxShield	WCTA	Interestcov	Majority_sh	Sole_propr
FinDev	1.38	1														
HHI	1.15	-0.313	1													
Crime	2.67	-0.071	0.020	1												
GDPpercapita	1.39	-0.061	-0.014	-0.420	1											
Size	1.20	0.001	-0.034	-0.084	0.069	1										
Stdebt	1.07	-0.015	-0.019	-0.114	0.082	0.149	1									
Ltdebt	1.10	-0.017	-0.004	-0.074	0.053	0.167	0.031	1								
Tangibility	1.24	-0.066	0.029	-0.002	0.008	0.113	0.037	0.206	1							
Intangible	1.19	0.066	-0.027	-0.027	0.002	-0.140	0.007	0.071	-0.008	1						
ROA	1.11	-0.002	0.003	-0.002	0.003	0.105	-0.080	-0.046	-0.091	-0.182	1					
WCTA	1.22	-0.011	-0.007	-0.066	0.040	0.104	0.131	0.027	-0.273	-0.179	0.151	1				
Interestcov	1.01	-0.001	-0.003	-0.004	0.002	0.037	-0.017	-0.013	-0.014	-0.023	0.100	0.007	1			
DifferentTaxShield	1.01	-0.004	0.008	0.007	-0.010	-0.079	-0.011	-0.009	-0.007	0.048	-0.018	-0.019	0.004	1		
Majority_sh	1.19	0.030	-0.014	0.003	-0.006	-0.021	-0.010	-0.030	-0.012	-0.017	0.022	-0.016	0.006	-0.0001	1	
Sole_propr	1.20	-0.018	-0.002	-0.015	0.025	0.075	-0.004	-0.013	0.011	-0.032	0.007	0.020	0.003	-0.004	-0.395	1

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GDPperCapita	-0.00221	-0.00414	-0.000946
Crime	0.00348	0.00558	-9.78e-05
Firm's variable (1st level)			
Size	-0.158***	-0.142***	-0.146***
Stdta	0.554***	0.669***	0.320
Ltdta	-0.241	-0.177	-0.0970
Tangibility	-0.730***	-0.290*	-1.273***
Intangible	-0.0379	0.374**	-0.548**
ROA	-0.556***	-0.432***	-1.978***
WCTA	-0.118*	0.0909	-0.318***
Interestcov	-3.34e-06	-1.65e-05**	1.76e-06
DifferentTaxShield	-0.510***	-0.496***	-2.017***
Majority_sh	-0.146***	-0.263***	0.0345
Sole_pr	0.0446	-0.110	0.255***
Year of incorporation FE	YES	YES	YES
Sector FE	YES	YES	YES
North/South FE	YES	YES	YES
Constant	-2.479***	-2.524***	-2.420***
Variance			
Firms	3.29	3.29	3.29
Province	0.051	0.055	0.037
LR test	58.70***	27.33***	8.73***
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HHI	-0.0132	0.347	-1.340**
GDPperCapita	-9.20e-05	0.000340	0.000415
Crime	0.000117	0.0336	0.00373
Firm's variables (1 st level)			
Size	-0.00355***	-0.172***	-0.127***
Stdta	0.0119***	1.078***	0.480***
Ltdta	-0.00643*	-0.932*	-0.318**
Tangibility	-0.0188***	-0.510*	-0.753***
Intangible	-0.00644*	-0.445	0.0741
ROA	-0.0364***	-0.506***	-0.607***
WCTA	-0.00104	-0.511***	-0.133***
Interestcov	1.04e-08	-6.30e-06**	-3.02e-06
DifferentTaxShield	-0.00140*	-0.953	-0.442***
Year of incorporation FE	YES	YES	YES
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North/South FE	YES	YES	YES
Constant	0.0523***	-4.309***	-1.912***
Variance			
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