Title: Risk Averse Insiders with Specific Objective Function and Capital Structure

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The final version of this preprint (working paper) was published in an article entitled *Risk Averse Insiders with Specific Objective Function and Capital Structure Choice in European Emerging Economies* in the journal *Corporate Ownership and Control*.

URL: http://www.virtusinterpress.org/IMG/pdf/COC__Volume_11_Issue_1_Fall_2013_ Special_conference_issue_contents.pdf

Suggested citation:

Črnigoj Matjaž: Risk Averse Insiders with Specific Objective Function and Capital Structure Choice in European Emerging Economies. Corporate Ownership and Control, 11(2013), 1, pp. 7-17.

RISK AVERSE INSIDERS WITH SPECIFIC OBJECTIVE FUNCTION AND CAPITAL STRUCTURE

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WORKING PAPER No. 37, 2007

Ljubljana, November 2007

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Abstract

I extend the logic beyond the scope of traditional empirical tests of modern capital structure theory, which is based on the assumption that firms are governed by dispersed minority shareholders and follow the goal of maximizing their wealth. In the paper I focus on the capital structure implications of having risk averse insiders with specific objective function in control. Using questionnaire data for Central eastern Europe in Baltic States (CEB) from EBRD-World Bank Business Environment and Enterprise Performance Survey, BEEPS (III) (EBRD and World Bank, 2005), which allow us to separate sufficient share of employee-governed and manager-governed firms, I have found that firms governed by insiders operate with significantly lower leverage, as well as that the probability that a firm uses a bank loan at all drops if insiders are the largest shareholders. In all the specifications of the empirical models I control for firm's specific capital structure determinants, industry specific effects and differences in creditor rights between countries.

1. Introduction

Typically, capital structure decisions have been analyzed by applying traditional tests of modern capital structure theory which is based on the assumption that firms are governed by dispersed minority shareholders and follow the goal of maximizing their wealth. As it has finally become clear that widely held firm is a rare phenomenon and that goals of other stakeholders significantly impact behavior of firms, I argue that existing empirical research, which failed to address the factors that affect the demand for external funds, is at least incomplete. In my opinion, there are two corporate governance characteristics – risk averse insiders who often governed the firms and control-motivated blockholders, that significantly affect the demand for external finance and have to be taken into account when explaining the sources and the amount of external finance used by the firms. In firms where insiders represent the controlling group, cash-flow retention and risk reduction motives are predominant, while where large blockholders emerged, motives of dilution of control are governing capital structure decisions.

In this paper, I focus on the capital structure implications of having risk averse insiders with specific objective function in control. As already argued in Crnigoj and Mramor (2006), employee-governed firms, which are typically more risk averse and in general maximize the wages instead of shareholders' wealth, opt for the lowest possible level of debt, since higher interest payments reduce near term cash flow and increase bankruptcy risk. Observing relatively low leverage in large proportion of the firms, some of them actually without any debt, and the fact that far the largest share of financing needs are met by internal sources, I test the dependence of firm's leverage and the probability of the firm having a bank loan, on the fact who governed the firm. Using questionnaire data for Central eastern Europe in Baltic States (CEB) from EBRD-World Bank Business Environment and Enterprise Performance Survey, BEEPS (III) (EBRD and World Bank, 2005), which allow us to separate sufficient share of employee-governed and manager-governed firms, I have found that firms governed by insiders operate with significantly lower leverage, as well as that the probability that a firm uses a bank loan at all drops if insiders are the largest shareholders. In all the specifications of the empirical models I control for firm's specific capital structure determinants, industry specific effects and differences in creditor rights between countries.

The paper is structured as follows. In the second section I discuss capital structure implications of having risk averse insiders with specific objective function in control. In the third section I look at the data, while in the forth I present the methodology used in the empirical study. In the fifth section I discus the results and the sixth section concludes.

2. Risk averse insiders with specific objective function in control and demand for external finance

Faleye et al. (2006) argue that the more the firm is employee-governed due to employees' ownership stake the more it deviates from shareholder value-maximization. It invests less in long term assets, takes fewer risks, grows more slowly, creates fewer new jobs and exhibits lower labor and total factor productivity. They assume that labor maximizes the total value of its two claims – fixed, wage-based and residual, equity-based. Since their equity claims are usually small compared to their fixed claims they suggest that employees push corporate policies away from, rather than toward shareholders' wealth maximization. Similar arguments have been made by Mramor and Valentincic (2001) who discus firm's financial behavior depending on who governed the firm and try to empirically prove some correlations in Slovenian firms.

Assuming employee-governed firm with specific objective function, i.e. maximizing the wages, Crnigoj and Mramor (2006) argue that these firms opt for the lowest possible level of debt, since higher interest payments reduce near term cash flow and increase bankruptcy risk. Employees' behavior does not coincide with that of outside shareholders because employees' equity claims are usually small compared to their wages and they are typically more risk averse than other investors (either because their wealth is less diversified, because they are less wealthy, or simply because they have limited abilities to asses the risk associated with their investments). Not least, in an environment where minority shareholder rights are not well protected they often have higher bargaining power as employees than as shareholders.

In contrast to the area of research focusing on the capital structure implication of having employees in control, where scarce literature exists, there is a wide area of research focusing on the effects of entrenched managers. Focusing on managerial control motivations, Haris and Raviv (1988) and Stulz (1988) argue that managers use debt to increase their voting power, while Israel (1991) to affect the distribution of cash flows between voting and nonvoting shares, in order to influence the outcome of the takeover contest. Zwiebel (1996) argues that managers, trading off their empire-building ambitions and the needs to ensure sufficient efficiency to prevent control challenges, use debt as a credible signal to constrain their future empire building.

However, in contrast to theoretical predictions that control motivated managers increase leverage, Berger et al. (1997) showed that entrenched managers actually decrease leverage. Capital structure motivation of managerial self-interest is well documented also in Friend

and Lang (1988). In a similar vein as Berger et al. (1997) they find negative relationship between relative debt levels and management's shareholding. Thus, reduction of firm's specific risk that represents a substantial risk driver in managers' undiversified portfolios must be more important than their control motives.

3. Data and methodology

3.1. Database

In order to determine capital structure implications of having risk averse insiders with specific objective function in control, a database with sufficient share of firms governed by insiders is needed. European transition economies are one of the most appropriate candidates because just recently a large amount of the large and medium-sized firms were privatized by management and employee buy-outs. Moreover, the power of insiders in these countries is augmented by the remains of the centrally-planned economic system in which equality and workers' rights were promoted.

The data comes from third EBRD-World Bank Business Environment and Enterprise Performance Survey, BEEPS (III) (EBRD and World Bank, 2005). Even though the survey encompasses almost 30 transition economies, I restrict the study to 8 most advanced countries – Czech Republic, Hungary, Poland, Slovak Republic, Slovenia, Estonia, Latvia and Lithuania (CEB). Privatization in these countries has been finished and I believe that the economies have been sufficiently transformed to market economies, thus we can expect controlling stakeholders to be powerful enough to behave independently of the central authority commands and that observed capital structures is determined by forces within the firm and not outside the firm, as was often the case in the former economic system.

Beside country composition, BEEPS data takes into account sector, size, ownership, export orientation and location distributional criteria. The sectoral composition is determined by their relative contribution to GDP, while size composition requires that at least 10 % of the sample is in the small and 10 % in the large size categories. Similar rules are considered at other distributional criteria.

3.2. Variable definitions

Since BEEPS data are collected by questionnaire, I have to approximate firms' leverage from the answers on questions about the firms' financing. Firm's leverage is determined by

the question in which the proportions of the firm's fixed investments financing sources are revealed (Q.45a). I distinguish here two proxies for leverage, first taking into account only borrowing from banks, and secondly including also other debt sources, i.e. borrowing from family and friends, other money lenders and informal sources, and leasing. I determined dummy variable $D_{bank\ loan}/D_{debt}$, which takes the value of 1 if the firm has a bank loan/debt and 0 otherwise using the same question.

Employee-governed firm was approximated by a dummy variable ($D_{employee}$), taking the value of 1 if the largest shareholders are employees and 0 otherwise. It is determined by question (Q.4a) asking the respondent who best describes firm's largest shareholder(s). Ina similar manner, I approximated manager-governed firm ($D_{manager}$).

From the questionnaire also some firm specific capital structure controls, e.g. profitability, growth and firm size can be approximated.[1] Profitability (*PROF*) is determined using question on the operating margin – per cent by which sales price exceeds operating costs (Q.14), growth (*GROWTH*) using question about the change of sales over the last 3 years (Q.55b1), and firm size (*SIZE*) by question about the estimate of firm's total sales (Q.57acat). According to traditional trade-off theory profitability is expected to be positively correlated with leverage because more profitable firms have higher incomes to shield and thus operate with higher leverage. On the other hand, theory based on agency costs and pecking order theory predicts negative correlation. According to the theory based on agency costs debt serves as a disciplining device and ensures that managers pursue firm's activities in a manner to maximize shareholders' wealth rather than build empires. Jensen (1986) argues that debt commits to pay out cash, thus reduces the amount available to managers to overinvest. According to pecking order theory capital structure decisions are driven by asymmetric information. Myers and Majluf (1984) thus argue financing process follows a pecking order forcing firms to exhaust internal sources first, and when external sources are required first to issue debt, while issuing equity capital only as a last resort. Growth should be positively correlated with leverage since faster growing firms are expected to need more external finance, and taking into account pecking order hypothesis debt is preferred to equity. However, firms with high growth opportunities borrow less because growth opportunities cannot serve as collateral. Jensen (1986) and Myers (1977) also argue that in firms with high growth opportunities shareholders expropriate wealth

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[1] There are some other firm specific determinants which have proved to significantly affect capital structure choice. The most important one missed here is tangibility of assets. Trade-off theory suggests that using tangible assets to collateralize the loan decrease bankruptcy costs, while Jensen and Mackling (1976) argue that collateral protects lender from moral hazard problem in conflicts between equity and debt holders. However, capital structure research in CEE transition economies when trying to explain total debt, like is the case in my empirical mostly failed to document positive correlation (see for example Cornelli et al., 1996; Klapper et al., 2002; Nivorozhkin, 2004; Berk, 2006; Črnigoj and Mramor, 2007).

from bondholders. Firm size is expected to be positively correlated to leverage. Rajan and Zigales (1995) argue that larger firms tend to be more diversified and thus less prone to go bankrupt.

Besides, I use seven industry dummies, determined by question in which the respondent indicated the percentages of the sales coming from different industries (Q.2), and proxy for industry competition (*COM*), determined using question that asks a hypothetical question what will be the result of rising the prices of the firm's main product or service by 10 % (Q.11).

Creditors' rights controls are from Pistor et al. (2000), who adopt and upgrade La Porta et al. (1997) indices. *CREDCON* captures the extent to which creditors can control the bankruptcy process, *COLLAT* captures the existence of legal provision on security interests, while *REMEDY* refer to the sanctions that creditors can impose on management ex-post, which goes beyond the original contractual rights or claims based on the security interest. I approximated legal effectiveness (*LEGALEFF*) by legal effectiveness index taken from the EBRD Transition Report (EBRD, 2002), as found in Pistor et al. (2000) to be among several alternatives the best proxy for legal effectiveness available.

3.3. Descriptive statistics

Despite the fact that BEEPS (III) includes 3.000 firms from CEB, my sample consists only of 2.117 firms due to the missing data for control variables. Country decomposition is not far away from the relations between size of the countries, thus the highest number of firms being Polish, followed by firms from Hungary and Czech Republic, while other countries being represented by approximately similar number of firms. In the sample there are 3,4 % of firms governed by insiders, 1,2 % majority owned by employees and 2,1 % majority owned by managers. Besides, there are 0,14 % and 0,19 % of firms in which managers and employees share the largest ownership share with other stakeholders. Concerning the origin of the firms, 84,3 % of firms are originally private, while only 10,5 % of them are privatized state-owned firms.

Taking into account firm's employee number, 74,8 % of firms can be characterized as small firms, 17,7 % as medium-sized, and 7,5 % as large firms. Median firm has sales from 250.000 to 499.000 USD. Profitability of the firms on average amount to 23,0 % (measured by the margin by which the sales price exceed operating costs). Over the last 3 years firms exhibited 8,1 % growth rate of sales on average.

As already said, firms on average operate with relatively low leverage. The share of firms' fixed investments over last year that have been financed by bank loans amounts to only 10,9 % on average, while all debt sources together represents only 20,1 % of the financial sources. Moreover, median firm actually do not use bank loans or any other source of debt finance to finance capital expenditures. Analyzing leverage of the firms given their ownership structure, I observe significantly lower leverage in the employee-governed firms, while the difference is not significant for manager-governed firms. Among employee-governed firms there are 5 % more of them without bank loans compared to the firms governed by other stakeholders, and 7 % more without any debt. Again, the difference is smaller for manager-governed firms.

4. Empirical models and estimation techniques

To determine the effects of having risk averse insiders with specific objective function, in control on the demand for external funds, I test two empirical models. The first model tests for the dependence of firm's leverage on the fact who governed the firm, controlling for firm's specific capital structure determinants, industry specific effects and differences in creditors' rights between countries.

The linear regression model can thus be written as:

$$LEV = \alpha + \beta_1 D_{employee} + \beta_2 D_{manager} + \beta_{3i} CONTROLS_i + \varepsilon$$

where *LEV* represents firm's leverage, $D_{employee}/D_{manager}$ are dummy variables taking the value of 1 if employees/managers are the largest shareholders and 0 otherwise, $CONTROLS_i$ represent a vector of firm-level capital structure determinants (profitability (*PROF*), growth (*GROWTH*) and firm size (*SIZE*)), industry specific effects (7 industry dummies and proxy for competition (*COM*)) and creditors' rights approximated by *CREDCON*, *COLLAT*, *REMEDY* and *LEGALEFF*.

The second model tests for the dependence of the probability that a firm has a bank loan/debt on the fact who governed the firm. Dependent variable ($D_{bank\ loan}/D_{debt}$) is approximated by a dummy variable taking the value of 1 if the firm has a bank loan/debt and 0 otherwise, while the model includes the same explanatory variables and controls as first model. Logistic regression can be written as:

$$logit(P) = \alpha + \beta_1 D_{employee} + \beta_2 D_{manager} + \beta_{3i} CONTROLS_i + \varepsilon,$$

The parameters of the first regression model are estimated by OLS, while estimation technique for the logistic regression model is maximum likelihood.

5.   Results

As hypothesized, insider-governed firms proved to be risk averse in their financial decisions. When employees or managers hold the largest ownership stakes, thus expecting the firms to be employee or manager-governed, firms do not use debt finance as aggressively as firms which are governed by outside shareholders. Lower leverage and lower reliance on debt finance by insider-governed firms is documented by studying firms' leverage, as well as decisions to use debt finance at all. As seen in table 2 of the appendix, employee-governed firms tend to operate with significantly lower leverage compared to the firms governed by outside shareholders (coefficient at $D_{employee}$ is significant at 10 % level). Similar findings are documented in Crnigoj and Mramor (2007). Lower leverage can also be observed in firms governed by managers, however the difference is smaller and statistically not significant. I estimated regressions explaining firm's leverage also excluding outliers, which were determined by Cook's distance (4/n). After excluding slightly less that 6 % of the firms (128 in the regression with bank loan and 121 firms from the regression with all debt sources) from the sample, all the coefficients retained the same signs but became highly significant.[2]

As seen in table 3, if the largest shareholder(s) are employees or manager(s), a drop in probability that the firm uses debt finance can be observed, however none of the impacts proved to be statistically significant. In the similar manner as in leverage regressions, I tried to address the problem of influential observation and estimated logistic regression without outliers, which were determined by Pregibon's dbeta (3 times of the average value). By doing that, I got very interesting results. In both specifications only employee-

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[2]   Results of the regression without outliers are not reported in the paper but are available at author.

governed and manager-governed firms without bank loan/debt were left in the sample since all levered employee-governed and manager-governed firms have been characterized as outliers and thus excluded. The dummy variable $D_{employee}/D_{manager}$ thus perfectly predicts zero probability that the firm has bank loan/debt.

It is expected financial behavior of insiders to become less conservative when faced with pressure from competition. Competition (*COM*) should also make rent extraction through wages by insiders less desirable. However, I cannot check this directly because of high multicollinearity when including the interactive terms. Firm's leverage tends to increase when faced with pressure from competition, but I got insignificant and inconsistent results for the impact of competition on the probability that the firm uses debt finance. Acknowledging that, I can confirm that rent execration from insiders is taking place in CEB firms since firms only when faced with pressure from competition are willing to burden with debt.

All firm's level capital structure determinants have expected signs and are statistically significant. Profitability (*PROF*) is negatively correlated to firm's leverage and the probability that a firm uses debt finance. This is in line with pecking order hypothesis which suggests that firms' financing process because of asymmetric information and thus high transaction costs follows a specific hierarchy – using first internal sources available, and only then resort to external finance; first debt and only as a last choice to equity. However, Delcoure (2007) argue that the order of external financing in CEE countries appears to be different and confirm new pecking order hypothesis proposed by Chen (2004) for developing countries. Since bond market in these countries is still developing and banks provide short-term liquidity loans rather than long-term financing firms have to rely on equity to finance their fixed assets. In addition, shareholder rights are not well protected. Managers thus prefer equity financing since it is not binding and it appears to free source of capital. Then I found positive correlation of firm's growth (*GROWTH*) and firm's size (*SIZE*) with firm's leverage and the probability that a firm uses debt finance. Faster growing firms are expected to need more external finance and taking into account huge transaction cost associated with issuing equity in CEB, debt looks often as their only choice. Firm's size, in contrast, should positively impact asymmetric information and lowers transaction cost, and thus increase firms' ability to reach equity market. Observing positive correlation of firm's size with firm's leverage and the probability that a firm uses debt finance, I can confirm that financing practices observed in CEB rarely include issuing equity. Beside firm specific determinants, observing many significant coefficients at industry dummies I can conclude that the industry specific effects are important determinants as well.

As already found in La Porta et al. (1997) and Pistor et al. (2000), law enforcement (*LELAGEFF*) have large and significant effect on leverage of the firms, as well as on the probability that a firm uses debt finance, while measures for law on books (*CREDCON*, *COLLAT* and *REMEDY*) do not exhibit any expected effects. Beside the fact that law enforcement proved to have a much stronger impact on external finance supplied than law on books, results may be due to the data for law on books used. I use data from year 1998 which do not correspond to the circumstances in 2002, and should have thus limited explanatory power.

6. Conclusions

Capital structure decisions have been only studied so far by applying empirical test of modern capital structure theory, which is based on the assumption that firms are governed by dispersed minority shareholders and follow the goal of maximizing their wealth. In this paper I extend the logic beyond the scope of traditional tests and focus on the capital structure implications of having risk averse insiders with specific objective function in control. As already argued in Crnigoj and Mramor (2006), employee-governed firms, which are typically more risk averse and in general maximize the wages instead of shareholders wealth, opt for the lowest possible level of debt, since higher interest payments reduce near term cash flow and increase bankruptcy risk. Observing relatively low leverage in large proportion of the firms, some of them actually without any debt, and the fact that far the largest share of financing needs are met by internal sources, I test the dependence of firm's leverage and the probability of the firm having a bank loan, on the fact who governed the firm.

Using questionnaire data for Central eastern Europe in Baltic States (CEB) from EBRD-World Bank Business Environment and Enterprise Performance Survey, BEEPS (III) (EBRD and World Bank, 2005), which allow us to separate sufficient share of employee-governed and manager-governed firms, I have found that firms governed by insiders operate with significantly lower leverage, as well as that the probability that a firm uses a bank loan at all drops if insiders are the largest shareholders. In the linear regression model, as well as in logistic regression, I found also that firm's leverage decreases with the profitability of the firm, and increases with firm's growth rate and firm's size. Beside these firm specific determinants, I observe significant industry specific effects. Not least, as already found in La Porta et al. (1997) and Pistor et al. (2000), leverage of the firms, as well as on the probability that a firm uses debt finance, is significantly affected by law

enforcement in the country, while measures for law on books do not exhibit any expected effects.

The results of the empirical study clearly suggest that there are firms which are governed by insiders and that the financial behavior of these firms differs from the behavior firms governed by shareholders. However, I obtained the results by analyzing firms from transition economies, for which it is often claimed that tend to behave in that way just because privatization enable insiders to take over for some time but will lost their power along with the process of ownership consolidation in the future, one can argue that the results cannot be generalized. This is a challenge for future research since scarce literature, especially analyzing employee-governed firms in developed economies, exists.

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Appendix

Table 1: Descriptive statistics with t-tests for the difference between average leverage among isider-governed firms and firms governed by other stakeholders

	Mean (t-test)	Median	Std. Deviation
Sales	-	250.000-499.000	-
Profitability	23,0	20,0	15,3
Growth	8,1	0	33,4
Leverage (bank loans)	10,9	0	26,0
Leverage (total debt)	20,1	0	34,0
Leverage (bank loans) of employee-governed firms	4,2 (2,72)	-	12,4
Leverage (total debt) of employee-governed firms	8,9 (2,69)	-	21,2
Leverage (bank loans) of manager-governed firms	11,6 (-0,16)	-	27,3
Leverage (total debt) of manager-governed firms	14,4 (1,32)	-	29,0
N = 2.117			

Table 2: Regression results in which $LEV_{bank\,loan}/LEV_{debt}$ measures firm's leverage, $D_{employee}/D_{manager}$ is a dummy variable taking value of 1 if the largest shareholders are employees/managers and 0 otherwise. *COM* proxies for competition, *PROF* profitability, *GROWTH* growth, and *SIZE* firm size (I also control for industry specific effects by including seven industry dummies). *CREDCON* captures the extent to which creditors can control the bankruptcy process, *COLLAT* captures the existence of legal provision on security interests, *REMEDY* refers to the sanctions that creditors can impose on management ex-post, which goes beyond the original contractual rights or claims based on the security interest, while LEGALEFF proxies for legal effectiveness

	$LEV_{bank\,debt}$			LEV_{debt}		
	Coef.	Std. Err.	t	Coef.	Std. Err.	t
$D_{employee}$	-9,03865*	5,08124	-1,78	-11,57864**	6,60429	-1,75
$D_{manager}$	-1,24820	3,88547	-0,32	-7,53464	5,05010	-1,49
COM	0,385778	0,530724	0,73	1,01643	0,6898028	1,47
PROF	-0,0617312*	0,037155	-1,66	-0,0824466*	0,0482918	-1,71
GROWTH	0,0377072**	0,0172643	2,18	0,1170693***	0,022439	5,22
SIZE	1,33729***	0,2375089	5,63	0,9572075***	0,3086996	3,10
CREDCON	-3,02852	3,21724	-0,94	-4,61077	4,18158	-1,10
COLLAT	-0,0404063	0,9184267	-0,04	-1,82734	1,19372	-1,53
REMEDY	4,49239	3,24819	1,38	-1,16615	4,22180	-0,28
LEGEFFE~2001	5,58695***	1,78145	3,14	3,96161*	2,31541	1,71
Const.	-7,64710	1,03766	-0,74	25,62338*	13,48685	1,90
N	2.117			2.117		
Adj. R^2	0,0335			0,0446		

Source: Author's calculations.

Table 3: **Logistic regression results in which depended variable $D_{bankloan}/D_{debt}$ is a dummy variable taking value of one if a firm has a bank loan/debt and zero otherwise. $D_{employee}/D_{manager}$ is a dummy variable taking value of 1 if the largest shareholders are employees/managers and 0 otherwise. *COM* proxies for competition, *PROF* profitability, *GROWTH* growth, and *SIZE* firm size (I also control for industry specific effects by including seven industry dummies). *CREDCON* captures the extent to which creditors can control the bankruptcy process, *COLLAT* captures the existence of legal provision on security interests, *REMEDY* refers to the sanctions that creditors can impose on management ex-post, which goes beyond the original contractual rights or claims based on the security interest, while LEGALEFF proxies for legal effectiveness**

	$D_{bank\,loan}$			D_{debt}		
	Coef.	Std. Err.	z	Coef.	Std. Err.	z
$D_{employee}$	-0,5904179	0,5580555	-1,06	-0,3815073	0,4507143	-0,85
$D_{manager}$	-0,1576469	0,3880118	-0,41	-0,3349826	0,3395078	-0,99
COM	-0,0547304	0,0540473	-1,01	0,0027203	0,0449621	0,06
PROF	-0,0083797*	0,0046916	-1,79	-0,0030684	0,0035762	-0,86
GROWTH	0,0041661**	0,0016126	2,58	0,007442	0,0014751***	5,05
SIZE	0,1891929***	0,0233775	8,09	0,0929516	0,0198773***	4,68
CREDCON	-0,0364462	0,3346287	-0,11	-0,3724538	0,276316	-1,35
COLLAT	0,0970236	0,098527	0,98	-0,0926084	0,07832	-1,18
REMEDY	0,3149067	0,3339547	0,94	0,1526792	0,2782614	0,55
LEGEFFE~2001	0,3512695*	0,1758721	2,00	0,2177554	0,1495953	1,46
Const.	-3,887338***	1,139330	-3,41	-0,3351529	0,8898104	-0,38
N	2.117			2.117		
Pseudo R^2	0,0629			0,0387		

Source: Author's calculations.

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