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FINANCING POLICY OF CZECH AUTOMOTIVE COMPANIES

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Abstract

Constructing accurate capital structure is crucial element in guarding the company from unexpected financial and non-financial shocks. Still there is not scientific consensus among economist that would show which is the optimal capital structure for the company. The aim of the study is to investigate factors affecting capital structure of the company's operating as automotive suppliers in Czech Republic. Existing theories on capital structure has been tested to identify which one of them represents current state of the financing policy on the Czech automotive industry. The study performed panel data analysis of the companies operating in automotive industry. Results of our study show that long term debt (LTD) and profitability (P) are considered to be crucial determinants that influence the capital structure of the Czech automotive suppliers

Keywords: capital structure, financing policy, automotive industry, theories on capital structure

1 INTRODUCTION

Optimal capital structure is linked with the managerial ability to outperform competitors. However, financing policy of the economic entity is constrained by current state of the company and influenced from firm specific characteristics and macroeconomic environment. Highly indebted companies tend to be more exposed toward bankruptcy when economic crisis are in place. High debt levels discourage stockholders to show interest within the company (Booth et al., 2001). In addition, Myer (2001) considers that it is impossible to expect results which would show optimal capital structure for the economic entities. Baum et al. (2009) shows that macroeconomic risk, limits firms to decrease short term financial leverage. However, continues increase in the price level (inflation) has negative relationship with debt to equity ratio (Hatzinikolaou et al. 2002). Bhamra et al. (2010) confirm that uncertainties coming from macroeconomic variables influence financing polices of the companies. The way companies finance their activities is constrained from the country economic development and structure of the financial system. USA and England are more focused on stock markets to finance operating activities of the companies. In contrast, in the European union countries banking industry holds the major share within the financial pie (EUCB. 2017). Caglayan and Rashid (2014) on their study found out that risk coming from macroeconomic conditions negatively affect short term debt of the UK manufacturing companies. Inefficient stock and bond markets do not create incentives for investors to raise capital from financial instruments. Banks are major creditors within the Czech financial system (CNB, 2017). However, within the Prague Stock Market operate only 14 public companies (PSE, 2017). Moreover, Czech automotive companies are not listed in the PSE. Standing under these limitations financing policies are mainly influenced from the bank loans. Automotive industry stands as the crucial engine of the Czech economy. Based on the results of Albertina database (database for Czech and Slovak companies), 92% of

borrowings are short term. In addition, this reflects that Czech automotive companies are in a need for short term liquid instruments.

The term capital structure associates with combination of financial securities that company use during operative activities (long term debt, short term debt, common stocks, preferred stocks). Company's leverage is distinguished in two types of financial items, such as: financial leverage and operating leverage. In addition, operational leverage allies with fixed operating costs while the financial leverage with fixed debt costs. Capital structure has important impact on cost of capital (WACC) as a core component in influencing intrinsic value of the firm. Moreover, higher cost of capital which causes higher risk level within the company, results on a lower value of the firm and vice versa. Finding the arrangement among debt and equity that would lower cost of capital is a fundamental objective of the managers. The pioneering work of Modigliani and Miller (1958), shed light on the optimal structure with limitations within their propositions. Their work intends that under efficient markets, companies shouldn't be concerned with their capital structure, since any mixture of debt or equity is as good as another. In this study, we investigate relationship between capital structure and firm specific characteristics in Czech automotive industry. Standing on the previous studies, structure of the companies is influenced from financial items, such as: company size, tangibility, growth potentials and debt structure. Studies can confirm only historical facts on the way capital structure is arranged on the companies. In contrast, manager's decisions on arranging passive side of the balance sheet is influenced from their working experience, instinct and vision for the upcoming events. Our work differentiates itself from the previous studies, since it is the first attempt measuring factors influencing capital structure in the Czech automotive industry. Moreover, the work tends to shed light on the capital structure on the Czech auto-suppliers. In addition, findings of our work will explain the long term financial actions of the Czech automotive managers.

The papers structure is as follows. Section two captures the literature review; Section three gives explanation on determinant factors affecting capital structure; Section four presents model specification and data. While in the fifth section represents results obtained from the study while in the sixth section stands conclusion.

2 LITERATURE REVIEW

One of the essential aims of the managers is to arrange the long run mix within equity and debt (capital structure). Managers tend to maximize firm value through lowering financial and operational costs. Moreover, organizing an optimal capital structure minimize cost of capital (WACC) and increase market price of the company. The initial work on capital structure theories is linked with Modigliani and Miller (1958) named as MM theory. Their work showed that eliminating income taxation, bankruptcy costs and other market imperfections, firm value is not dependent on the debt to equity ratio. In a line with MM theory, additional theories have been developed on capital structure determinants such as trade-off theory, pecking order theory, agency theory and cash flow theory.

The trade-off theory and pecking order theory provide explanation on the combinations between debt and equity that the firm use to finance its activities. The trade-off theory shows benefits

and costs associated with financing activities with debt. Each firm must construct its own objectives on capital structure, since it will maximize firm value (Acaravci, 2007). Welch (2004) confirm that approximately 60% of the movements in the firm's leverage are due to firm's financial problems and not because of the leverage objectives. However, the studies conducted by (Ozkan 2001; Flamnery and Rangan 2006; Faulkender et al. 2012) show that firms rapidly adjust their capital structure toward their objectives. In contrast, Huang and Ritter (2009) claim that previous studies that measure speed of leverage adjustment toward firms targets are biased. Additional element that constrain speed of capital adjustments is linked with costs and benefits of changing capital structure (Elsas and Florysiak, 2010; Dang et al. 2012). Capital structure determines the compounding arrangement of debt and equity that the company keeps in the balance sheets. Moreover, financing most of the firm's activities with debt, exposes the company to huge bankruptcy risk when hard times are in place. While financing all activities with equity is impossible, since issuing common stocks is very costly for the company. None of the three theories can give a clear picture on the optimal capital structure, since they are all based on certain assumptions and limitations (Myers, 2001). The majority of research on capital structure has been conducted for developed countries with less focus on developing countries (Booth et al, 2001; Eldomiaty, 2008; Mohammed. K et al, 2015). Beside numerous studies on developed countries, still there is not a clear portrait if factors affecting capital structure on developed countries converge with developing countries. In addition, Zingales (1995) found that factors affecting capital structure in U.S. experience the same pattern with G7 countries. In addition, the study by Zingales (1995) proves existence of the certain level of economic unification within G7 countries and USA. Each theory works out under its own assumptions and limitations (Myers, 2001). Results obtained from different scholars on capital structure determinants are mixed, while Fama and French (2002) consider that two theories of capital structure (trade-off theory and pecking order theory) give representative determinants on the company leverage. Since interest expenses are tax deductible, they stimulate firms to orient their financing recourses toward more debt intensive capital structure. But in addition there are also other forms how to reduce tax burdens such as depreciation of tangible and intangible assets. According to the pecking order theory there is negative relationship between non-debt tax shields and leverage (Zabri, 2012). The study conducted by Bauer (2004) for Czech listed companies confirm that leverage of the firm is positively related with the size while negatively related with the profitability and non-debt tax shield. Moreover, Bauer (2004) has extended his work on capital structure through including companies that operate in Visegrad countries. However, his work confirms that leverage is positively correlated with the size while negatively linked with tangibility, profitability and tax shields.

Capital structure is affected also by the company size. Big companies have more long term debt in their balance sheets than short term debt because of shareholder-lenders conflict. Indebted companies tend to be more efficient, since they are opposed toward bankruptcy. In contrast, some scholars studied debt issue on the macroeconomic outlook not simply on the enterprise viewpoint. Relationships within economic growth and leverage ratio of the country are diverse. When the company is going bankrupt, problem is isolated within the enterprise stakeholders. Although when countries are highly indebted and facing solvency issued, in that case problem might cross national borders. The recent Greek economic crisis of 2010 proved that debt might

not cause problems when the country owns healthy economic framework. Since automotive manufacturers and automotive suppliers target diverse set of costumers. In addition, our work tends to identify difference in the capital structure within subindustries.

3 DETERMINANTS OF CAPITAL STRUCTURE

In this section we give a brief descriptions of the indicators impacting capital structure. These indicators are classified as growth opportunities, size, profitability and tangibility.

Dependent Variable

Independent and dependent variables were selected from the previous studies done on the capital structure. Dependent variable stands as leverage ratio (LTD) which is a measure ratio of total debts to total assets. Leverage ratio as dependent variable is confirmed by studies conducted by Huang and Song (2002), Antonion et al., (2002), Chen (2004) and Buferna et al. (2005). The study confirms portion of total assets that are financed from total liabilities. Using debt within the capital structure raise bankruptcy risk but also in the same time oppose company toward more investment opportunities.

Growth Opportunities

According to Fama and French (2000) firms with higher growth potential use more equity for their investment projects. The trade-off theory shows that exist negative trade-off between leverage and investment opportunities. In the same route with trade-off theory, pecking order theory and agency problem theory proclaim that negative relationship exist between capital structure and firm growth opportunities. Moreover, negative relationship between leverage and growth opportunities has been confirmed by (De Miguel and Pindado, 2001; Bevan and Danbold, 2001; Chen and Jiang, 2001). In a contrast, studies realized by Fatouh et al, (2002) confirm positive relationship between leverage and growth.

Size

Statistical results within size and leverage for different countries tend to be mixed. Trade-off theory considers that exists positive relationship within firm size (TA) and leverage. In addition, positive trade-off between firm size and leverage is confirmed through studies conducted by (Tomak, 2013; Banerjee et al, 2000; Bevan and Danbolt, 2001). It is considered that larger firms are less opposed to bankruptcy issues, since they can be more diversified than small firms. While the work done by (Chen, 2003; Yolanda and Soakerno, 2012) prove negative relationship between capital structure and size. Some scholars use natural logarithm of net sales to identify size of the company, while the others natural logarithm of assets. In our work, we have used natural logarithm of assets, since statistically both items are acceptable.

Profitability

In terms of profitability indicators there is a dispersion within existing theories on the impact that they imply on capital structure. The trade-off theory confirms that exists positive relationship between capital structure and profitability (P) of the company. Since more profitable companies try to shield on taxes by getting more leverage. The pecking order theory

proclaims that the relationship is negative between profitability and capital structure, since more profitable firms have less needs for debt financing (they utilize internal financial recourses). However, cash flow theory considers that more profitable companies are more indebted, since leverage self-control managers to pay more cash than investing in unprofitable projects.

Tangibility

Empirical studies realized confirm that there is a positive relationship between tangible assets and leverage (Bevan and Danbolt, 2001; Wahab et al, 2012). The trade-off theory considers that there is positive relation within debt and tangible assets (FTA). Moreover, companies that contain huge collateral level, carry more debt on their financial statements. Higher level of tangible assets within the company lower insecurity of creditors. Positive relationship is expected among tangibility and leverage. In contrast, studies realized by Booth et al. (2001), and Huang and Song (2002) show negative relationship within tangibility and leverage. Even though, tangibility item in their work is calculated by dividing tangible assets by total assets.

4 MODEL SPECIFICATION AND PANEL DATA ANALYSIS

The study sample is focused on the companies operating in the Czech automotive industry from 1998 until 2014. Sample size contain all companies that operate as auto suppliers in the Czech Republic. Statistical tests are conducted on the automotive suppliers. Data concerning the annual financial statements were collected from Albertina database. Thus the following model is used to assess the relationship of capital structure and its determinants:

$$LR_{it} = \alpha_1 + \beta_1 logTA_{it} + \beta_2 FTA_{it} + \beta_3 P_{it} + \beta_4 LTD_{it} + u_{it}$$

The method used is Fixed effects model, which result from the assumption that individual specific effects α_i in the main model are correlated with explanatory variables x_i.

$$y_{it} = \alpha_i + x'_{it}\beta + u_{it} \quad (1)$$

construction the clustering of the individual-specific effects α_i with explanatory variables (time invariant):

$$\bar{y}_i = \alpha_i + \bar{x}_i'\beta + \bar{u}_i \quad (2)$$

In the model we include α_i as an intercept, counting on different intercept per single individual while all individuals have the same slope parameters. As fixed effect estimator no longer considers time variant from eq.2, we subtract eq.2 and eq1. and re-obtain the model:

$$(y_{it} - \bar{y}_i) = (x_{it} - \bar{x}_i)'\beta + (u_{it} - \bar{u}_i) \quad (3)$$

the number of observation are *NT*, subtraction led the specific-individual effect α_i (time-invariant i.e. $\alpha_i - \alpha_i = 0$) to cancel out.

5 EMPIRICAL RESULTS

5.1 5.1 Descriptive statistics

Summarization and description of the variables used in this study is shown in Table 1, which presents the arithmetic mean and standard deviation of the predefined capital structure (leverage ratio) and its determinants respectively used in the model. An impression of average difference among scores and the mean in the period 1998-2014.

Table 1 Leverage and its determinants statistics summary (1998-2014)

Dependent variable	OBS	Mean	Std.Dev
LR	685	0.199	0.232

Independent Variable	OBS	Mean	Std.Dev
TA(log)	685	5.954	0.615
FTA	685	0.491	0.171
P	685	0.059	0.094
LTD	685	0.095	0.166

The average capital structure ratio defined as LR is estimated approximately 20% for 85 observed companies within 8 years on average[1] that gives a brief explanation that Czech automotive suppliers are financing its growth with debt. The average ratio indicates that companies' capital structure contains 20% of debt. Similarly, we observe form estimation the summary of statistics, companies' Total assets (natural logarithm) is averaged 6%, Tangentability as a ratio of tangible assets over total assets averaged to nearly 50%, with mid-low rate on profitability (ratio of net profit/total assets) generation averaged 6%.

On the following table 2 we display the correlation coefficients among variables:

Table 2. Correlation among all variables used in the model.

Variable	LR	TA(log)	FTA	p	LTD
LR	1.000				
TA(log)	-0.256	1.000			
FTA	0.270	0.115	1.000		
P	-0.100	-0.019	-0.289	1.000	
LTD	0.871	-0.144	0.266	-0.142	1.000

[1] We use unbalanced data set for 85 companies within 1998 to 2014.

Results obtained from the correlation estimation, capital structure (LR) and long term debt (LTD) have a significant positive relationship (coefficient 0.87). This might lead to or raise a suspect for a multicollinearity problem. A concrete check is done with variance inflation factor (VIF) to detect the multicollinearity – which is not present in our model, see table 3 below.

Other variables, see table 2, suggest that there is either positive or negative relationship among capital structure (LR) and its determinants, and coefficients do no not indicate any possible multicollinearity, yet check is performed using VIF.

Table 3. variance inflation factor

Variable	VIF	1/VIF
TA(log)	1.05	0.844
FTA	1.18	0.894
P	1.10	0.911
LTD	1.05	0.954

5.2 HAUSMAN Specification Test

To determined which method is more appropriate to estimate and analyze our panel data, Hausman Specification test is performed[2]. Test results estimated suggests that are in favor of alternate hypothesis, thus we reject the null hypothesis, claiming that fixed effects is more appropriate for this case, and therefore estimation of model is done by using fixed effects method (complete results, Appendix 3).

Table 4. Results of Hausman Specification Test

	Fixed Effects	Random Effects
TA(log)	-0.0066313	-0.0296179
FTA	0.047336	0.0748176
P	0.1070068	0.1148079
LTD	1.209896	1.191124
Chi Square statistic	10.98	
P-Value	0.0268	

[2] H_0: assumes random effects model is appropriate
H_a: assumes fixed effects model is appropriate

5.3 Panel Regression Estimated Results

Estimated results show a relationship among capital structure and its determinants as analyzed by panel regression for Czech automotive suppliers. The method used by fixed-effects model and its results are shown in table 5 (complete results are shown in Appendix 1).

Table 5. Results on capital structure of Czech Automotive suppliers

LR	Coefficients	t value	p value	
TA(log)	-0.0066313	-0.43	0.666	-
FTA	0.047336	1.36	0.174	-
P	0.1070068	2.17	0.031	***
LTD	1.209896	32.62	0	***
Constant	0.0940754	0.98	0.327	-

Based on the results obtained, an indication is that long term debt (LTD) a ratio calculated by long-term debt and total assets has a major effect on capital structure (LR). The analysis show that LTD have a significant positive association with LR. Similarly, results show that profitability (P) is also positively associated to LR, which is inline and backed by the Trade-off theory. While tangentability (FTA) and total assets (TA – natural logarithm used in the model) results with no relationship to LR, both variables represent company's size and are linked to capital structure. Hence, our estimation results add evidence to support profitability and long term debt as key determinants that play important role on company's capital structure.

6 CONCLUSION

Automotive industry in the Czech Republic stands as important economic framework that generates employment, exports and economic growth. The last financial crises of 2008 proved that automotive industry is highly sensitive toward business cycles. The form automotive industry finance its activities influence its financial position and bankruptcy issues. Capital structure represents compounding structure on the passive side of the balance sheet. Since, lending activities within the Czech financial system are dominated from banks, this gives clear picture that most of the economic entities in the Czech Republic inject their activities from bank loans. Moreover, Czech automotive companies are not listed within Prague Stock Market (PSE) which reflects that capital structure items are book value. Standard theories on capital structure confirm that does not exist clear guidelines which should be the capital structure of the company. Moreover, the way companies arrange their capital structure stands on the managerial talent, size of the company, objectives, taxing system of the country and shareholders interest.

Economic history has shown that companies find their appropriate way to finance their operations through diverse channels and sources. Bank loans and retained earnings generated from the company performance are the main passages for the Czech companies to raise money. Our work confirms that long term debt (LTD) and profitability (P) are considered to be crucial

determinants that influence the capital structure of the Czech automotive suppliers. In addition, this stands in line with the trade-off theory and successfully explains the determinants of capital structure for Czech automotive suppliers. Nevertheless, the focus of our study tend to clarify the general attitude of capital structure determinants of the overall the automotive suppliers in Czech Republic rather than specific company. Testing the company specific and the performance of company's capital structure determinants is a subject of other promising studies.

Study does not consider macro variables as a determinant factors of capital structure which is considered as a limitation of the study. Future research might identify to what extent macro indicators influence capital structure of the companies operating in the automotive industry in the Czech Republic.

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APPENDIX

Appendix 1.

Fixed-effects (within) regression Number of obs = 685

Group variable: company_code Number of groups = 85

R-sq: within = 0.6809 Obs per group: min = 1

between = 0.7783 avg = 8.1

overall = 0.7648 max = 18

F(4,596) = 318.00

corr(u_i, Xb) = 0.0079 Prob > F = 0.0000

lr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ta	-.0066313	.0153334	-0.43	0.666	-.0367453	.0234828
fta	.047336	.0347998	1.36	0.174	-.0210093	.1156812
p	.1070068	.0493936	2.17	0.031	.0100002	.2040134
ltd	1.209896	.0370907	32.62	0.000	1.137051	1.28274
_cons	.0940754	.0958908	0.98	0.327	-.0942496	.2824003

sigma_u	.0861988
sigma_e	.08878069
rho	.48524781 (fraction of variance due to u_i)

F test that all u_i=0: F(84, 596) = 5.15 Prob > F = 0.0000

Appendix 2.

Random-effects GLS regression Number of obs = 685

Group variable: company_code Number of groups = 85

R-sq: within = 0.6792 Obs per group: min = 1

between = 0.7992 avg = 8.1

overall = 0.7762 max = 18

Wald chi2(4) = 1615.43

corr(u_i, X) = 0 (assumed) Prob > chi2 = 0.0000

lr	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]
ta	-.0296179	.0101492	-2.92	0.004	-.04951 -.0097258
fta	.0748176	.0302111	2.48	0.013	.0156049 .1340303
p	.1148079	.046219	2.48	0.013	.0242203 .2053956
ltd	1.191124	.0322609	36.92	0.000	1.127894 1.254355
_cons	.216523	.0629327	3.44	0.001	.0931771 .3398689

sigma_u	.06967124
sigma_e	.08878069
rho	.38112804 (fraction of variance due to u_i)

Appendix 3.

Hausman Specification test (Fixed-Effects method vs Random-Effects method)

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed_auto	random_auto	Difference	S.E.
ta	-.0066313	-.0296179	.0229866	.0114938
fta	.047336	.0748176	-.0274816	.0172719
p	.1070068	.1148079	-.0078011	.017422
ltd	1.209896	1.191124	.0187714	.0183017

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 10.98

Prob>chi2 = 0.0268