



Impact of Internal and External Determinants on Capital Structure in Russian Companies

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Abstract. The process of capital structure formation is one of the main issues of corporate finance, since the optimal proportion of equity capital and debt capital will allow a company to use its resources in the most efficient way. The main objective of this article is to test the hypothesis of the existence of determinants that may affect capital structure of Russian companies in the period from 2014 to 2018. This paper uses a systematic approach, including methods of statistical analysis. The work includes review of empirical researches on the subject. The article represents proposed hypotheses and carries out the results of the correlation analysis of selected factors for Russian companies. The results showed no relations between the selected variables (company age, company size, EBIT, ROE, ROA, MOEX index Russia, key rate, GDP, inflation, taxes) and the capital structure of Russian companies in the period from 2014 to 2018.

Keywords: Capital structure · Debt to equity ratio · Leverage

1 Introduction

The term «capital structure» refers to financial decisions made by company's manager regarding to what sources of financing, whether inner or external ones, will be used. To ensure the company's survival in an environment of market competition and crises, manager should strive for formation of an optimal capital structure [12]. The capital structure is considered to be optimal when the costs of capital are minimal, which leads to maximization of company's value [11]. While making financial decisions the manager should consider internal and external determinants which can have an effect on capital structure. Internal factors are company-specific and can be controlled by the management, while for macroeconomic factors the company can only adapt to. Information about the level of influence of these factors can help companies to make better funding decisions to ensure long-term growth [10].

The formation of the capital structure is considered as one of the most important decisions of company's management, since it directly affects company's financial results in the future. This subject had become particularly important after the publication of works by Modigliani and Miller [3, 4]. A huge amount of theories had been devoted to this subject, and many researches had been carried out about decisions on capital structure and its possible determinants. However, despite the enormous amount

of works dealing with this issue, there is no theory or research that can provide a precise answer as to what factors influence company's capital structure decisions [5, 7]. Currently, the business environment in Russia can be described as complex, volatile and fluctuant, as the economy is experiencing a slowdown in growth due to crisis, sanctions, and coronavirus pandemic. Therefore, it is even more important to find the way internal and external variables affect company's financial decisions in this complex economic environment.

2 Methodology

In accordance with previous researches the objective was set - to analyze factors affecting the capital structure of Russian companies from 2014 to 2018. The following hypotheses were proposed:

Hypothesis 1: Company Size Has a Positive Effect on Leverage of Russian Companies

The trade-off theory suggests that large companies use more debt financing as far as they are more diversified and less likely to go bankrupt compared to small companies which will be liquidated in case of any financial difficulties. Also, large companies have an easier access to the capital market [12]. The scope of small companies is limited, which means they do not need huge amounts of funding and this fact is considered by financial institutions to increase the probability of bankruptcy risk. For this reason, the process of obtaining loans is more complicated for small companies [7].

At the same time, according to the pecking order theory large companies borrow less due to the fact, that information asymmetry in large companies is less severe. In other words, this theory assumes a negative correlation between company size and leverage. Moreover, issuing stocks is more expensive for small companies compared to the large ones [12].

Researches conducted by Yousef [13], Ramli, Latan and Solovida [9], Fedorova and Persidskaya [2] showed a positive correlation between leverage and company size, however Deari, Matsuk and Lakshina [1] did not reveal a relationship between capital structure and company size. The study conducted by Pepur, Ćurak and Poposki [6], on the contrary, showed a negative correlation.

Hypothesis 2: GDP Has a Positive Effect on Leverage of Russian Companies

Gross domestic product (GDP) is widely considered to be one of the main indicators of a country's economic performance. According to the pecking order theory, during times of economic growth, leverage decreases since companies already have enough funds from internal sources.

On the other hand, investment opportunities are strongly connected with the state of the economy, so there must be a relationship between the profitability of companies and the growth rate of the economy. Companies will be capable of using more borrowed capital when the country has a higher level of economic growth [9]. A positive relationship between GDP growth and leverage was found in works by Deari, Matsuk and Lakshana [1] and Ramli, Latan and Solovida. [9].

Hypothesis 3: Inflation Has a Negative Effect on Leverage of Russian Companies

Economic theory suggests that increase in inflation leads to higher interest rates. Higher levels of inflation cause the growth in interest rates of commercial banks [5]. Inflation also can have an influence on the process of making corporate financial decisions on providing companies with debt financing. Creditors usually reject companies' request for long-term loan when country's inflation rate is high. Consequently, it is assumed that country's inflation rate has a negative effect on leverage [9]. Researches conducted by Deari, Matsuk and Lakshina [1] and Ramli, Latan and Solovida [9] show a negative correlation between inflation and leverage.

Hypothesis 4: Return on Assets Has a Positive Effect on Leverage of Russian Companies

According to the trade-off theory more profitable companies use debt capital more often as they are considered by other financial institutions as companies functioning at a lower level of risk. On contrary, the pecking order theory assumes that foremost companies prefer using internal sources of funding and external sources are second priority. That is explained by the fact that company's main objective is to minimize the capital costs and that internal ways of financing are cheaper compared to external [13]. Study performed by Fedorova and Persidskaya [2] shows a positive correlation between company's profitability and leverage, while finding from Yousef [13] indicates a negative connection.

Hypothesis 5: The Key Rate Has a Negative Effect on Leverage of Russian Companies

Borrowing money when the interest rate is low is more cost-efficient for companies and due to the fact that the key rate set by the Central Bank directly affects the rate of commercial banks, the key rate negatively correlates with leverage. Furthermore, since there are no taxes on interest expenses, using debt will allow the company to reduce costs and improve its financial performance [9].

A profitable company with a sustainable position on the market has more financial opportunities to pay for interests on loans. That is why it is considered that companies will more likely use external funding when the costs of capital are low [8]. Research performed by Ramli, Latan and Solovida [9] shows a negative connection between the key rate and leverage. For the analysis, were selected financial indicators of Russian companies in the period from 2014 to 2018. The variables used for correlation analysis are shown in Table 1.

Capital structure was calculated using the following formula:

$$\text{Capital structure} = \frac{\text{long-term liabilities} + \text{short-term liabilities}}{\text{shareholders' equity}} \quad (1)$$

The main criteria for selecting companies for the sample are the following: the cost of assets should be more than 60,000,000 rubles annually; the revenue should be more than 100,000,000 rubles annually in the whole period from 2014 to 2018.

Companies that belong to the financial sector, social sector and insurance companies were excluded from the sample. It is assumed that their financial policy is different. Most of the selected 10,000 companies did not have "long-term liabilities" and "short-

Table 1. The description of variables used in the correlation analysis

Variables	Calculation	Expected relation
Capital structure	Debt-to-equity ratio	
Age	Number of years since company's registration	+
Size 1	Natural logarithm of assets	+
Size 2	Natural logarithm of sales	+
EBIT	Earnings before interest and taxes	+
ROA	Net Income/assets	+
ROE	Net Income/shareholder' equity	+
GDP	Gross domestic product of Russia	+
KR	The key rate of the Central Bank of Russia	-
MOEX	MOEX Index Russia	+
i	Inflation rate	-

Source: authors.

term liabilities" in their financial statements, and since this data is crucial for calculating the capital structure, the number of companies was reduced. Thus, the sample includes 798 companies.

All internal company data (age, assets, EBIT, ROE, ROE) was obtained from the «SPARK» system. The key rate values were obtained from the official website of the Central Bank of Russia. Macroeconomic factors were obtained from the official statistics websites of Russia. The values of MOEX Index Russia were obtained from the official website of MOEX.

3 Results

A correlation matrix was constructed based on the selected variables. The results are shown in Table 2.

Table 2. Correlation matrix of the influence of macro and micro factors on debt-to-equity ratio in Russian companies in the period from 2014 to 2018

	D/E	Age	Size 1	Size 2	EBIT	ROA	ROE	GDP	KR	MOEX	i
D/E	1										
Age	-0,047	1									
Size 1	-0,004	0,084	1								
Size 2	0,008	0,032	0,711	1							
EBIT	-0,017	0,050	0,195	0,263	1						
ROA	-0,011	0,015	-0,055	0,138	0,531	1					
ROE	-0,016	-0,028	-0,036	0,000	0,109	0,026	1				
GDP	0,011	0,241	0,095	0,081	0,055	0,036	-0,004	1			
KR	-0,015	-0,088	-0,029	-0,010	0,038	0,069	0,013	-0,483	1		
MOEX	0,002	0,252	0,102	0,093	0,082	0,079	-0,004	0,942	-0,288	1	
i	-0,004	-0,173	-0,067	-0,052	-0,019	-0,007	0,015	-0,661	0,829	-0,638	1

Source: authors.

Since the amount of taxes paid by companies per year was given in «SPARK» system only for two years (2017–2018), for these variables a separate correlation matrix was constructed (Table 3).

Table 3. Correlation matrix of the influence of taxes on debt-to-equity ratio in Russian companies in the period from 2017 to 2018

	D/E	Taxes
D/E	1	
Taxes	0,0069	1

Source: authors.

As it is seen from Tables 2 and 3, correlation coefficients are close to zero which indicates that there is no connection between the selected variables.

4 Discussion

Identifying factors that affect the capital structure of companies and building a regression model could help small companies make their market position more sustainable and survive the crisis. The development of small and medium-sized companies is important both for individual consumers and for the whole economy of the country. However, at the current moment, even within the same period, the studies show different correlations. The contradictory results of researches conducted by different authors prove the complexity of the issue of the capital structure formation, which is still relevant. In subsequent studies, the period may be increased and a separate correlation analysis for each industry can be made. There can also be added such internal variables as the company's growth opportunities, liquidity ratios and the share of fixed assets in the total amount of assets. As for macroeconomic factors, the exchange rate and the cost per barrel of oil can be added.

5 Conclusion

Formation of the capital structure is an important part of the company's corporate policy and is represented by the debt-to-capital ratio. A large number of studies in different countries are touching upon the subject. In an uncertain market environment, the issue of formation of an optimal capital structure becomes even more relevant, as it will determine the company's competitiveness, financial stability and solvency, and, as a result, its performance. Managers can form an optimal capital structure that would correspond to the company's goals and contribute to the achievement of set goals and determine lending strategies. Determining the optimal capital structure helps companies to get on a path of sustainable development. The results of the correlation analysis showed an absence of relations between the selected variables (company age, company size, EBIT, ROE, ROA, MOEX index Russia, key rate, GDP, inflation, taxes) and the capital structure (debt-to-equity ratio) of Russian companies in the period from 2014 to 2018.

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