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MICROECONOMIC FACTORS IDENTIFYING LIFE CYCLE STAGE AND MACROECONOMIC FACTORS ENHANCING DEVELOPMENT

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Abstract

As company transfers through various stages of its life cycle, the priority of the key parameters, the types of agency problems, the availability and using certain sources of capital is in dynamics. And company's performance is usually explored separately from its life cycle, which is basically defined by organizational parameters. The limitation of the methodology for the formation strategies of financing leads to their non-sustainability. The report is concerned with likelihood to company being at certain life cycle stage compared to baseline, when capital structure, profitability, liquidity changes. Based on logistic regression an increase in capital structure encourages transition from slow growth to boost growth stage and constrains further transition to maturity. Also, macroeconomic factors have significant influence economic activity and development. The coefficient *q* characterizes distribution of cash flows to investment and consumer sector. It was found by the model of *shifting mode reproduction of fixed capital. High q-value reflects, that emission encourages more growth in inflation, than in real gross domestic product. Was approved, that expansionary monetary policy has an effect on decrease high q-value in Russia in terms of complex actions. Was found positive issue impact on shifting mode reproduction of fixed capital and economic growth, not on inflation. Finally, expansionary monetary policy could re-allocate resources in capital assets and the necessity in attracted capital is decreasing. These results can be used as a part of future monetary policy implementation.*

Keywords: Capital structure, life cycle, mode reproduction

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1. Introduction

A comprehensive financing strategy is one of the key components essential for ensuring long-term development of companies and adding value for their stakeholders. Companies operating on the growing capital market require a constant inflow of finance since the lack of funds from owners, unavailability or limited access to sources of capital and debt financing can have a negative effect on the quality of their growth. A company's strategy of financing should be aimed not only at attracting the most available financial resources but at the long-term development of the company also. Especially in emerging capital market, including in Russia, special emphasis should be put on how to improve strategy of financing. Also occurred restrictions and barriers, lack in owner's capital impede development of the firm. According to the World Bank (2020), in 2018 more than 26% of companies in developing countries and more than 28% of companies in Russia in 2012 and 14,5% in 2019 named the lack of access to finance as the main obstacle to doing business. Facing significant obstacles to raising capital, companies often use the most available sources at the moment of finance, that may create new problems. This approach cannot be considered very efficient, roots in a lack of strategy vision, because management loses sight of the company's development prospects and potential problems that arise as the company moves along its life cycle curve and focuses on short-run. Not only internal factors influence performance. Also expansionary monetary policy reflects resources reallocation on consumer sector and investment sector. If additional money contributes only to consumers it will encourage inflation. The opposite effect reflects economic growth stimulation.

2. Problem Statement

The current trend of growing complexity of the world, economic relationships, financial institutions, and business needs is the reason for a divergence between behavior of financial market agents and the choice of preferred sources of financing determined by the views and conclusions of the classical capital structure theories. Research results refute or only partially confirm applicability of the trade-off and pecking order theory, so they require some adjustments, like inclusion of a behavioral component in the decision-making process. The crucial importance of such driving forces as knowledge, motivation of actors, skillful organization, innovative culture for the modern innovation models has increased (Nikonova, 2018).

In practice, many companies build up their capital structure intuitively, or apply a strategy of following the industry leader. Despite a significant quantity of theoretical and empirical research on the subject, companies are still in need for the systematic methodology and tools for forming their strategy of financing, that would take into account the features of their development pattern and potential agent-related problems. But the classical works represent some general approaches to putting together the capital structure of a company and strategy of financing. With other things being equal, the study of corporate financing is basically reduced to finding the optimal debt-to-equity ratio and formulating theoretical ideas about how to properly choose sources of financing. So the differences in key factors and agency problems during company's transition over life curve are missed.

The decrease in long run source of capital compels enormous using internal financing and finally curbs replacement or reproduction of fixed assets. Fixed capital depreciation and its replacement, based on shifting mode reproduction model, could be one of the essential drivers of new technological wave. In cases

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of a lack of accumulated resources, investment pause (Dement'ev, 2012) is occurred, that restrain innovation.

3. Research Questions

The gap in theoretical constructions include, first of all, the lack of systematic understanding of how the company's strategy of financing is formed: in the financial management this strategy implies managing the liquid capital while in the corporate finance strategy of financing is identified with formation of the capital structure. Moreover, the corporate finance tends to have a confused in understanding of fund raising, financial strategy, and financial decisions. This approach of looking at the capital structure as a synonym for strategy of financing is definitely a simplified it.

Under some methodology, the financial decision-making process involves studying the capital structure options available, finding the reasonable debt-to-equity ratio over a certain period of time, estimating the rate of return on financial investments for the owners, and determining their cash balance (Damodaran, 2010). The final goal of the financing analysis is to conclude whether the chosen debt-asset or debt-equity combination is optimal: if the share of debt capital is too high the company is over-leveraged, and if it is too low the company is under-leveraged. The next stage of the analysis process is to determine whether the company can move to the optimal leverage.

Now the capital structure life cycle theory is only being developed; even the factors that identify the life cycle stages are not clearly defined yet. Many theoretical directions of capital structure research demonstrate lack of identity: first, the size of the capital structure is not identical and identified in a static; second, there is a significant difference in factors that affect formation of the capital structure; and third, the influence of changes in life cycle on the capital structure is not always taken into account. However, more recent works do link the life cycle concept with changing parameters of companies' activities.

According to the sources of pecking order theory, the main reason that determines the choice of sources of financing is the asymmetry of information available to investors on the one hand and managers on the other hand. Because of this asymmetry, debt financing is mainly used at the initial stage of the company life cycle (due to higher cost of information discrepancy), and only at the next stage attraction of new investors (co-owners) is considered. Indeed, this situation is typical mainly for young companies with a high dispersed ownership. The static trade-off theory assumes reduction in the marginal cost of bankruptcy for companies that are profitable, which makes it possible for them to raise debt financing. The theory and model by Fluck (1999) is one of the first attempts to take into account the relationship between the company financing structure and its life cycle directly.

The most interesting are conclusions about the amount of leverage (the debt-to-equity or debt-to-equity ratio). Damodaran (2010) looks at dynamics of the leverage, assuming that at early stages of its life cycle the company will not have much debt because of the limited access to debt financing. With a high level of risk inherent at the growth stage, equity capital is attracted, and borrowed capital is attracted at the stage of maturity, when companies are financially independent (Dierker et al., 2019). According to the commonly used methodology by Anthony and Ramesh, (1992) the highest capital structure value is observed at the stagnation stage and at the maturity stage. The growth stage has a negative effect on leverage. In the report there would be a contrary conclusion about the higher leverage at the boost growth

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stage. Referred to this opinion, the highest debt-to-equity ratio determines at the growth and maturity stage, at the decline stage this indicator has decreased (Dickinson, 2001). For Iranian companies, the largest leverage was found at the growth and decline stages, and the smallest – at the maturity stage. The liquidity ratio, on the contrary, is higher at the maturity stage (Salehi et al., 2013). Also industry type reflects capital structure. Oil companies prefer to issue long-term debt, that increases capital structure (Restrepo et al., 2020).

Except internal factors also macroeconomic features influence company's performance, particular – strategy of financing. In countries with high inflation bank loans are the most appropriate source of financing, then use of riskier equity (Frank & Goyal, 2009). And expansionary monetary policy decreases sensitivity of investment cash flows. It means, that additional flows re-allocate to firms, constrained in internal capital.

Also expansionary monetary policy encourages investment in research and development (R&D) and lead to an increase in output (Jorda et al., 2020). Tightening on monetary policy has decreased R&D in dynamics and tightening monetary shocks induce real GDP to drop (Cheng & Yang, 2020; Moran & Queralto, 2018).

However, the challenge arises, when an increase in monetization is favorable and when it only creates inflation. And monetary effects become less significant in a case of low inflation (Jorda et al., 2020). According to the theory of the switching mode of fixed capital reproduction, developed by V. Mayevsky in Russian Academy of Science, it is possible to estimate new coefficient q (Maevskij et al., 2019). This coefficient evaluates emission flows in short-run circuit in consumer sector or long-run circuit in investment sector. It was found that the value $q < 1$ is characteristic of fast-growing economies that achieve growth due to internal development in terms of low inflation. These countries include Singapore, China, Japan, Korea, and Sweden. The value $q \sim 1$ is determined to highly profitable economies, when the real gross domestic product (GDP) growth rates correspond to the inflation rates: Canada, New Zealand, USA, UK. The value $q > 1$ is most typical for transition economies with inflation higher than the growth rate of real GDP. Russia also is into this group and q-value is estimated near 1,05.

So to explore the company's activity, it is necessary to study not only the internal characteristics. Basically, the company's life cycle and changes in its organizational structure are studied in isolation from the financial study. In the authors' opinion, understanding of the company's strategy of financing should be gained through the systemic approach, with the consideration of its subsystems – parts of the whole system that are merged together but have their own purposes. Also macro and meso-parameters have an effect on company's performance.

4. Purpose of the Study

The strategy of financing should be aimed not only at attracting the most available sources of financing but also concerns with long-term development of the company. A dynamic approach to the company implies both potential changes in its goals and objectives and variations in its key development benchmarks. So the purpose of the present report is to develop an approach to strategy of financing, based on a combination of strategic and corporate finance system thinking.

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The strategy of financing is understood by the author in the present report as a dynamic system focused on attracting financial resources, consisting of subsystems: agency relation, life cycle and capital structure. Within each subsystem, analysis of its elements should be carried out to determine potential principal-agent problems, factors that affect the choice of the capital structure, criteria for identification of company life cycle stages, and their subsequent characteristics.

Hypothesis 1: The strategy of financing should be perceived as a system consisting of the key subsystems. The evidence will be the influence of financial and economic characteristics, in particular the capital structure, on the company's presence at a certain stage of life cycle. Hypothesis 1.1. Capital structure is one of key drivers being at life cycle stage for large companies, and for small and medium the most essential is profitability. Hypothesis 1.2. The highest capital structure is at the boost growth stage in large companies and a decrease will force company's transition to maturity stage.

Hypothesis 2: The impact of external factors should be investigated: influence performance at micro-meso and macro levels. Is the additional emission will encourage only the growth of inflation? Another approach, based on conclusion of shifting mode of capital reproduction, when emission leads to a re-distribution of flows into fixed capital investment and coefficient q~1 represents this case. Hypothesis 2.1. Increasing monetization to GDP will reduce the q coefficient in Russia in terms of incomplete capacity of fixed assets. Hypothesis 2.2. Increasing monetization to GDP will enhance the share of new fixed assets and will encourage real GPD in Russia.

5. Research Methods

A systematic approach to strategy of financing should be based on the synthesis of several well-known theories and concepts in economics, that focused at the company's behavior and its financial and economic activities from different routes: financial management, the principal-agent theory, the organization's life cycle concept, the institutional theory, and the capital structure theories. This approach deepens scientific knowledge about connections between such subsystems as the capital structure, principal-agent relations, and company life cycle stages. Also the systematic approach expanses choosing sources of financing in view preferences of shareholders and managers, and concerned with more complex combination of conditions and factors, that change as companies are moving along their life cycle.

To validate the system view of the strategy of financing, the interrelations of its subsystems will be explored. To find out, what influence company's transition from the base stage to explored, the logistic regression models will built. So the explored life cycle stage is binary dependent variable which is equal 1, if company is determined at this stage and 0 to the other stages. The general model is: $p = \frac{1}{(1+e^{-Z})}$

$$f(z) = P(Y_{it} = 1 \mid x_{it})$$

$$Z_{it} = a_{it} + b_1 * opm_{it} + b_2 * mc_{it} + b_3 * ne_{it} + b_4 * cr_{it} + b_5 * finlev_{it} + b_6 * \frac{d}{e} + b_7 * ind_k + \varepsilon_{it}$$

Where p – is probability, that company states at the explored stage; Z – is a linear combination of independent factors; opm – operating profit margin; mc – market capitalization; ne – employees; cr – current liquidity ratio; finlev – financial leverage represents asset-to-equity ratio; d/e – debt-to-equity ratio;

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ind – dummy variable of industry, ε – error; i – company; t – year. Financial leverage and debt-to-equity ratio characterize capital structure.

Concerned with findings of shifting mode reproduction models, explored by V. Maevsky, the increase in monetization has a positive effect for emerging countries in terms of incomplete capacity and low M2-to-GDP share. Macro variables influence is based on linear least squares regression.

$$Y_t = a + \beta_t * x_t + \varepsilon_t$$

Where Y_t is dependent variable: financing characteristics – share of new fixed capital to the present fixed assets; logarithm of real GDP; *q*, that describes emission flows to investment sector and consumer sector. X_t – independent variable of monetization: M2-to-GDP (sum of currency, deposits, checks divided to GDP), and logarithm of M2; ε – error.

6. Findings

6.1. Results of the models, estimated the impact of micro and meso-economic factors

The construction of logistic regression for large companies defines the differences in the financial and economic factors that characterize the presence of a company at the studied and base stage of the life cycle. According to the estimated coefficients before the independent variables, the stage of boost growth is characterized by a higher level of operating profit margin, market capitalization, capital structure and liquidity. An increase in the company's debt-to-equity ratio (for the average value for the sample) by 1 unit, will force the probability by 23% of being at the stage of boost growth compared to the stage of slow growth. A decline in revenue grows up the probability being at a maturity stage compared to a growth stage. A higher value of the capital structure is estimated at the stage of boost growth, that reducing the probability, that the company is at the maturity stage.

Table 1. Econometric estimates of the likelihood to stay at certain stage of the life cycle compared to baseline stage

Independent variable	Being at Boost growth compared to Slow growth	Being at Maturity stage compared to Boost growth	Being at Decline stage compared to Maturity stage
Liquidity	0,94	Not significant	0,86
Financial leverage	0,98	-1,42	0,95
Operating profit margin	0,03	-0,037	0,03
Retail industry	Positive	Positive	Negative
Manufacturing industry	Negative	Positive	Positive

Based on the estimated logistic regression, the coefficients of the dummy variables for retail and power industry are significant and positive, reflecting a higher likelihood of companies experiencing boost growth.

The obtained results of evaluating the logistic regression characterize a significant negative effect of the type of industry on the probability of a company being at the stage of boost growth and a positive

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effect on the probability of being at the stage of maturity. So these results approve the posted Hypothesis 1.1. and 1.2.

6.2. Results of the models, estimated the impact of macroeconomic factors on q, GDP and new capital

It is assumed that with an increase in monetization, the necessity to attract outside capital (including bank capital) to finance investments in capital assets fixed will decrease. Based on the econometric models was determined the negative relation between monetization and the use of outside attracted funds in Russia. And was estimated, that monetization enhances real GDP. The positive impact of monetization on the new fixed assets was estimated. So, when the M2- to-GDP is not high and policy of targeting inflation is conducted, additional emission will encourage re-distribution of circuit to the investment sector and will have a positive effect in fixed assets increase.

Table 2. Econometric estimates of the monetization impact in Russia

Independent variable	*q* (efficiency of emission)	GDP	New capital (new fixed assets to the present one)	Attracted capital
Monetization	-0,025	0,08	0,21	Negative

Thus, the possibilities of stimulating monetary policy in Russia have been empirically proved. These findings could solve the discussion, if additional emission would improve the investment and economic growth. And a negative role of emission in stimulating economic development is based on the well-known fact of inflation increase due to expansionary monetary policy under conditions of high capacity.

7. Conclusion

Scientific conclusions made on the basis of the research results contribute to improving theoretical understanding of the strategy of financing concept with the dynamism and consistency principles. The author of this paper based on logistic regression models have approved, that the probability of the company's being at a certain stage of its life cycle depends on different factors: capital structure, profit margin, liquidity, capitalization and also – type of industry. So the lower operating profit margin and leverage, performing in manufacturing industry will increase the likelihood for this company to move from the boost growth to the maturity stage.

Macroeconomic factors influence economic development. Expansionary monetary policy can stimulate flows to investment sector, which reflects low q-value. A high q-value in Russia is determined by a higher inflation growth in comparison with real GDP, although the trend shows a decrease in q in the future. Also the results of the models present significant positive influence of emission.

Conclusions and results of the models of the switching mode of reproduction in relation with the parameters of monetary policy and macroeconomic factors improve solving a set of practical problems. Based on the coefficient q, it is possible to estimate the effects of monetary policy in terms of the distribution of short-run cash flows to consumer sector, that determined $q>1$ and to long-run investment

sector – q~1. Moreover, in conditions of incomplete capacity and regime of inflation targeting, the additional emission encourages investment in capital assets and enforces economic development.

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