

National Research University Higher School of Economics

Elena Sholomitskaya

**NON-FINANCIAL CORPORATIONS' BORROWING
AND THE REAL CAPITAL ACCUMULATION
IN THE RUSSIAN ECONOMY**

Economic sciences

PhD Dissertation Summary

Academic Supervisor:
Revol'd Entov, Professor

JEL: E22, G31

Moscow – 2018

Problem description. The real capital accumulation is one of the channels through which the financial sector influences the economic growth. The process of capital accumulation begins at the microeconomic level, i.e. at the firm level, and its results are observed at the level of the economy as a whole. Therefore, understanding of the phenomena, arising at the firm level and affecting the capital accumulation, should contribute to the formulation of the adequate economic policy on supporting enterprises and industries in order to use the opportunities for catch-up growth in Russia.

The Russian economy, which had gone through the transition to the market, transformational recession and subsequent recovery, is still under the conditions that are not entirely market-based, if compared to those in developed countries. The active role of the state and the imperfections of market mechanisms affected the behavior of Russian firms, whose features make them different from a conventional representative firm that appears in typical economic models, designed for developed market economies. Therefore, while the thesis is based on traditional neoclassical model, we incorporated some features of the Russian economy. This also stresses on the significance of the research.

Russian companies quite actively use loans as a source of funding. At the same time, the transformation of financial flows into fixed capital is unstable and to large extent unclear process. After 2012-2013 there were significant disproportions in the dynamics of credit and real capital flows. Both internal and external corporate debt steadily grew with high rates until 2015, while the growth rates of investments in fixed capital were close to zero.

Fixed capital investment is a form of investments which contributes to the formation of new assets, i.e. the real capital accumulation. Another form of investments is investment in the acquiring of other companies, and these two types of investment expenditures differ from each other from the firm's point of view and

fundamentally, since they affect economic growth through different channels: the first form – through capital accumulation at the level of the economy as a whole, and the second one – through reallocation.

Investing in fixed assets is not always the main purpose for attracting loans by Russian companies. Large corporations attract much funds to acquire other companies in the industry, including direct competitors to increase their own monopoly power. Such a policy often aims at benefiting from the anticipated growth in the value of the company due to the expectations of rising prices for its products. Besides this, acquiring companies can be the part of empire-building strategy. Since the decisions on investing in fixed assets either in existing assets, i.e. other firms, are interrelated at the firm level, especially through the issue of financing, we consider them together within one framework of this study.

Our goal was to take into account the peculiarities of the the Russian economy as much as possible, special attention will be paid to the role of government participation in the corporate sector. There is a discussion in the academic literature on whether the state eliminates market “failures” or, on the opposite, distorts the efficient allocation of resources and crowds out private investments. Our hypothesis is that the active participation of the state in the corporate sector functioning can facilitate the crowding out of private investments by “quasi-state” companies, or in other words, investments by companies with government participation in capital, under the conditions of limited financial resources. This may be amplified by directing substantial funds to conducting large corporate transactions aimed at the redistribution of assets and empire-building.

Review of selected literature. Capital accumulation and the investment dynamics in the Russian economy were analyzed in the works of V. Bessonov, I. Voskoboynikov, L. Grigoriev, E. Gurvich, R. Kapelyushnikov, E. Nazrullaeva, A. Radygin, Yur. Simachev, S. Stepanov, R. Entov. At the same time, although

investments are considered in the context of their debt financing, the understanding of the links between these processes is vague, mostly due to the lack of the relevant database (with dynamic data) at the firm level. The transformation of credit flows into real capital flows and the related constraints are still not sufficiently explored.

Among the international studies, devoted to the issue of the determinants of corporate investments, the most important are the ones by P. Clark, S. Myers, M. Jensen, S. Fazzari, R. Hubbard, S. Gilchrist and K. Hammelberg, C. Hennessey, O. Lamont, J. Stein. For example, Fazzari et al. [1988] showed that the company's own financial resources have a significant impact on investment. The impact of the debt burden also matters. Lamont [1995] shows that accumulated debt can generate the problem of debt overhang depending on economic conditions. Therefore its impact on investment and macroeconomic dynamics is exacerbated during the crisis and post-crisis periods, and we are demonstrating this effect for the Russian economy.

Investments in the form of mergers and acquisitions were examined in the works of B. Jovanovic and P.L. Rousseau, R. Morck and D. Wolfenzon, A. Spearot, V. Maksimovich, G. Phillips, M. Warusawitharana. Jovanovic and Rousseau [2002] were among the first who proposed to consider investing in mergers and acquisitions as conceptually equal to investments in used capital (purchase of assets in the secondary market). The application of this concept gives us basis for studying the real capital accumulation and mergers and acquisitions under the framework of one model.

We pay special attention to the empire-building phenomenon. This topic has been actively developed in the academic literature since the late 1950s ([Baumol, 1959]), many works appeared in the 1980s and 1990s ([Amihud, Lev, 1981], [Rhoades, 1983], [Stulz, 1990], [Hart, Moore, 1995]). After 2000 there was a number of works devoted to empire-building strategies and the contract

weaknesses, which cannot solve this issue, analyzing them in the framework of theoretical models (e.g., [Kanniainen, 2000]) or searching for the empirical evidence for the existence of empire-building motives ([Masulis et al., 2007]).

The most relevant for the problems, raised in the thesis and investigating the role of the state in the corporate sector activity, are those done by A. Schleifer, R. Vishny, J. Kornai, E. Perotti, L. Chernykh, and for the Russian economy – by T. Dolgopyatova, J. Pappé, C. Sprenger, A. Yakovlev. For example, Dolgopyatova [2015] and Sprenger [2010a, 2010b] are considering the process of expanding state participation in the Russian economy since the mid-2000s. A comprehensive analysis of this kind of “renationalization” as a result of “government-initiated takeovers” is carried out in the paper by Chernykh [2011]. The main result of her research is that the acquisitions of other companies carried out by state-owned companies in Russia do not depend on the profitability of the target company. However, in this work, investments in acquisitions are considered from the point of view of the target company’s features, while we consider from the point of view of the acquiring company’s characteristics. The role of government participation in the company's capital is described by Perotti [2014], where he discusses the easier than for other market participants access of such companies to loanable funds.

In order to analyze the dynamics of investments at the macroeconomic level, we apply a structural vector autoregressive model with sign restrictions. This model is used as a tool for analyzing the impact of shocks on various macroeconomic indicators in [Uhlig, 2005], [Mountford, Uhlig, 2005], [Enders et al., 2008], [Vargas-Silva, 2008], [Malick, Sousa, 2013]. Examples of studies using this econometric approach for analyzing the Russian economy are [Deryugina, Ponomarenko, 2011] and [Deryugina et al., 2015]. Factors affecting Russian investment in fixed assets are considered, for example, by Lomivorotov [2014] (along with other macroindicators), while Gurvich and Prilepsky [2016], as well as

Shirov et al. [2015] draw attention to the fact that after 2014, the dynamics of investment was under the significant influence of sanctions against Russia. We will pay special attention to this issue as well, studying the role of foreign borrowings of non-financial corporations for investment.

By the present moment there're quite a lot of different theories of investment behavior, explaining these or those phenomena, and a significant amount of empirical evidence is accumulated. However, the question of whether overinvestment and underinvestment can arise under the same conditions, and if so, for what reasons, doesn't have the clear answer. Our approach is to consider the various forms of investment simultaneously and in the context of their financing. Moreover, the number of studies, providing the empirical evidence on investment behavior of Russian companies, is quite small (e.g., [Kapelyushnikov, 2005], [Lazareva, Rachinsky, Stepanov, 2008]). Taking into account the changes, which occurred in the Russian economy over the past few years: the transition from steady economic growth to a weaker dynamics and even stagnation, the increase of state participation – makes it necessary to obtain relevant estimations, which reckon in these changes.

The object of the research and definition of key terms. The objects of the research are investments in fixed assets at the firm level and the level of the economy as a whole (aggregate investment), as well as firm investments in mergers and acquisitions, and factors that influence the investment behavior, causing underinvestment, overinvestment, and the transition from one state to another. Underinvestment is defined in the academic literature and in this thesis as the investment decision by the firm, which is under the strong influence of financial constraints that force it to reject profitable investment opportunities (liquidity constraints, debt overhang). Overinvestment stands for the case when the management of a firm carries out inefficient projects, pursuing not the goal of

maximizing the market value of the company, but his own goals (such as the growth of assets under management). In addition to the factors of capital investment at the firm level, we study the factors and shocks explaining aggregate investment dynamics.

Objectives of the research. The aim of the thesis is to estimate the relationship between financial flows, especially the internal and external debt of non-financial corporations, and the real capital accumulation in the Russian economy. We explore the factors that determine deviations of corporate investments from their optimal value in terms of traditional models, consider mechanisms and factors of both underinvestment and overinvestment, and pay special attention to the role of borrowings: in what way external financing affects the accumulation of fixed capital and what kind of restrictions matter.

Another purpose of the study is to examine the relationship between real capital accumulation and investments in acquisitions at the firm level. We question whether these two forms of investment are independent from each other, or they are complementary, or they are substitutes: in other words, if companies face a trade-off between the two forms of investment. Besides this, we consider the role of state participation in the designated processes. Our conjecture is that private companies and companies with government participation in their capital have different behavior in terms of financing capital expenditures and spending of available funds.

To achieve our goals, the following tasks were accomplished:

- we examined and analyzed the structure and dynamics of internal and external borrowings, together with the dynamics of investments (of various forms) of non-financial corporations;

- on the basis of investment theories, we identified potential constraints, their sources and possible investment strategies in terms of attracting and using borrowed funds;
- a large database of panel data was collected on which statistical analysis was carried out and econometric models were tested to test hypotheses;
- we estimated the macroeconomic model to compare the effects found at the micro level with those observed for the aggregate investment data.

Methodology. The methodological basis is the standard neoclassical model of investment behavior, the theory of liquidity constraints (investment free cash flow sensitivities), and the “principal-agent” theory in the form of its applications to the investment behavior. The analysis is carried out at the micro level using the companies’ financial statements and at the macro level using aggregate data. We use comparative analysis and econometric modeling: first, dynamic panel data models (for firms), and second, a time series model (vector autoregression) for macroeconomic data.

The analysis is carried out at the micro level using the companies’ financial statements and at the macro level using aggregate data. For the micro level we use comparative analysis and econometric modeling: dynamic panel data models, estimated with the generalized method of moments (GMM), developed by Arellano and Bond (1991). The corresponding database contains more than 100 public Russian companies, for the period from 2000 to 2016, and includes corporate financial statements’ indicators (according to international standards), data on the market capitalization of firms and information on state participation in capital (unbalanced panel). Dynamic panel data models were estimated using the statistical package EViews9.

For analysis at the macroeconomic level we use a structural vector autoregressive model with sign restrictions, estimated in Matlab, applying IRIS Toolbox.

Main findings. A number of hypotheses were formulated and tested. The first main hypothesis is that for periods of tightening financial conditions at the macro level financial constraints begin to play an important role, including the problem of accumulated debt burden (debt overhang), which results in underinvestment. This hypothesis was formulated regarding the structure of company ownership, and the concomitant conjecture was that the state participation in capital could play an important role in terms of the relevance of financial constraints. According to the results of the estimation, the above hypothesis cannot be rejected for private companies, and for companies with state participation up to 2015 we observed relatively soft budget constraints. After 2015, due to strong external pressure as a result of sanctions by developed countries, the differences between private and state-owned companies shrank.

The second key hypothesis is that there is a relationship between the company investments in fixed assets and its investments in acquisitions of other firms. This hypothesis cannot be rejected, and the important result is that financial constraints play an important role here as well: under soft external financial conditions, companies did not face the trade-off problem, and the relationship between the two forms of investment was positive, while under the tougher conditions the trade-off problem arose.

The third hypothesis is to check the existence of the overinvestment phenomenon in the form of acquisitions of other companies among large Russian corporations. Our estimates showed this takes place, and the largest companies in our sample, in the absence of the financial constraints impact, were prone to shift their investment strategies in favor of a larger share of M&A transactions. Thus, it

can be stated that some of the companies in our sample were prone to empire-building.

The fourth main hypothesis was that the effects found at the microeconomic level should be observed at the level of the economy as a whole, at least to some extent. The structural vector autoregressive model, which allowed us to decompose the dynamics of aggregate investment, demonstrated that external loans substantially contributed to changes in the aggregate investment, and the sign of this contribution was the same as we estimated it with the analysis at the firm level: until 2007 it was positive, and in the post-crisis period, after 2011 – mostly negative.

Borrowings of Russian corporations, on the one hand, supported the real capital accumulation but, on the other hand, they subsequently constrained it, and the structure of borrowings is important in two aspects. The first aspect is the structure from the point of view of the source: as it turned out, external debt plays a more significant role, because through it external shocks are transmitted to the national economy. The second is the structure from the point of view of the borrower: we have identified differences in the behavior of private companies and companies with government participation in the capital. The latter were to a much lesser extent influenced by financial constraints, which at the same time discouraged the investment of private companies, so we can conclude that for different groups of companies in some periods underinvestment and overinvestment took place, and these periods could overlap (in 2009-2014): underinvestment took place for private companies, and overinvestment in the form of acquisitions – for large companies with state participation.

Contribution of the work is, first, the approach that considers in one framework investments in fixed assets and investments in acquisitions, while the latter are not treated as separate transactions, as it is usually done in the researches,

but, similarly to the capital accumulation, as a single stream of funds spent by the company to all of its acquisitions. To study Russian investments, this approach is applied for the first time, and its relevance is proved in the thesis, since it is demonstrated that at the firm level the decisions about investments in these two types of assets are interrelated.

Second, our research reveals the mechanisms and factors of investment behavior of the Russian non-financial corporations, especially the features of the investment strategies of large corporations (the appetite to empire-building) and the respective changes in financing strategies. Thus, a contribution is made to the studies on the transformation of financial capital into real capital at the firm level.

There were not many attempts to estimate investment functions for a large sample of Russian companies for a long period of time, and in this regard, our research contributes. We identified and analyzed not only key investment factors, but also the change in their influence over time, which turned out to be especially important. Thus, the paper presents a set of results that are confirmed empirically with the involvement of a large-scale database.

An important aspect of our work is assessing the consequences of government participation in the company's capital, therefore we contribute to the literature on the role of the state in the economy, since we demonstrate differences in the investment behavior of companies depending on the structure of their ownership. It is shown that the existence of an empire-building strategy among the largest Russian companies with state participation and simultaneous existence of an underinvestment problem for private companies could lead to crowding-out of investments of the latter by the investments of the former under limited financial resources conditions. The result is new for understanding how active participation of the state in the corporate sector of the economy impacts the efficiency of resource allocation.

Theoretical implications of the research is, first, that our estimates have shown the relevance of consideration of various forms of investment (fixed assets investment and acquisitions) in one context. This approach creates basis for future research of the firm's investment strategies. Secondly, one can speak of identifying the problem of crowding out private investments by investments of large companies with state participation. The formulation and obtained evidence of the existence of this problem open the opportunities for further theoretical and empirical research in this direction.

Practical implications. The results of the thesis can be used in the development of economic policies, since they explicitly demonstrate the factors that contribute to investment and real capital accumulation and the respective constraints. Secondly, the results can be used to prepare structural economic reforms aimed at reducing the role of the state in the economy in order to ensure better functioning of market mechanisms and equal access of economic agents to capital markets, both internal and external.

Approbation of research results. The results of the thesis research were presented at the following conferences:

- 11.04.2017. XVIII April International Academic Conference on Economic and Social Development. Elena Sholomitskaya. “Investment in Russia: influence of key macroeconomic shocks”.
- 19.12.2016. The Third Russian Economic Congress. Elena Sholomitskaya. “Structural factors of Russian investment”.
- 06.07.2016. International Scientific Symposium “Economics, Business & Finance”, Latvia. Elena Sholomitskaya. “New Capital Investment vs. Acquisitions: Is There a Trade-Off? Evidence from Russian Public Corporates”.
- 21.04.2016. XVII April International Scientific Conference on the Problems of Development of the Economy and Society, Moscow. Elena

Sholomitskaya. “Corporate debt overhang and investments in the Russian economy: the role of financial conditions and state participation”.

- 15.10.2015. 17th EBES Conference, Venice, Italy. Section «Corporate Finance». Elena Sholomitskaya. “Corporate Debt Overhang and Investment in Russia: The Role of Financial Conditions and Government Participation”.

- 12.05.2015. 6th International Scientific and Practical Conference of Students and Post-Graduates “Statistical Methods of Analysis of Economics and Society”. Moscow, HSE. Elena Sholomitskaya. “Economic and statistical analysis of the impact of state participation in the capital of Russian enterprises on investment activity”.

List of author’s original articles. The main results of the thesis were published in six papers with a total volume of 7.4 author’s sheets. (all is the personal contribution), three of which were published in Russian peer-reviewed journals, recommended by the Higher Attestation Commission of the Ministry of Education of Science of the Russian Federation, as well as indexed by the international database Scopus (4.3 author’s sheets):

1. Sholomitskaya E. Corporate debt overhang and investment in Russia // HSE Economic Journal. 2016. Vol. 20. No 2. P. 129–155 [in Russian].

2. Sholomitskaya E. New capital investment vs. M&A: evidence from Russian public corporates // Economic Policy. 2017. Vol. 12. No 1. P. 226–249 [in Russian].

3. Sholomitskaya E. Influence of key macroeconomic shocks on Russian investments // HSE Economic Journal. 2017. Vol. 21. No 1. P. 89–113 [in Russian].

Other works published by the author on the topic of the thesis:

4. Sholomitskaya E. Corporate debt overhang and investment in Russia: the role of financial conditions and government participation // Higher School of

Economics. Preprint. Series WP2 “Quantitative analysis in economics”. 2015. № 2015/04 [in Russian].

5. Sholomitskaya E. Corporate Debt Overhang and Investment in Russia: The Role of Financial Conditions and Government Participation, in: 17th Eurasia Business and Economics Society (EBES) Conference Proceedings Vol. 1. EBES Publications, 2015. P. 322–342.

6. Sholomitskaya E. New Capital Investment vs. Acquisitions: Is There a Trade-Off? Evidence from Russian Public Corporates, in: International Scientific Symposium “Economics, Business & Finance” Proceedings. Jurmala, Latvia: IRIS-ALKONA, 2016. P. 55–62.

* Please see references in the Russian version