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## Monetary Policy Influence on Companies' Competitiveness through Credit Channel

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**Abstract:**

*We contribute to the studies of monetary policy transmission mechanisms' influence on real sector competitiveness. Monetary policy changes influence credit availability and affordability to enterprises and thus transmits impacts to the real sector competitiveness.*

*Using the Russian market data, we derived several lagged regression and VAR models to estimate the extent of corporate competitiveness dependency on credit extension or shrinking.*

*Our findings comprise the conclusion that monetary policy changes affecting the money supply (M2) having positive impact on the volumes of credit extended to enterprises and on the net change of bank loans debt together denoted as 'credit channel breadth'.*

*Changes of the latter inspire changes of several dimensions of corporate competitiveness – capital expenditure and fixed assets' purchase value, since companies facing the liquidity changes revise their attitude to liquidity and profitability tradeoff.*

**Keywords:** Monetary policy, transmission mechanism, competitiveness, credit channel, VAR model, capital expenditure.

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## 1. Introduction

Our ongoing research of monetary policy transmission mechanisms and their competitiveness related issues continued in testing the response of capital expenditure and value of fixed assets purchases (further denoted as PP&E) to the changes of the credit channel breadth in terms of credit availability and affordability (CAA). Previously we introduced the concept of “credit channel breadth” (Ekimova *et al.*, 2017) where estimates of monetary policy changes’ lagged influence on credit supply and demand, i.e., on credit channel breadth, were provided.

We hypothesize that the credit channel of monetary policy transmission can influence enterprises’ performance and financials which are meant to be the components of corporate competitiveness. Particularly, we assume that a CAA change can influence corporate sector’s funding strategies and performance contributing to liquidity-profitability preference shifts, as well as affecting willingness to capital expenditure and innovation. In brief, credit shrinking or expansion trigger the competitiveness parameters to change, and thus require a specific survey to determine if there is a plausible interrelation between the intensity of credit channel of monetary policy transmission and the real sector competitiveness, which is a relatively new research task, especially on the Russian market data. Expected novelty of the research comprises estimates of a CAA change impact on real sector competitiveness and a significant contribution to the discussion on the matters of the credit channel’s ability to influence corporate performance as well (Trifonova *et al.*, 2016).

The research objective is to obtain quantitative measures of interrelation between the credit channel of monetary policy transmission and the real sector competitiveness via the consecutive solution of the following tasks and procedures:

- to introduce a research-specific definition of a company’s competitiveness as the function of its balance-sheet positions and performance change;
- to trace impacts sent by credit supply and demand changes on corporate funding strategies in terms of capital expenditure financing sources change;
- to model the influence of credit channel breadth changes on competitiveness parameters, namely capital expenditure (denoted as Capex) and PP&E value of purchases, including further verification of the models.

Research methodology is a successor to already published papers on the topic (Ekimova *et al.*, 2017; Gryzunova *et al.*, 2018; Gryzunova *et al.*, 2017). Based on the profound literature review we conceptualize the notion of corporate competitiveness and its components subject to CAA-side influence. Taking our previously obtained results for granted, we refrain from further discussion of monetary policy transmission channels but search into various aspects of corporate competitiveness and globally recognized approaches to its identification and

measuring. We also involve into discussion on the matters of innovation as a competitiveness component, including innovation funding patterns in Russia and abroad relative to credit availability and affordability.

Analytical side of the research employs lagged (auto)regression modeling techniques with respect to applicable constraints and limitations from the computational side: time series stationarity and integrity, multicollinearity issues, spurious regression tests, etc., that were dealt with using the “Authentic/Executive” approach introduced by Kolmakov *et al.* (2015). The data employed comprise the Bank or Russia statistics, as well as data from the Russian Federal Statistics Agency.

## **2. Literature review and methodology background**

### **2.1 Competitiveness conceptual framework**

Competitiveness of a company is a complex issue that requires an effort to study policy-applicable terms (Pontoh, 2017; Arvanitis *et al.*, 2017). Corporate competitiveness is often related to a company's efficiency and performance. Rational understanding of the latter presumes that a company is efficient and well performing if the three conditions are met simultaneously: profit growth rate is positive and is higher than the rate of revenue growth, and the rate of revenue growth is higher than assets' growth rate. The more sophisticated approaches to competitiveness definition and measuring were proposed by Matsumura *et al.* (2013) as the extent of relative profit maximization, by Gupta *et al.* (2017) who define it as a function of corporate governance efficiency, or by Momaya (2016) as an ability to employ positive effects of spatial clustering. Akhmetshin *et al.* (2018) also contribute to competitiveness definition by placing it into the context of human capital development regarding appropriate quantifiers.

Given the assumptions above, it is necessary to introduce an alias for the concept of “the real sector competitiveness”, replacing it with an integral construct, known in financial management as “efficiency and performance”, which also has a multiparametric nature, as shown in Bondarenko *et al.* (2017). The validity of this approach is supported by a number of studies in which the authors convincingly demonstrate a correlation between the increase in the efficiency and performance of companies and their competitiveness.

Given the issues of credit channel of monetary policy transmission, one of the competitiveness factors is the receivables and payables ratio, since they depend on CAA. What's more, if the total payables are not fully covered by receivables, it creates an imbalance of cash flows and provide additional demand for loans. On the other hand, capital structure of a company is the factor to be checked: if indebtedness of a company increases, it must correlate to either the growth of capex or to the output and sales growth. Normally, the reasons for heavy indebtedness are

the slowdown of payments and the increase of receivables turnover period that are usually compensated by overdraft credit or working capital expansion loans. The monetary policy transmission mechanism allows to determine the potential impact of its instruments on changes of balance-sheets positions and companies' performance. The interrelation is rather obvious and verified by several researches. The study by Chang *et al.* (2015) gives evidence of significant corporate performance improvement (i.e. ROA, Tobin's Q, etc.) after quantitative easing policy was implemented in the USA.

Another issue of competitiveness to be discussed is its interrelation with monetary policy. Since credit availability depends on monetary policy changes, we can assume that overall competitiveness of the economy is subject to money supply changes. Empirical evidence can be drawn from macroeconomic data and nations' competitiveness ratings. According to the Russian Federal Statistics Agency, in 2017 capex were funded primarily with retained earnings (52.1% of total capex), while bank loans, both domestic and foreign, were close to negligible 4.0% of total capex funding. Practitioners and policymakers agree that the under-investment in the Russian economy is due to the monetary policy that makes credit either unavailable or unaffordable.

To compare with, bank loans in China were used to finance 11.5% of the total capex of 2017 (National Bureau of Statistics of China, 2018), European Union and the United States had significantly greater influence of bank loans on capex funding, 49.0% and 58.0% respectively as of 2016 (General Electric, 2016). The result of such a monetary policy implementation is not in favor of the real sector's competitiveness: enterprises that lack finance face low availability of credit due to sanctions and growing uncertainty. Banks reassess risks to increase interest rates, thus making credit unaffordable.

In this study, we assume that competitiveness can be defined as an integral characteristic of a company's changes in balance-sheet positions and performance. We find it rational to test the hypothesis that the two latter dimensions depend on CAA, thus the approach is going to be a two-step procedure. Firstly, we are going to derive the macroeconomic conclusions and, afterwards, test them on the microeconomic data (the forthcoming papers will disclose the results of the second step). Since we are not planning to have any macroeconomic comparisons in terms of national competitiveness within this research, then it will be only the dynamic characteristics that get in scope. This kind of approach is designed to ensure the proper level of quantitative assessments of CAA impact on the real sector performance and assets dynamics and structure.

## **2.2 Methodology of modeling the response of the real sector competitiveness to monetary policy changes**

As far as credit channel transmission mechanism is uniform for all the economy, credit availability and affordability do not affect the relative competitiveness of direct competitors – enterprises operating in the same market. However, the relative competitiveness of different industries and trades will change, since they might be different in terms of capital requirements and debt to equity ratio, length of their operating cycle and the cycle of their suppliers, contractors and clients.

Market competition and general market conditions also determine companies' appetite for debt, because the "market of supplier" situation allows for much greater extent of balancing profitability and liquidity by manipulating the terms and conditions of payment, thus obtaining a substitute for direct credit. Obviously, companies with a lower gearing ratio can benefit from higher interest rates, since they are less dependent on loans compared to their buyers.

Hence, the credit channel of monetary policy transmission influences several parameters of nonfinancial enterprises' competitiveness, mainly through the change of assets and liabilities, net cashflow, free cashflow, and profit and loss as well. According to Kneeshaw (1995), "*changes in monetary policy induce intertemporal substitution effects, which essentially entails consideration of the incentives of potential borrowers and lenders to bring forward or delay expenditure. Balance-sheet structures and current income flows may affect agents' capacity to take advantage of such incentives, for instance by recourse to increased borrowing*". In this regard, as we have proved earlier, changes in the monetary policy of the Bank of Russia have an impact on the availability and affordability of credit and on the reluctance of banks to extend credit or, conversely, to retain excess liquidity. The correlating indicators were interest rates and the money supply on the one hand, and bank loans extended and the net change of bank loans debt on the other hand.

The most obvious consequences of credit shrinking or expansion may be the following changes in balance sheets or corporate performance indicators:

- change in the duration of operating cycle through the acceleration / slowdown of the payables and receivables turnover: increasing CAA of short-term credit speeds up cash receipts; on the other hand, shrinking supply of short-term credit increases payment intervals, thus deteriorating profitability as the cost of working capital increases due to increases in the average annual payables and receivables value;
- change in fixed assets investment: a decrease in CAA, especially the long-term credit, provides an increase in the number of rejected investment projects, while credit liberalization provides an additional impetus to capital expenditure.

### **3. Results and discussion**

To study the credit channel breadth influence on competitiveness of the real sector enterprises, we ran a multiple regression modelling to determine the interrelation between purchase price of PP&E and the net growth of corporate debt on bank loans. Taken separately, loans of different duration vary in terms of their influence on PP&E dynamics, which might sound natural due to the difference in financial purposes of long-term and short-term debt. In particular, 3-year-plus loans demonstrate the greatest and the most significant influence on the growth of PP&E (cumulative effect of more than 54% of the total variance), as well as loans raised for 181-365 days (30% contribution to the total variance), although the latter is less statistically significant. See table 1 for details.

**Table 1:** Regression results and parameter estimates for PP&E regression by the net increase of bank loans debt of enterprises

Parameters	Beta	B	p- level
Dependent variable: PP&E purchase price, $R^2 = 99.4\%$			
Intercept		17084634	0
net increase of bank loans debt of businesses	0.997	7	0
Dependent variable: PP&E purchase price, $R^2 = 99.3\%$			
Intercept		16352443	0.000
Up to 30 days	0,111	25	0.227
31-90 days	0.003	1	0.971
91-180 days	-0.079	-12	0.635
181-365 days	0,306	12	0,119
1-3 years	0.148	4	0,443
3 years plus	0,542	8	0,001

**Source:** Authors' own calculations.

The “authentic” model used for verification confirmed the findings. Consequently, such a factor of companies’ competitiveness as fixed assets procurement is proved to be dependent on CAA changes.

Capex act as a dynamic characteristic of competitiveness change, being both the factor and the result of it: investment portfolio growth facilitates, ceteris paribus, the development of new competitive advantages or life-cycle prolongation of the existing ones. On the other hand, a company’s ability to invest is determined by its competitiveness, because of its close relation to ability to raise funds needed for investment.

The appropriate study of Capex dependence on the net change of corporate debt (see Table 2 for details) derived the conclusion that the net growth of debt among all the durations has a positive impact on Capex dynamics, but the statistical significance is rather moderate (determination coefficient is 63.8%, i.e. less than two thirds of the Capex variance is determined by the net growth of debt). The latter is quite rational, since the bank loans are not the only source of funding Capex, along with other debt

and equity components.

**Table 2:** Regression results and parameter estimates for Capex regression by the net increase of bank loans debt of enterprises

Parameters	Beta	B	p- level
Dependent variable: Capex, R <sup>2</sup> = 63.8%			
Intercept		67371.18	0.697
net increase of bank loans to businesses	0.798	0.58	0,000
Dependent variable: Capex, R <sup>2</sup> = 85.7%			
Intercept		209856.5	0,137
Up to 30 days	-0.089	-0.9	0.512
31-90 days	0.205	1.7	0.176
91-180 days	0.218	1.3	0,362
181-365 days	0.386	0.8	0,177
1-3 years	0.359	0.7	0.061
3 years plus	0.198	0.3	0.165

**Source:** Authors' own calculations.

Again, just like in case of PP&E purchase price, the most significant influence on Capex is made by the net growth of long-term debt (3 years and more) and of 181-365-day loans debt. The two cases indicate high level of correlation, yet with some assumptions regarding the statistical significance of the regression coefficients. Consequently, the credit channel's effect on corporate competitiveness in terms of maintaining their positive dynamics of Capex may be considered as the confirmed one.

Regarding the rigidity of the obtained results we have to refer to the previously mentioned fact that only 4% of fixed capital investment in Russia was credit-backed in 2017, as there were no more than 8% during 2011-2017. If possible, monetary policy changes will activate the credit channel to increase the supply of debt capital to enterprises, the relative shift is going to be substantial in terms of "times" of growth: reaching back to 8% share in capex funding as it was in 2011 would mean doubling the corporate debt. If it happens following the normal pattern (non-crisis scenario), the model estimates will much likely become unactual. Still, Polyakova and Simarova (2014) argue that the real sector competitiveness will go up, as weighted average cost of capital will go down and speed-up value of the real sector – another globally recognized metric for competitiveness.

Regarding the contemporary theories of corporate competitiveness under monetary policy changes, we admit that different other performance measures can be employed to determine the interrelation between the two phenomena. Such a linkage of competitiveness to performance can be done in a multidimensional environment like "productivity, flexibility, quality, cost, and time" (Kaur *et al.*, 2017). Several other studies measure competitiveness as a relative profit maximization: "each firm

maximizes the weighted average of its absolute profit and its relative profit – the difference between its absolute profit and the average of the absolute profits of other firms” (Hattori and Tanaka, 2017).

Estimates, provided by different authors, are controversial. The case of Turkey, for example, indicates that “tight monetary policy is more effective for exchange rate and output than a loose change to monetary policy” (Ülke and Berument, 2016) since one standard deviation upwards shock to interest rates decreases output and prices having persistent effect on them.

On the other hand, credit shrinking is much likely to rearrange cashflows from investment to internal reserves generation, thus making real sector enterprises search for and implement cost reduction strategies and revenue expansion plans. In this instance we can address corporate valuation theory which says that credit tightening is much likely to increase the weighted average cost of capital thus deteriorating value, and the only way to compensate for it is to increase free cash flow by capex cut and net operating profit growth. Using value or its basic components (free cashflow to firm or to equity, terminal value, weighted average cost of capital, internal or sustainable growth rate) is the next level of corporate competitiveness aggregation that comprises previously mentioned performance measures in an integral construction.

One more argument to use value as a measure of competitiveness can be derived from macroeconomic computations of regions’ performance criteria (Kurushina and Petrov, 2018; Gureva, 2018). The hierarchy of monetary policy changes impacts and channels of its transmission to corporate competitiveness is about the following: monetary policy change causes sovereign risk and ratings to change as well that determines regional policy adaptation practices, since regions do not have their own monetary systems; being a precursor of corporate competitiveness, regional economic environment translates signals to local business community to sustain expected growth rates. This indirect channel of monetary policy transmission is subject to a special study which is forthcoming.

#### **4. Conclusion**

We derived the model of credit channel influence on corporate competitiveness in terms of measuring interrelation between the credit channel breadth and the real sector performance. Its practical implementation can provide quantifiable measures for any managerial decision taken to change monetary policy parameters that affect money supply and credit availability and affordability changes.

Theoretically known features of the model we derived comprise the explanation of long-term credit’s greater potential to foster fixed assets accumulation and capital

expenditure. It can now be operationalized through specific policy changes aimed at real sector competitiveness growth.

Another issue to be raised is the proportion of innovation expenditure within the capex we observed. It is reasonable to note that real sector competitiveness should be studied in comparison with other economies to determine the influence of innovation-driven development of enterprises' PP&E spending, which is dependent on the breadth of credit channel of monetary policy transmission.

Further research is going to test the derived models on the panel of 1300 Russian companies to obtain industry-specific, size-specific and other metrics of credit channel influence on corporate competitiveness, as well as to compare the credit channel efficiency to the other channels of monetary policy transmission.

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