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Firm Performance and Regional Economic Freedom

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Draft date: July 18, 2018

Little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism but peace, easy taxes, and a tolerable administration of justice: all the rest being brought about by the natural course of things

(Adam Smith, 1858)

1. Introduction

The economic growth of any country depends on firm activities leading to the production of new goods and services. Recent studies suggested that the increasing endowment of firm's resources is not enough for sustainable growth and provided evidence that it is determined by a large set of drivers, including the business environment and institutional development. As was shown by Dawson (1998) institutions can affect economic activity indirectly through an effect on investment or directly through an effect on total factor productivity. One of the crucial elements of the institutional environment is the degree of economic freedom under which companies form and operate. Milton Friedman (1992) maintained that economic freedom fosters economic growth by affecting incentives, productive effort and efficiency. In that context, increased freedom is an indicator of institutional development and, therefore, could be considered as a factor explaining cross-country and cross-region differences in economic development. Hall and Lawson (2014) surveyed literature using an Economic Freedom Index as an explanatory variable find the index to be positively related to economic outcomes of interest, like the rate of growth in per capita income, improved infant mortality and others.

Nowadays, economists agree that economic freedom, political freedom and civil liberties are important pillars of a country's institutional structure and, following from this, institutions are prominent factors in explaining cross-country differences in living standards. Despite this wide-spread agreement about the importance of institutions, a generally accepted precise

measurement of institutions eludes researchers. One measure of institutional quality is the concept of economic freedom which Heritage Foundation (2004 p. 50) describes as “the absence of government coercion or constraint on the production, distribution, or consumption of goods and services beyond the extent necessary for citizens to protect and maintain liberty itself”. Gwartney et al. (2011) underlined that economic freedom is the degree to which a jurisdiction’s policies and institutions protect the rights of firms and individuals to pursue their economic objectives without interference. Therefore, economic freedom encompasses all liberties and rights of production, distribution, or consumption of goods and services; indices of economic freedom are intended to measure the degree to which an economy approaches the maximum of such liberty.

While the majority of research on economic freedom focuses on national level outcomes, a growing literature links economic freedom within jurisdictions in a given country, like states in the United States or provinces in Canada, to outcomes of interest, like economic growth. Karabegović, McMahon and Samida (2002) constructed the first Economic Freedom of North America Index (EFNA). This index and its updates have been used to study questions like the influence of economic freedom on migration across states of the United States (Ashby, 2007), on income distribution (Ashby and Sobel, 2008), and on entrepreneurship/business formation (Campbell and Rogers, 2007; Hall and Sobel, 2008; Bjornskov and Foss, 2008; Hall, Pulito and van Mitre, 2012; Powell and Weber 2013).

Few papers look to the level of the firm for evidence of the impact of economic freedom. Lawson and Roydhouhury (2008) considered the impact of state level economic freedom on stock market returns in the United States; Chen et al. (2015) use the Economic Freedom of the World Index, hypothesizing that greater economic freedom enhances equity value because firms

are better able to manage investment options; Azizi et al. (2016) studied the market returns of 16 government-invested companies in Malaysia.

One reason for this lack of studies on firm performance is that there are few countries for which indices of economic freedom exist for sub-national jurisdictions. The EFNA, mentioned above, is one of these. In addition, Feng and Xia (2008) built The Corporate Capital Freedom Index for the provinces of China. Importantly for our purposes, Coates, Mirkina and Moorthy (2017) constructed the first index of economic freedom for the 82 regions of the Russian Federation, which we utilize to study the performance of Russian firms.

A recent subnational survey of firms in 37 Russian regions by the World Bank indicates significant differences in the lists of most severe obstacles for firms' performance across regions (World Bank, 2013). The study of Russian officials conducted by the World Bank in twenty Russian regions in 2008 (CEFIR, 2009) also reports substantial heterogeneity of regions in many aspects of regulatory agencies' performance and one of the results which relevant to our study is a reported link between the subjective attitudes of employees of regulatory agencies and the performance of the agencies.

Namely, it was shown that agencies whose employees indicate stronger subjective support toward more liberal regulation demonstrate better compliance with the legislation of the reform package and the differences in subjective attitudes of individual bureaucrats toward the deregulation reform explain some cross- regional variation in how the laws are implemented and enforced (CEFIR, 2009).

Based on the empirical evidence, we suppose that the Russian business context is an appropriate example of regional heterogeneity. Cai and Treisman (2004) analyzed case studies showing substantial regional differences in terms of tax collection and tax administration in the 1990s and early 2000s. CEFIR (2006), EBRD (2013), Bruno et al. (2008) and Iwasaki et al. (2016) shown that even neighbor regions can face completely different business climate. Important differences across Russian regions were indicated by Hauner (2008) in terms of

efficiency of public services provision, by Freinkman and Plekhanov (2010) in quality of public services and by Iwasaki and Suganuma (2005) and Ledyeva (2009) in the general perception of legislative and political risks.

Despite there are number of studies (Puffer and McCarthy, 2011; Guriev and Zhuravskaya, 2010; Aidis et al., 2008; Marinova et al., 2012; Iwasaki et al., 2016; Golikova and Kuznetsov, 2017) found out the significant impact of particular institutes on firm performance, there is still little empirical evidence on how economic freedom affects business performance. In other words, the channel by which economic freedom generates improved economic growth and company results is generally not studied. To the extent that national economic growth depends on the collective firms' performance, considering the regional diversity, an interesting question arises regarding the effects of the regional institutional environment measured via economic freedom on performance in Russia. In an attempt to further close this gap on the channel by which freedom generates greater growth, this paper investigates whether general economic freedom drives firm performance. Performance here is measured by sales, return on invested capital, return on assets and Tobin's q . The analysis utilizes data on 1,096 public, considerably heterogeneous, Russian companies during the years between 2004 and 2015 combined with the about Index of Economic Freedom (EFI) for Russian regions developed by Coates et al. (2017). More precisely, we consider company performance as a multilevel phenomenon, allowing economic freedom to affect firms generally in a region and individually within the region.

To test the research question, we implement a multilevel approach using the hierarchical linear modelling (HLM) technique allowing us to simultaneously investigate both levels of performance differentiation. For a robustness check, a panel data fixed effect model with robust standard errors is estimated. Previewing our results, we find that higher levels of regional

economic freedom are correlated with measures of firm performance such as return on assets, return on invested capital and Tobin's q but not correlated with sales or economic value added.

By focusing specifically on the link between the economic freedom and company returns in Russia, this paper contributes to the literature in several ways. First, the focus on economic freedom and performance of individual companies is unusual despite the growing interest to regional context' studies. Moreover, there is little understanding of how the overall institutional environment affects the company results in the frame of emerging economies. Second, the context here is companies in the Russian Federation. While studies of the performance of Russian companies exist, it is uncommon to assess the influence of the institutional context measured through economic freedom of those companies on their performance. Previous studies fallen short in understanding how particularly the institutional environment (or channels) influences firm performance of Russian companies, despite the deep institutional changes that have been taking place in Russia for the last two decades. Such an insights are critical for the design and implementation of effective regional and institutional policies for economic growth and competitiveness increase. Finally, the literature on the impact of institutions and economic freedom on economic performance has not made use of the empirical technique we employ, hierarchical linear modeling. In different with previous papers we consider the relationship between economic freedom and firm performance as multilevel phenomenon taking advantage of nested structure of the data. It allows us investigate more precisely the effect of regional institutional environment to firm returns taking into account that this effect might be different from firm to firm.

The rest of the paper is structured as follows. Section 2 covers the background of the study, motivating the subsequent analysis and empirical specifications in the context of a review of the existing literature. Section 3 is devoted to the methodology, including the discussion of

our sample data and included variables and indicators. The main findings of the HLM estimations are presented in Section 4. Section 5 concludes with our findings along with discussion about theoretical contribution and managerial implications both for companies and for authorities and study limitations.

2. Literature

Numerous papers have examined the role of protection of property rights and legal and financial institutional quality in financial market development, often captured by the extent of external financing utilized by firms (Demirgüç-Kunt and Maksimovic, 1998; La Porta, Lopez-de-Silanes, Schleifer, and Vishny, 1997, 1998). However, few papers have related economic freedom indices to the stock market and fewer still to performance of individual firms, beyond the issue of new firm births and existing firm deaths. For example, Li (2002) shows that developed countries with greater economic freedom and stronger shareholder protections have larger total equity market capitalizations as a percentage of GDP. Billmeier and Massa (2009) find similar results for Middle Eastern and Central Asian stock markets. Stocker (2005) argues that changes in economic freedom will change future cash flows and discount rates, thus changing equity valuations. Examining five year periods, Stocker finds that larger changes in economic freedom are associated with larger changes in aggregate equity returns and that low initial levels of economic freedom are associated with larger increases in returns. Smimou and Karabegovic (2010) focus on economic freedom and aggregate stock market returns in emerging country markets, the Middle East and North Africa (MENA) countries. Their results indicate that greater economic freedom, especially with respect to legal protections and security of property rights, is associated with higher market returns.

There are few studies that address the influence of economic freedom and performance in particular industries or specific companies. One example is Gropper et al. (2015) which

confirmed that greater economic freedom is associated with stronger local bank performance in the US for the years 1989 – 2010, whether using returns on assets (ROA) or bank stock returns as the performance measure. Furthermore, a strong effect of political connections was observed: banks generate significantly higher ROAs when their headquarters are located in the states where a Senator or Member of the U.S. House of Representatives is the chair of a banking committee in Congress. However, while there generally is a significant effect of political connections on firm performance, the effect appears to be less important in areas that have greater economic freedom.

According to the results of Lawson and Roydhouhury (2008), companies located in states with increasing economic freedom experience higher stock market returns. However, an investment strategy based on economic freedom is does not produce an above market return for investors. Chen et al. (2015) use the Economic Freedom of the World Index on a sample of 186,423 firm-year observations from 30 countries for the 2000–2010 period. They hypothesize that greater economic freedom enhances equity value because firms are better able to manage investment options. Their evidence supports the hypothesis. Recently, Azizi et al. (2016) studied the market returns of 16 government-invested companies in Malaysia for the years 1995 until 2012, finding a positive correlation between the country's economic freedom score and the companies' stock returns. However, researchers in general are yet to understand the link between economic freedom and firm performance.

For the Russian context, studies of the role of institutions in economic outcomes are common. At the same time, differences in the quality of institutions, although overall evidence on drivers of regional growth is somewhat inconclusive (Ahrend, 2008). For example, Guriev & Vakulenko (2012, 2015), Lehmann and Silvagni (2013) and Solanko (2008) focus on economic growth and regional convergence. Friebel and Guriev (2002) and Gehlbach (2003) suggest that regions with higher level of institutional subversion have smaller SME sector. There is also

growing evidence that political connections might destroy firm efficiency through replacing professionals in board positions (Fan et al., 2007) or tunneling assets out of the firm to political beneficiaries (Mironov and Zhuravskaya, 2016). However, Iwasaki (2014) confirms that the independence of governance bodies from top management is positively correlated with the survival probability of the firm. Moreover, using the Market freedom sub-index included in the Carnegie index of democracy for Russian regions, Sokolov and Solanko (2016) empirically proved the hypothesis that there is the positive association between firm political influence and profitability. Interestingly that this effect exist only in in weak institutional environments. Recently Golikova and Kuznetsov (2017) shown that regional level of corruption as proxy for quality of institute development negatively associates with increasing of the size for SMEs. Underdeveloped institutions and poor property right protection often stated as important factor for firms to go offshore (Ledyaeva et al., 2013; Kheyfets, 2013). Puffer et al. (2009) and Aidis et al. (2008) shown that a poor regulatory quality imposes significant transaction costs on businesses, and negatively impacts business start-ups, firm survival and overall business growth. In whole, empirical studies conclude that institutions play a role, but never is the focus on the importance of economic freedom per se. Importantly, the effort to enhance local control and policy-setting highlights the potential role of divergent economic freedoms across the regions.

Mau & Yanovskiy (2002) is the only study of the regions of the Russian Federation that discusses economic freedom. Like the studies described above, the focus in Mau & Yanovskiy (2002) is local development. However, they opt not to use a measure of performance such as gross regional product in favor of such variables as the number of cars per 1000 inhabitants, foreign direct investment in 1998 and small business employees between 1995 and 2000. Indicators of economic freedom and indicators of political freedom are among an array of variables from which the authors derive principal components, which are then used as explanatory variables for their measures of economic development. Mau & Yanovskiy (2002)

find that protection of personal security, free speech and private property have a stronger impact on their dependent variables than do the quality of civil litigation, regional political stability or the presence of tax concessions.

3. Hypotheses

Based on the existing empirical evidence, we hypothesize a positive relationship between economic freedom and company performance. We suppose that greater economic freedom 1) reduces friction and enhances the firm's future investment in response to current profitability, 2) fosters production efficiency and 3) therefore positively affects the company's results. In addition, regulations on product and labor markets, the tax system and low tariff and non-tariff barriers to international trade, could affect the firm behavior. Furthermore, firms' costs of investment are also lower, the more secure property rights and the more competitive are credit markets. Therefore, in this study, we investigate whether general economic freedom drives firm performance. We develop and test the key hypothesis:

H1: The greater is economic freedom, the higher is company performance

3. Methodology and data

3.1. The Research framework: multilevel modelling

The approach here is to estimate hierarchical linear models (HLM) explaining company performance and addressing the spatial dependency issue while observations within the high level—regional level—share some similarities. Sun et al. (2015) concluded that Chinese firms in the same province often share similar legal environment, factor market, and culture. Misangyi et al. (2006) find that the success of a business unit is influenced by the parent corporation of which it forms a part and upon the industry in which the company operates. Karniouchina et al. (2013) extend the analysis to account for the life-cycle of the business. These studies contend that the

environment plays a role and they find support for this position using the HLM approach. Moreover, these higher order factors, company or industry, can influence that varies across the units nested within them. The HLM exploits the information that groups of observations are nested within higher order structures and allows the regression coefficients to have a random component by observation: the regression coefficients of the low-level models such as firm characteristics are regressed on the high level variables such as economic freedom. We process the data under a two-level hierarchical structure and apply random coefficient model (the multilevel mixed effects linear model) with the *xtmixed* command in Stata14 (Cuervo-Cazurra and Dau, 2009; Rabe-Hesketh and Skrondal, 2008).

In our case, there are many companies with headquarters within a specific region of the Russian Federation. For all companies within a specific region, variables reflecting region-specific influences on company performance will take on the same value. Such variables take different values for different regions, so the impact of the variable can only be estimated on the regional variation. In the HLM model, the impact of these regional influences on the firms has a firm-specific random component whose mean is zero but whose variance is not zero. The idea is that the variable that does not differ across firms within a region may, nonetheless, influence performance of those firms within the region differently from each other and from firms in other regions. The model incorporates links between different levels of data and admits complex structures for residual terms.

We estimate two different models that allow for different error structures. In the models below, i indexes the company and j indexes the region. In the first model, we introduce the economic freedom of the region as an explanatory variable in the vector of controls and allow for the random intercept (u_{0j}), other words $u_{1j} = 0$. With this model, we make a first test of the hypothesis above. We then generalize the model to allow the coefficient on the economic freedom variable (β_{1j}) to be random. In this case, we have model 2.

Generalized random intercept and random slope model

$$\left\{ \begin{array}{l} Y_{ij} = \beta_{0j} + \beta_{1j}EF_{ij} + \beta_{ij}Controls_{ij} + r_{ij} \\ \beta_{0j} = \gamma_{00} + u_{0j} \\ \beta_{1j} = \gamma_{10} + u_{1j} \end{array} \right.$$

$$\text{Therefore, } Y_{ij} = \gamma_{00} + \gamma_{10}EF_{ij} + \beta_{ij}Controls_{ij} + u_{0j} + u_{1j}EF_{ij} + r_{ij} \quad (1)$$

where Y_{ij} represents performance metrics of company i in j region; γ_{00} is the mean performance across all regions, while β_i is the vector of coefficients on the control variables; u_{0j} , which is between regions' variation of performance, and r_{ij} is between companies' variation. The u_{0j} and r_{ij} are assumed to have a zero mean and unknown variance; γ_{10} is the effect of the economic freedom level of the region on firm performance, and u_{1j} is the random portion of the influence of economic freedom between regions. The variance of (estimated) u_{1j} is computed.

One can test the null hypothesis that this variance is zero against the alternative that it is not zero. Rejection of the null implies that the slope of the regression with respect to economic freedom is different from region to region.

The size of the regional effect (higher level of aggregation or the second level in the model) measured as the percentage of observed variations in the performance attributable to regional-level characteristics can be estimated via the *intraclass correlation coefficient* (ρ):

$$\rho = \frac{\tau_{00}}{\tau_{00} + \sigma^2} \quad (2)$$

where τ_{00} is the variance of the regional-level residuals and σ^2 is the firm-year-level residuals variation. The existence of a significant variance component for τ_{00} calls for the incorporation of particular regional-level variables in an attempt to account for some of this variation.

Before turning to the data, we note that endogeneity in regressions involving measures of economic freedom. The issue is whether contemporaneous levels of, or changes in, economic freedom drive the outcome or are produced as a consequence of the outcome. Various approaches to resolving endogeneity are utilized in the literature. Ashby and Sobel (2008) address the issue by using initial values in all variables except for the change in freedom. For reducing the endogeneity, Compton et al. (2011) employed System GMM dynamic panel analysis. Roydhoudhury and Lawson (2010) used one-year lags of the EFW index, Powell and Weber (2014) use rolling five year averages of the EFNA index or that variable lagged to explain rolling five year averages in business start-ups. We simply use one, two and three year lags of the economic freedom index rather than the contemporaneous value. It seems unlikely that the performance of an individual firm is driving the level or changes in the level of the regional economic freedom.

3.2 Data

3.2.1 Corporate performance measures

We measure corporate performance with several different metrics, which allows us to describe firm activity from different aspects: operational efficiency, investment returns, competitiveness and investment attractiveness. Return on assets (ROA) is among the most popular indicators of operational efficiency and widely used in studies of company performance (Boubakri et al., 2005; Richard et al., 2009; Weiss and Hilger, 2011). Richard et al. (2009) claim that ROA reflects the management ability to utilize the company financial and real investment resources to generate profits, depending not only on the firm's policy decisions but also on uncontrollable factors relating to the economy and government regulations.

We also analyse the return on invested capital as indicator of firm performance reflecting companies' investment opportunities, as commonly used in corporate finance studies, such as Ismail (2013) or Guner et al. (2016). We use Tobin's Q as an indicator of investment attractiveness following the literature (Weiss, Hilger, 2011; La Porta et al., 1998; Iturriaga et al., 2017). Examining different metrics allows us to increase the robustness of the results and decrease the disadvantages of each particular indicator (Ivaskovskaya and Zinkevich, 2009). Moreover, Hawawini et al. (2003) who studied firm and industry levels, concluded that the relative importance of the effect does not depend on the particular indicator of the firm's outcomes.

3.2.2 Economic freedom index of Russian regions

The primary question of this research is the role of economic freedom in company performance. It is assumed that the index of economic freedom could be a good proxy for the quality of institutional background. The quality of institutions is recognized one of the crucial determinant of growth, therefore, as a channel through which investments can influence economic performance. Our context is unique in that the focus is on individual Russian companies rather than aggregate measures of the stock market. Since institutional development is quite heterogeneous among regions in Russia (Golikova and Kuznetsov, 2018; Expert-RA, 2018), we apply the Economic freedom index (EFI) for Russian regions developed by Coates et al. (2017) to capture the multidimensional institutional change and investigate the effect of economic freedom at the sub-national or regional level.

The methodology for construction of the index is a modified form of the Economic Freedom of North America index from the Fraser Institute. Specifically, the regional index is based on those aspects of the economy and economic policy that are under the control of the regional policy-makers. As an example, the regional index does not include anything about international trade or monetary policy because those are completely controlled by the national

government. As an additional example, the national government sets a minimum wage policy but the regions can require a minimum wage that exceeds the national standard. A higher index means a higher degree of economic freedom. Table 1 briefly shows the structure of the EFI, while details can be found in Coates et al. (2017).

Table 1. Areas and components of the Economic Freedom of the Russian Federation index*

Regional index	All-government index
1. Size of Government	1. Size of Government
<i>A. General government expenditure</i>	<i>A. General government expenditure</i>
<i>B. Transfers and subsidies</i>	<i>B. Transfers and subsidies</i>
(i) Government expenditure on subsidies	(i) Government expenditure on subsidies
(ii) Share of households receiving transfers and subsidies	(ii) Share of households receiving transfers and subsidies
(iii) Share of households receiving public housing	(iii) Share of households receiving public housing
<i>D. Government enterprises and investment</i>	<i>D. Government enterprises and investment</i>
(i) State enterprises investment	(i) State enterprises investment
(ii) Regional budget investment	(iii) Federal and regional budget investment
	(iv) State enterprises output
2. Taxes	2. Taxes
<i>A. Income tax revenue</i>	<i>A. Income tax revenue</i>
(i) Corporate profit tax revenue	(i) Corporate profit tax revenue
(i) Corporate profit tax revenue	(i) Corporate profit tax revenue
(ii) Personal income tax revenue	(ii) Personal income tax revenue
<i>B. Property taxes revenue</i>	<i>B. Property taxes revenue</i>
<i>C. Marginal tax rates</i>	<i>C. Marginal tax rates</i>
(i) Marginal corporate profit tax rates	(i) Marginal corporate profit tax rates
(ii) Marginal property tax rates	(ii) Marginal property tax rates
(iii) Marginal vehicle tax rates	(iii) Marginal vehicle tax rates
	(iv) Top marginal payroll tax rate
3. Regulation	3. Regulation
<i>A. Labor market freedom</i>	<i>A. Labor market freedom</i>
(ii) Regional minimum wage for state-owned organizations	(i) Federal minimum wage legislation
(iii) Regional minimum wage for private-owned enterprises	(ii) Regional minimum wage for state-owned organizations
(iv) Government employment	(iii) Regional minimum wage for private-owned enterprises
	(iv) Government employment
	B. Overall labor market freedom
	C. Regulation of credit markets
	D. Business regulations
	4. Legal system and property rights
	5. Sound money
	6. Freedom to trade internationally

* Notes: Table is taken from Coates et al. (2017)

3.2.3 Control variables

We control for common determinants of firm performance and for regional level effects. First, we control for firm market experience through *firm age* measured by the data of registration.

However, the problem with firm age is that many firms simply reregistered after the collapse of the Soviet Union; counting the age of these firms from this reregistration makes them seem like they are new when in fact they have existed for a very long time. New firms are the only ones that might reasonably be thought to have chosen to locate in a region with high economic freedom, suggesting a self-selection issue that could bias our results. Considering this Russian specifics, we use a dummy variable for *new firms* in order to be sure about their real age. The variable is equalled 1 for companies firms which were founded after 2003, and 0 otherwise. Our assumption is that long existing firms will have reregistered long before 2003, a decade after the break-up of the Soviet Union.

Following Konijn et al. (2011) we include *financial leverage* to control for heterogeneity in performance which depends on differential ability of firms to attract financial resources and the degree of financial constraints and therefore, considers as the important risk factor for firm returns. Thus, Wang et al. (2009) explained that firms with a higher leverage are likely to experience a greater price decline because of worries about the firms' possible inability to make interest and loan payments, which might lead to bankruptcy (Wang et al., 2009). For *firm size*, two metrics are used. In line with Babakus et al. (2006) and King and Santor (2008), we use the number of employees and book value, consequently. Large companies are capable of superior performance due to the economies of scale and stronger market power (Misangyi et al. 2006). However, monitoring and agency costs are likely to be less in smaller firms (YASUDA 2005). In order to catch the effect of activity outside the region and control for firm structure, we include into the model *number of branches* that company might have following the idea of López-Bazo and Motellón (2017). Puffer and McCarthy (2001), as well as Pissarides et al. (2003), consider them as proxy for one of major barriers to both starting up and expansion of businesses in Russia. Taking into account the specifics of the Russian economy, we control for the *state ownership* in shareholder capital as a proxy of financial constraints and privileges of

companies with political connections. The issue was widely investigated by a number of scholars (Li et al., 2008; Claessens et al., 2008; Do et al., 2013). The variable is introduced as a binary variable, which equals 1 for companies with state investments, and 0 otherwise.

Among regional characteristics, we underline the heterogeneity in firm outcomes due *to the differences in economic development* and environment for doing business using the gross regional product (GRP) per capita, *the level of business concentration* via share of urban population and *the income inequality among region population* through the Gini Index that have been frequently used in similar previous studies (e.g. Sternberg and Arndt, 2001; Love and Roper, 2001; Beugelsdijk, 2007; Srholec, 2010; López-Bazo and Motellón, 2017). As noted in Arnold and Hussinger (2010), the GRP per capita coefficient can be a proxy for economic performance and heterogeneity (or convergence) of regions.

Finally, we control for unobservable macroeconomic effects and including *time period dummies* (2005 -2015 years) into the model, in line with (Karniouchina et al. 2013, Wintoki et al., 2012; Gugler et al., 2014); as well as capturing *industry* heterogeneity via binary variables for each firm into one of five sectors, as identified by the North American Industry Classification System. It is argued that firms are constrained to a certain degree, particularly in the short term, by opportunities available to the industry as a whole (Campbell, 2002).

3.2.4 Dataset

The whole sample for the study comprises annual data of 1096 Russian companies for the period 2004-15, or 13,152 firm-year observations. The non-balanced panel data set includes active (at the start of 2004) publicly listed companies with annual reports, obtained from the Ruslana Database, which is provided by the Bureau Van Dijk. Aside from financial information, the data set contains information about the EF index of Russian regions based on the estimations from Coates et al. (2017).

According to the two-digit North American Industrial Classification System, the distribution of Russian public companies within various industries it manufacturing is the following: accounts for 46% of the studied firms, electricity and related businesses for 18%, construction for 46%, and 4% are wholesale and retail trade, while the remaining comprises the service and financial sectors. Therefore, our sample reflects the structure of Russian economy across industries.

Figure 1 presents the dynamics of EFI in Russian regions during the time-span of analysis. Despite the convergent dynamics in EF than in 90s or early 2000s, we see the still high level of variation among regions.

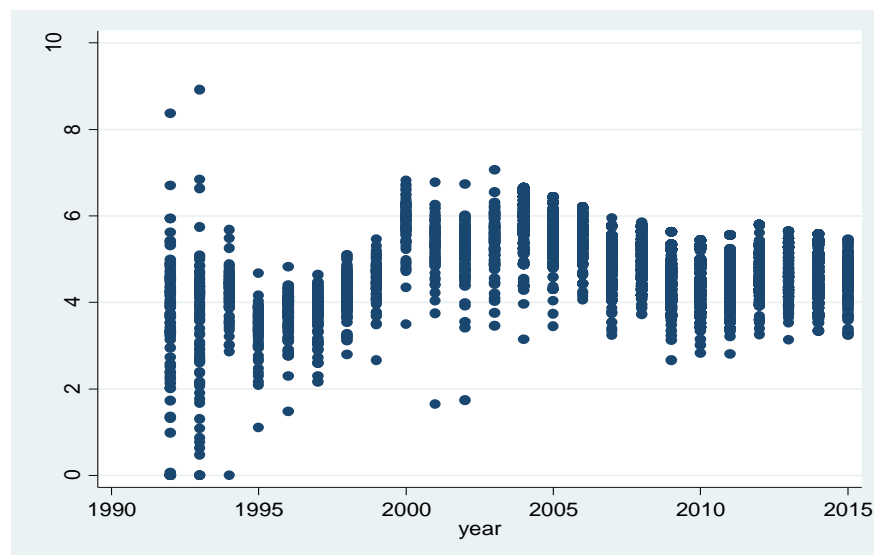


Figure 1. The EFI for Russian regions*

*Notes: estimated by authors based on Coates et al. (2017) data

Moreover, the mapped results for 2015 (Figure 2) shown that there is geographical distribution of the regions with different level of economic freedom – most of the high-level regions are locates on the west and south-west parts of the Russia. It is highly corresponds with whole level of economic activity in Russian economy and confirmed results of investment climate attractiveness investigation done by RAEX (https://raexpert.ru/rankingtable/region_climat/2017/tab1)

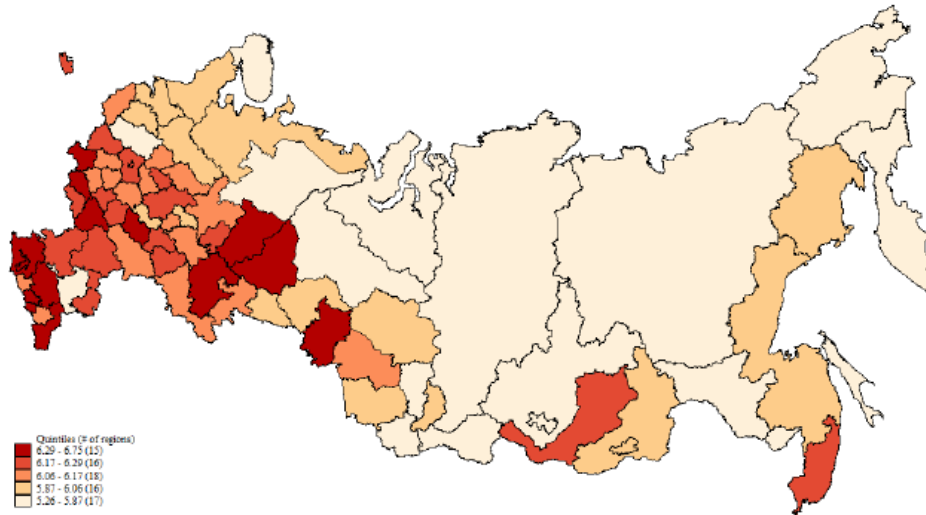


Figure 2. EFI for Russian regions in 2015*

*Notes: Figure is borrowed from Coates et al. (2017)

The results of the multivariate test of difference between average values for all indicators (Table 2), demonstrate a statistically significant variation between the regions for all variables used in the study:

Table 2. Results of the multivariate test on statistical differences between regions

Indicator	Wald χ^2 statistic
ROA	343.519***
ROIC	415.091***
TobinsQ	185.288***
EFI	4082.854***
Number of employees	1455.179***
Book Value	1270.007***
Firm age	1556.854***
New companies	143.778***
Number of branches	1157.557***
State ownership	755.409***
Financial leverage	580.605***
Share of urban population	13020.916***
Gini-coefficient	11447.620***
GRP per capita	5462.804***

Note: *** p<0.001.

4. Empirical results

4.1. Explanatory Analysis

Some descriptive statistics are reported in Table 3, which shows the mean and standard deviations of the variables, along with the maximum and the minimum.

Table 3. Descriptive statistics of the sample

	No. of obs.	Mean	St. dev.	Min.	Max.
ROA	9,702	0.041	0.101	-0.418	0.447
ROIC	9,248	0.086	0.126	-0.849	0.992
TobinsQ	2,547	1.098	0.725	0.018	9.035
EFI	9,702	5.011	0.651	3.350	6.650
Number of employees	9,417	3584.843	17023.690	1.000	456000.000
Book value, mln.euro	9,702	731.030	7649.416	.001	301148.300
Firm age	9,702	33.084	37.684	0.000	303.000
New companies	9,702	0.051	0.219	0.000	1.000
Number of branches	9,702	11.580	23.266	0.000	347.000
State ownership	9,702	0.030	0.171	0.000	1.000
Financial leverage	9,124	2.244	6.133	3.28e-08	93.528
Share of urban population	9,702	78.563	14.511	42.400	100.000
Gini-coefficient	9,702	0.420	0.053	0.316	0.575
GRP per capita	9,702	1048.364	1067.000	51.141	11763.610

The results given in Table 3 reveal that the average firm in Russia returns 4.1% on its assets and 8.6% on its equity. TobinsQ equals 1.098 meaning the excess in average of market value over book value. The mean value of the key dependent variable, i.e. Index of Economic Freedom, is 5.011 with maximum of 6.650 and minimum of 3.350 reflecting only the half of possible score according to the Index methodology. The average number of employees (3584.8) and book value (731.030) show the skewedness of the sample toward large companies and at the same time high heterogeneity in the firm size. Despite the average firm age equals 33 years, the share of new companies is only 5% out of the sample. This confirms our guess about Russian specifics: in reality, most of the companies were established in Soviet Union period and were reregistered in early 90s. Such a quit small number of new firms is in the line with results of Aidis and Adachi (2007) and Estrin and Prevezer (2010). Scholars conclude that the low degree of firm creation and the low survival rate of newly created businesses in emerging economies relate with informal barriers caused by the lack of rule of law, inconsistent enforcement of regulations, regional autonomy and pervasive corruption. The huge heterogeneity is observed in the company structure: the number of branches differ from 0 to 347 while the average value is 11.5. We

assume that most of such distributed companies work in the different territories. Our sample includes only 3% of companies with government investments which less than in Russian economy in whole. According to the Ranking of 100 largest Russian companies in 2015, 28 companies consider as state-invested, have 6.1% of total employment and 2.8% Russian GDP in 2014 (Expert-RA, 2015). At the same time, the analysis by sectors represents high variation of state participation: in oil and gas industries as well as military production the share of government shareholder capital might achieve 100% whereas in agriculture and telecommunication industries it is less than 10%. The average financial leverage equals 2.244, which is similar with other studies. Apart from firm level control variables, we include several indicators of regional economy. Thus, the percentage of people live in the cities is 78,5% which is higher than in Russian economy, while Gini-coefficient (0.420) represents the situation in Russia in whole. According to the World Bank data, the estimated Gini-coefficient for Russia is 0.377 which is higher than in developed countries but similar or even less than in other emerging countries like Brazil or China (World Bank, World Development Indicators, 2016 <https://www.indexmundi.com/facts/indicators/SI.POV.GINI/compare?country=ru#country=br:cn:xc:oe:ru:us>). The average level of GRP per capita is 1048.364 mln.euro but the dispersion is quite huge.

Table 4 provides information on the degree of correlation between the explanatory variables used in the multivariate regression analysis. The matrix shows that in general the correlation between variables is not strong; the variance inflation factor (VIF) coefficients suggests that multicollinearity is not a problem here. At the same time, in broad terms, the correlation matrix confirms that there is positive correlation between economic freedom and the performance metrics.

Table 4. Correlation matrix and VIF coefficients

	ROA	ROIC	Tobins'Q	EFI	Nempl	BV	Age	New	Branch	StOwn	Fin.lev	City	Gini	GRP
EFI	0.081***	0.083***	0.107***											
Nempl	0.121***	0.157***	0.016	-0.052**										
BV	0.066***	0.075***	-0.024	-0.150***	0.672***									
Age	-0.001	-0.005	-0.064**	-0.040***	0.175***	0.087**								
New	-0.027**	0.009	0.078***	0.009	-0.144***	-0.014	-0.189***							
Branch	0.000	0.007	0.000	0.018*	0.138***	0.237***	-0.025**	-0.010						
StOwn	0.061***	0.069***	0.039**	-0.016	0.298***	0.411***	-0.082***	0.053***	0.319***					
Fin.lev	-0.188***	-0.123***	0.007	0.005	-0.023**	0.062***	-0.020*	-0.013	-0.010	-0.041***				
City	-0.024**	-0.055***	-0.068**	0.096***	-0.145***	0.109***	-0.046***	0.049***	0.134***	0.112***	0.041***			
Gini	-0.036***	-0.057***	-0.003	0.274***	-0.238***	-0.007	-0.126***	0.045***	0.155***	0.116***	0.052***	0.675***		
GRP	-0.106***	-0.140***	-0.129***	-0.128***	-0.167***	0.121***	-0.071***	-0.045***	0.047***	0.118***	0.047***	0.512***	0.446***	
VIF	2.46	2.50	1.08	1.18	2.29	3.06	1.10	1.11	1.59	1.70	1.06	1.97	2.24	1.88

Note: This table reports the correlation coefficients and their statistical significance, as well as the VIF coefficients. *** p<0.001, ** p<0.05, * p<0.10.

Taking into account the possible endogeneity of EFI as was described in previous papers (Dialga, and Vall'ee, 2015; Dutta and Williamson, 2016; Kešeljević and Spruk, 2013), we use the one-year lag for these variables. Moreover, we have run the model with two and three years lag with little effect on the results. To conserve space, we choose not to report them in the paper, but they are available upon request.

We ran two specifications of our model in which the dependent variable is a firm's performance measured through different metrics. For smoothing the variance, we also use natural logarithm for the following variables: number of employees and book value. The results are shown below in Table 6.

Columns 1, 3 and 5 in Table 5 report the results from estimations that include the economic freedom index as an explanatory variable and random intercept on the regional level, while columns 2, 4 and 6 present the result of random coefficient and random intercept model.

Table 5. Results of mixed multilevel regression analysis

Dependent variables	ROA		ROIC		Tobins'Q	
Models	(1)	(2)	(3)	(4)	(5)	(6)
Intercept (constant)	-0.033 (0.028)	-0.034 (0.030)	-0.059 (0.042)	-0.057 (0.042)	0.559 (0.439)	0.412 (0.446)
Firm level determinants						
Variation (residual)	0.0080624 (0.0001218)	0.0079013 (0.0001202)	0.0168972 (0.0002591)	0.0162315 (0.0002498)	0.0252418 (0.0083329)	0.4989048 (0.0148408)
Regional level determinants						
Variation (constant)	0.0003264 (0.0000873)	3.26e-14 (1.83e-13)	0.0007623 (0.0002127)	1.97e-15 (2.64e-12)	0.5165758 (0.0150921)	1.97e-09 (1.03e-08)
u_{0j}						
Lagged EFI γ_{10}	0.007*** (0.003)	0.007** (0.003)	0.013*** (0.004)	0.014*** (0.004)	0.121*** (0.042)	0.138*** (0.042)
Variation (EFI) u_{1j}		(0.0000141) (4.04e-06)		0.0000231 (7.12e-06)		0.0009752 (0.0003571)
Variation (Energy sector) u_{1j}		0.0013806 (0.0003722)		0.0066241 (0.0014002)		0.0850709 (0.029871)
Control variables						
Number of employees	0.002* (0.001)	0.002* (0.001)	0.004*** (0.001)	0.005*** (0.003)	-0.037*** (0.014)	-0.026* (0.014)
Book Value	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.003*** (0.001)	0.021 (0.015)	0.007 (0.016)
Firm age	-0.000* (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
New companies	-0.020***	-0.021***	0.007	0.004	0.105	0.125*

	(0.005)	(0.005)	(0.008)	(0.008)	(0.066)	(0.067)
Number of branches	-0.000*** (0.000)	-0.000** (0.000)	-0.000** (0.000)	-0.000 (0.000)	-0.001 (0.001)	-0.000 (0.001)
State Ownership	0.018*** (0.007)	0.021*** (0.007)	0.026*** (0.011)	0.025** (0.011)	0.260*** (0.071)	0.269*** (0.072)
Financial Leverage	-0.003*** (0.000)	-0.003*** (0.000)	-0.002*** (0.000)	-0.002*** (0.000)	0.002 (0.003)	0.003 (0.003)
Share of urban population	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.008** (0.003)	-0.007** (0.003)
Gini-coefficient	0.009 (0.051)	-0.001 (0.055)	-0.060 (0.076)	-0.108 (0.077)	1.438* (0.827)	1.220 (0.848)
GRP	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000* (0.000)	-0.000* (0.000)
Time-period dummies	Included	Included	Included	Included	Included	Included
Industry dummies	Included	Included	Included	Included	Included	Included
Variation analysis						
Across firms, %	97,1		95,7		95,3	
Across regions, %	3,9		4,3		4,7	
Model statistics						
Observations	8,865	8,865	8,616	8,616	2,408	2,408
Number of groups	73	73	73	73	71	71
Chi-square	718.65***	696.66***	674.62***	621.29***	217.68***	214.02***
LR test vs. previous eq. (chi-square)	80.57***	164.88***	75.33***	300.72***	75.72***	75.72***

Note: This table reports the estimated coefficients (std. err.) of the mixed multilevel models. We also report on the variation analysis, based on the intraclass correlation coefficient, as well as the chi-square statistics and the results of the LR test. *** p<0.001, ** p<0.05, * p<0.1.

Overall, we can claim that all specifications are significant and robust and meet requirements of HLM modelling. The results of the likelihood ratio (LR test) show that data have the nested structure and it is needed to apply HLM instead of simple liner regression. According to the results, we can confirm our hypothesis and conclude that the economic freedom variable is positive and significant in the ROA, ROIC and Tobin's Q equations. Each of these results means that greater economic freedom corresponds to a higher returns or a more valuable company.

The model reported in 1, 3, and 5 columns here assumes that the marginal impact of the EFI is the same for all firms across all regions. Each model supports random intercepts. In other words, for each firm performance measure, the mean value of the measure varies by region. The results of analysis of variation coefficient (constant) demonstrate statistically significant differences in the variance components of the intercept. In other words, the regional effect explains around 4% of performance variation while more than 95% of the total variance in the

returns is concentrated on the firm level. The predominantly small relevance of regional effect confirms the results of Chan et al. (2010) and supports the view that resources are moved to where returns are greatest and institutional environment better. By the way, the results are in the line with studies analysed the location effect on firm performance. Bamiatzi et al. (2016) studying more than 15, 000 firms within 10 emerging and 10 developed countries and applying 3-Level random coefficient model, received that 4.42 of total variance in firm ROA comes from location effect. For 509 companies in Brazil, Ferreira et al. (2010) indicate that the variables may characterize location effect explain at most approximately 3% of the total variability of performance between companies. Scholars conclude that location matters greatly to the destiny of firms and underlines the importance of understanding the particular characteristics specific to regions which could promote or retard the performance of their firms. However, Zouaghi et al. (2017) for Spanish agricultural firms found out that location matters most in Navarre (Spain), where the effect accounts only for 1.8% of ROA variance. At the same time, several past studies (see Makino et al., 2004; McGahan and Victor, 2010) confirm that location effect is more pronounced in emerging markets rather than in developed ones. Chakrabarti et al. (2011) conclude that this phenomenon could be attributed to the presence of internal market structures, developed to bypass the institutional inefficiencies.

Regarding to the Economic freedom Index in Columns 1,3 and 5, the findings confirm the evidence that the higher performance enjoyed by a company, which is operated in better institutional environment measures as EFI, is positive and significant. The positive relationship between economic freedom and economic performance is very well empirically tested on macro level and results from micro level confirm this. For example, consider the result for Tobin's Q. In the data, the mean value of Q is 1.116, the impact of raising the EFI by one unit, about 20% of the mean value, is for Q to rise by 0.121, or about 10% of the mean value. The outcomes encourage us to the further study.

Finally, consider columns 2, 4 and 6. The model now allows for the influence of economic freedom to differ from region to region. There is a constant influence across firms from all regions, and the random component, affecting firms differently based on their region. According to the results, we see the significant average effect of Economic Freedom Index on all companies' performance metrics represented by the coefficient 0.007 for ROA, 0.014 for ROE. Surprisingly, the strongest results are for TobinsQ (0.138), representing investor expectations of company potential returns. The results indicate that for the influence (slope) of economic freedom varies by region (variance of EFI is statistically significant), while constant level of economic freedom has the same effect for all firms (variance of constant is non significant). Therefore, by adding the EF index as a variable at the regional level, we show that performance heterogeneity is explained by the economic freedom, not because of its average effect of EFI which equal for all companies, but by the level of institutional development in particular region.

Analysing the results of control variables, we can conclude that they show robust estimates and confirm the results of previous studies. The results indicate that, generally speaking, company size, measured by the number of employees and book value, is a significant determinant of firm performance. While more employees is positively related to return on assets and return on invested capital is negatively related to Tobin's Q. The book value of the firm is positive and significant in the ROA and ROIC equation, and not significant in the Tobin's Q equation. Although it has ordinarily been considered that productivity has a positive association with firm size, as reported by (Leung et al. 2008) for Canadian companies, our results for TobinsQ confirmed the research conducted by (Kouser et al. 2012). State ownership has a significant and positive impact on firm results, as was shown by (Abramov et al. 2017) for 114 largest Russian companies. However, (Ding et al. 2016) for Chinese companies in 1997-2007, reached the opposite conclusion. In contrary with our expectations, we reveal that financial leverage has a negative effect on firm results, which however is in line with the results of many previous

empirical studies. In common with (Ramstetter and Ngoc 2013), we observe that young firms are more successful than mature ones. Among regional characteristics, only GRP has stable significant impact: the higher GRP leads to the worse firms' performance, while the share of urban population is insignificant for all measures except Tobin's Q.

4.2. Robustness check

We have estimated the model with 2 and 3 period lags of the economic freedom variable as a robustness check. One quick conclusion is that the original findings, concerning the study hypotheses, are robust to this kind of scrutiny. For example, the level of statistical significance frequently rises on the economic freedom variable; if it is significant at the 10% level when lagged once it is significant at the 5% level lagged twice or three times. Moreover, the random slope economic freedom coefficient is also significant at a higher level. These results are available upon request.

Furthermore, we estimated the generalized model on two subsamples based on the new companies' variable. The results show that economic freedom is positively affects firm results for old companies but does not have any impact for new ones. Our guess is that because of small number of observations (only 7% of companies in the sample are new) which are limited in few regions with low variation in economic freedom.

Each equation is also estimated using company fixed effects. Of course, any variable with no time series variation drops out of the regression, so these fixed effects cause industry dummies to drop out. The key result, that the economic freedom index is positively and significantly related to company performance, remains.

Table 6. Results of panel data fixed effect model

Models	(2)	(3)	(5)
Dependent variables	ROA	ROIC	QTob

Intercept (constant)	-0.126*** (0.026)	-0.127*** (0.035)	1.217** (0.475)
Lagged EFI	0.021*** (0.003)	0.030*** (0.004)	0.106** (0.049)
Number of employees	0.006** (0.003)	0.007** (0.003)	0.064 (0.040)
Book Value	0.003 (0.003)	-0.005 (0.004)	-0.202*** (0.054)
New companies	0.000 (0.008)	0.001 (0.014)	0.117 (0.114)
Number of branches	0.000 (0.000)	0.000 (0.000)	-0.000 (0.002)
Time period dummy	Included	Included	Included
Observations	9,417	9,184	2,417
Number of observations	0.037	0.055	539
R-squared	1,002	989	0.141

Note: This table reports the estimated coefficients (std. err.) of the fixed effect model. We also the R-squared statistics. *** p<0.001, ** p<0.05, * p<0.1.

5. Conclusion and Discussion

The current study is devoted to the external source of firm performance heterogeneity in the context of underdeveloped in whole, at the same time quite disperse region by region, institutional environment. We agree with Short et al. (2007) who noticed that one of the central questions in contemporary strategic management issues is “the extent to which a firm’s fate is self-determined” (Short et al., 2007: 161). Specifically, we consider regional economic freedom as the essential factor influencing firm activity and consider them as the possible channel for investments. Taking the advantage of two-level data, i.e. firm-region, we apply hierarchical linear modeling (HLM), as a technique for the simultaneous observation of the region and company levels, to investigate such a phenomenon. The approach allows us to deeper explore the role of regional institutional environment in firm performance both from accountant and market-based view. By combining the institutional theory with strategic management literature, namely resource based view, we demonstrate that the context of the general economic environment is most critical in determining the role of firm, industry, and country effects on firm profitability. By introducing the Regional Economic Freedom Index as integrated indictor of level of institutional development, we can conclude that a multilevel approach brings new insights and a

better understanding of the role of institutes with respect to company performance heterogeneity. The investigation reveals novel findings and intriguing results.

Despite the quite importance, the literature revealed the gap in the research linking the economic freedom to the conduct and behavior of firms. Most of the studies done in the field are on the country or sub-national level. However, in emerging economies, like Russia which characterized by a complex system of entry barriers and the weakness of institutions, particular mechanisms of institutional environment effects require an additional research. As was noticed by Golikova and Kuzntecov (2017) Russian companies face the situation when institutes are far from effective in creating investment climate. Therefore, the analysis of firm strategies should be not complete without incorporating institutional aspects, particularly economic freedom (Aidis, 2015; Smallbone et al., 2014; Krasniki, Desai, 2016). Moreover, studies using multilevel perspective on firm-economic freedom nexus is lacking also. Mostly, previous studies captured the institutional effect by using dummies for particular institutes (state ownership, political connections, corruption, entry barriers etc.). Indeed, scholars like (Short et al. 2007), (Arend 2009), (Chen 2010), (Zacharias et al. 2015) have discovered the importance of the multilevel approach for better understanding the heterogeneity of company performance. In our study, we follow this approach allowing for theoretical advancements in strategic management field (Aguinis and Molina-Azorín 2015).

First, in line resource-based view (McGahan & Porter, 2002, Short et al., 2007 among others), we confirmed that, irrespective the economic environment, firm performance is predominantly driven by firm-specific factors which explained 96% of results heterogeneity. Second, by incorporating the regional level into analysis of firm behavior, we observed that company performance differences significantly depend on different business environment in the particular territory, i.e. regional effect explains 4% of firm heterogeneity. Finally, more importantly that our empirical results confirmed our initial expectations and show that economic

freedom is significant driver of firm profitability and even more crucial for investment opportunities and market (or potential investors') expectations. Firms operating in regions with higher economic freedom enjoy better financial results. Moreover, such a positive effect is different for different companies located in the particular region. The results are robust across specifications, performance metrics and estimation approaches.

Contribution

Research and practical implications

Nevertheless, this study has several limitations giving awaits for future research. Since we used HLM approach as the key estimation technique, the study has constraints with regard to the measurement approach. To address this, we used classical panel data fixed effect modeling as the robustness check and received similar results. Second, our sample is restricted to public companies due to availability of the financial data. One of the future research lines could be related with enlarging the sample with special focus on small and medium enterprises. Empirical evidence shows that such type of firms are mostly influent by favourable business environment (Thorsten and Demirgunk-Kunt, 2004; Klapper et al., 2009). Third, results could be possibly biased by the fact that firms very often operate not only in the region boundaries and in even have exporting activity. Therefore, not only the regional economic freedom, where the headquarter of the company located, affects firm performance. We partly eliminated this effect by including variable reflecting company structure, namely number of branches.

Despite the underlined limitations, we do hope that this study will encourage other scholars to investigate the firm performance-economic freedom relationship as a multilevel phenomenon. Thus, one of the possible research lines could be related with dividing the Index into sub-components. The previous empirical studies show that not only important to analyze an overall index of economic freedom, but it is also important to “investigate which components of the economic freedom indices that are important for growth and the direction of these effects”

[Carlsson and Lundström, 2002]. Another possible study direction is exploring whether firm strategies are aligned within regional institutional environment context, which according to the literature, is relevant for Russian companies (Glazunov 2016). Other words whether economic freedom has moderation effect of a particular company by its contribution to company performance. Mathematically, we test the significance of the cross-level interactions between the firm-level drivers and the level of regional economic freedom. We suppose that the level of economic freedom in region might be more different in different contexts. One such context is the ownership type, another relates with industry and age.