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as a manuscript

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**DECENTRALIZATION AND ECONOMIC OUTCOMES OF FIRMS
IN ENVIRONMENTS WITH WEAK INSTITUTIONS**

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Problem description

This dissertation studies decentralization of decision-making at the level of firms. During recent decades the practice of decentralization – the delegation of decision-making authority from the top of a firm’s managerial hierarchy down to middle-level and local employees – has become increasingly widespread. Following this tendency, the literature in economics has paid increasing attention to the topic of decentralization of decision-making at firms.

Decentralization has a huge potential to improve firms’ efficiency and competitiveness: it creates conditions for quicker and more competent decision-making on a wide range of questions and enhances the involvement and motivation of employees. However, decentralization is associated with additional agency risks: risks that employees may use the delegated authority in ways that are not necessarily in their firms' best interests. The agency risks of decentralization can be particularly high in environments with weak institutions. Therefore, the balance between the costs and benefits of decentralization for firms depends on the institutional context.

The existing literature focuses primarily on the decentralization of firms in developed countries. Scientific knowledge of firm decentralization in countries with weak institutions is still limited. The literature in this area focuses on the very high agency risks associated with the decentralization of firms under weak institutions, concluding that decentralization cannot be successful under low-quality institutions. However, this conclusion is based on data from only three developing countries – Brazil, India, and China – and is not supported by data from other countries with weak institutions.

Research on the decentralization of firms in environments with weak institutions is important, since decentralization can improve firms' efficiency and competitiveness even under weak institutions, and in the majority of countries in the world, firms have to work in weak institutional conditions. This dissertation proposes new approaches to the study of decentralization of firms in the context of weak institutions. It explores the payoff from decentralization for firms in different institutional contexts, and investigates the new mechanisms – those not related to agency risks – by which quality of institutional environment can influence the payoff from decentralization and, in turn, the popularity of decentralization among firms. The empirical analysis of decentralization of firms in weak institutions environment is based on data on Russian manufacturing firms.

Brief literature review

During recent decades, a sustained tendency toward greater decentralization of firms has been observed in developed countries (Rajan and Wulf, 2006; Bloom et al., 2010b; Guadalupe and Wulf, 2010). The theoretical literature outlines several channels through which decentralization can improve firms' efficiency and competitiveness and facilitate their growth. Decentralization relaxes demands on the time of the CEO, incentivizes managers and employees, facilitates communication inside the firm, and promotes more efficient use of available information (Penrose, 1959; Chandler, 1962; Aghion and Tirole, 1997; Baker et al., 1999; Rajan and Zingales, 2001; Dessein, 2002; Aghion et al., 2014). However, decentralization is associated with additional agency costs for firms (Aghion and Tirole, 1997; Bloom et al., 2012a; Aghion et al., 2014 et al.); the agency costs of decentralization become a particularly important issue in countries with weak institutions (Bloom et al., 2012a).

Several recent papers empirically demonstrate a correlation between decentralization and the economic performance of firms in developed countries. Acemoglu et al. (2007), using data on French and British firms, show that decentralized firms are, on average, more productive. Kastl et al. (2013) use data on Italian firms to document that decentralized firms tend to spend more on R&D. Aghion et al. (2017) use data on firms from 10 OECD countries to provide evidence that decentralized firms are more resistant to economic crises.

The popularity of firms' decentralization varies significantly across countries. The literature demonstrates a strong influence of the environment, and the institutional environment in particular, on the choices made by firms regarding decentralization. Bloom et al. (2010b) show that higher product market competition leads to greater levels of decentralization. Bloom et al. (2012a) demonstrate that higher trust in the region and stronger rule of law in the country increase decentralization within firms. Athanasouli and Goujard (2015) show that firms in more contract-dependent industries located in more corrupt regions are less likely to be decentralized.

The literature exploring the decentralization of firms in countries with weak institutions is still very limited. Apart from the present study, only three empirical papers on this topic are known: Bloom et al. (2010a), Bloom et al. (2012a), and Bloom et al. (2013). Analyzing data on firms from three developing countries – India, Brazil, and China – Bloom and co-authors conclude that under weak institutions, most firms are run in a very centralized manner and decentralization is extremely rare. Moreover, they argue that in countries with weak institutions successful decentralization of firms is almost impossible due to the very high agency risks. However, these conclusions are not supported by the empirical data on firms in other countries.

A separate branch of literature studies the influence of the strategy of hiring for top positions – competitive hiring or hiring through family ties – on firms’ performance. Bloom and Van Reenen (2007) argue that hiring for top positions through family ties can positively and negatively affect firms. On the one hand, hiring through family ties reduces agency risks. On the other hand, such a hiring strategy limits the pool of candidates and, correspondingly, the pool of managerial talent from which firms can choose when seeking candidates for top positions. At the same time, Perez-Gonzales (2006) and Bennedsen et al. (2007) demonstrate that firms that hire CEOs competitively turn out to be more economically successful than firms that hire CEOs through connections. Apart from the present dissertation study, the literature that studies the effect of hiring strategies for top positions on firms’ performance does not interact with the literature on decentralization.

The aim and objectives of the dissertation

The dissertation is aimed at research of decentralization of firms: it analyzes the payoff from decentralization for firms in different institutional conditions and explores new mechanisms through which weak institutions limit decentralization of firms.

Objectives of the dissertation:

1. To study differences in economic outcomes between the decentralized and centralized firms (the payoff from decentralization for firms) in different institutional contexts.
2. To explore the effect of strategies of hiring for top positions (competitive hiring vs. hiring through connections) on the payoff from decentralization for firms under weak institutions.
3. To study factors that limit the decentralization of firms.
4. To reveal the new mechanisms through which weak institutional environment limits the payoff from decentralization for firms and the spread of decentralization among firms.

Hypotheses

Decentralization allows firms to take decisions and react to changes in environment more quickly and efficiently, to quickly take competent decisions on a wider range of questions, to use available information more efficiently. Moreover, it enhances involvement, responsibility and motivation of employees and creates a more free and pro-creative atmosphere at firms. Therefore, decentralization has a strong potential to improve the economic efficiency of firms. However, it is also associated with additional agency risks, which are especially high under weak institutions.

To mitigate the agency risks of decentralization, firms may choose to decentralize decision-making authority to people whom the owners or CEOs trust based on some type of prior relation – acquaintanceship, recommendations from friends, or similar – that is, to employees hired “through connections.” Such a strategy for decentralization is rather popular in countries with weak institutions. On the one hand, it allows a significant reduction of agency risks because by selecting candidates for top positions through connections, firm owners and CEOs get a chance to more accurately estimate their moral qualities. On the other hand, such a strategy has serious drawbacks: employees hired “through connections” are often less professional and efficient than employees hired through open competition, which makes the effectiveness of this decentralization strategy questionable.

Therefore, in economies with weak institutions, it is important to distinguish between the two decentralization strategies available to firms: *real decentralization*, which is the decentralization of decision-making authority to competitively hired professionals, and *cautious decentralization*, or decentralization to people hired through connections, not necessarily professionals. Real decentralization can improve firms' economic efficiency; however, it is associated with severe agency risks. Cautious decentralization is much less risky; however, its potential for improving firms' economic efficiency is also much lower.

In this dissertation, I suggest that the positive influence that real decentralization can have on firms' economic efficiency is so strong and important that the benefits that firms gain from real decentralization can outweigh the costs even in conditions of weak institutions. Therefore, the payoff of real decentralization is positive.

Hypothesis 1. Under weak institutions really decentralized firms are, on average, more economically successful than firms that are centralized or cautiously decentralized.

Hypothesis 1 suggests that real decentralization is helpful for firms because it creates conditions for improving economic efficiency. However, under weak institutions, the importance of efficiency to the economic performance of firms can decrease. In countries with weak institutions, non-market factors, such as corruption, connections, and the like, can play an important role in firms' economic efficiency. The more significant the role of non-market factors is in the economic efficiency of firms, the lower the value of economic efficiency in relation to their performance. Therefore, the more significant the role of non-market factors is in firms' economic efficiency, the lower the potential payoff for them from real decentralization becomes and, consequently, the less popular it is.

Hypothesis 2. In regions with higher levels of corruption, the payoff for firms from real decentralization is lower.

Hypothesis 3. Real decentralization of firms is less prevalent in regions with higher levels of corruption.

Hypotheses 1-3 are tested on the data on Russian firms. Empirical analysis is based on “Russian Firms in a Global Economy” (RuFIGE) survey data. This survey has a unique combination of questions about decentralization of firms and their strategies of hiring for top positions. Such a combination of questions allows to distinguish empirically between the two decentralization strategies – the strategies of real and cautious decentralization – which is fundamentally important for this study. The author does not possess information about other surveys that include such a combination of questions.

Data

The empirical analysis in the present study is based on data from two large surveys of firms: “European Firms in a Global Economy” (EFIGE) and “Russian Firms in a Global Economy” (RuFIGE). This data is supplemented with estimates of the quality of the institutional environment in the Russian regions calculated from the data of the firm survey “Business Environment and Enterprise Performance Survey” (BEEPS). The study also uses data from the Russian Fund “Public Opinion” GeoRating Survey and Rosstat data.

The EFIGE survey was conducted in 2010 by the European think-tank Bruegel in seven European countries: Germany, France, the United Kingdom, Spain, Italy, Austria, and Hungary. The survey sample includes almost 15,000 firms (small, medium-sized, and large). In Germany, France, the United Kingdom, Spain, and Italy, the survey sample includes 2,000–3,000 firms; in Austria and Hungary, the sample is smaller – about 450 firms. The use of sampling weights allows the sample to be treated as representative by firm size and sector in each of the countries.¹ The questions in the survey were answered by CEOs and top managers of the firms. The questionnaire includes a large range of questions that cover different aspects of firms’ performance and organization. In particular, it includes a question on decentralization of decision-making at firms and questions about export, innovation, and research and development activity.

The RuFIGE survey was conducted by the Institute for Industrial and Market Studies (IIMS HSE) in 2014. It collected information about 1,950 manufacturing firms from 60 Russian

¹ The survey sample was designed to be representative by firms’ industry and size in each of the countries, with one exception: to make statistical analysis possible in the group of large firms, large firms were intentionally overrepresented in the sample. This approach is standard for surveys of firms. More information about the survey can be found at: <https://www.bruegel.org/efige/>.

regions. The use of sampling weights allows the sample to be treated as representative by firm size and sector.² The questions in the survey were answered by CEOs and top managers of the firms. The questionnaire used in this Russian survey repeats some of the EFIGE survey questions and contains additional questions that account for Russian specificity. In particular, the RuFIGE questionnaire contains the EFIGE survey questions on decentralization and innovation and export activity of firms. In addition, it contains a new question on hiring strategies for top positions (competitive hiring vs. hiring through connections) practiced by firms.

The BEEPS is conducted periodically in different countries by the World Bank and the European Bank for Reconstruction and Development. This dissertation study uses data from the BEEPS Russian survey, run in 2011-2012 in Russia, in which 4,200 firms from 37 Russian regions took part. The use of sampling weights allows the sample to be treated as representative by firm size and sector in each of the regions; therefore, data from this survey can be used to estimate the quality of the institutional environment in various Russian regions.³

The key variables in the empirical analysis conducted in this study are the variables for decentralization of decision-making, hiring strategies for top positions at firms, and corruption in Russian regions. The methodology of construction of these variables from the survey data described above is presented in the Appendix.

Empirical strategy

The dissertation employs regression analysis methods to explore the relationship between firms' decentralization and hiring strategies on the one hand and their economic outcomes on the other, and to analyze factors that influence firms' decentralization and hiring strategy choices. A range of economic outcomes related to firms' efficiency is considered: investment, innovation activity and access to export markets; all reliable information on firms' economic outcomes from EFIGE and RuFIGE⁴ surveys is used. Regression probit and linear probability models are estimated.

² Like the EFIGE survey sample, the RuFIGE survey sample was designed to be representative by firms' industry and size with one exception: large firms were intentionally overrepresented in the sample. More detailed information about the survey can be found at: <https://iims.hse.ru/en/rfge/>.

³ The BEEPS data cover nearly 80% of the RuFIGE sample, namely, 35 regions with 1,536 of 1,950 RuFIGE firms. The re-weighting procedure is used to work with these data as with representative.

⁴ In the analysis the preference is given to non-financial indicators of firms' performance, because information about the financial performance of firms in countries with weak institutions – Russian firms in particular – is often hidden or manipulated (for example, only approximately half of the RuFIGE survey firms responded to the question about revenue) and thus is generally considered to be unreliable.

To test Hypotheses 1, 2, and 3 regarding the payoff from real decentralization and the extent of real decentralization among firms in countries with weak institutions, I use data from the RuFIGE survey. I estimate linear probability regression models with the following specifications:

$$(1.1) \quad Outcome_i = \beta_0 + Really_Decentralized_i \cdot \beta_1 + Firm_Controls_i \cdot \beta_2 + \varepsilon_i,$$

$$(1.2) \quad Outcome_i = \beta_0 + Decentralization_Hiring_Dummies_i \cdot \beta_1 + Firm_Controls_i \cdot \beta_2 + \varepsilon_i,$$

$$(2) \quad Outcome_{ij} = \beta_0 + Really_Decentralized_{ij} \cdot \beta_1 + Really_Decentralized_{ij} \cdot Corruption_j \cdot \beta_2 + \\ + Firm_Controls_{ij} \cdot \beta_3 + \varepsilon_{ij} \text{ and}$$

$$(3) \quad Really_Decentralized_{ij} = \beta_0 + Corruption_j \cdot \beta_1 + Regional_Controls_j \cdot \beta_2 + \\ + Firm_Controls_{ij} \cdot \beta_3 + \varepsilon_{ij}, \text{ where}$$

index i stands for the firm, j for the region,

$Outcome_{ij}$ is one of the following three outcome variables:

$Invest_{ij}$ – a dummy variable for firms that implement investment,

New_Prod_{ij} – a dummy variable for firms that bring to the market innovative products new to the Russian or global market, and

$Export_{ij}$ – a dummy variable for firms that export their production;

$Really_Decentralized_{ij}$ – a dummy variable for really decentralized firms;

$Decentralization_Hiring_Dummies_{ij}$ is a set of dummy variables for four groups of firms: really decentralized firms, cautiously decentralized firms, centralized firms that hire for top positions competitively, and centralized firms that hire for top positions through connections;

$Corruption_j$ denotes corruption in the region j ;

$Firm_Controls_{ij}$ is a vector of control variables that includes log employment at the firm, log age of the firm, share of employees with higher education as a proxy for the quality of human capital at the firm, dummy variables for the receipt of state support or state orders, dummy variables for the presence of state or foreign ownership, belonging to a holding, recent (during the three pre-survey years) change of the main shareholders, location (regional center / other city or town / village), position of the respondent, sector, and region (except for the regression models (3), where the variable of interest is corruption in the region; therefore, $Firm_Controls_{ij}$ does not include a control for region);

Regional_Controls_j is a vector of region-level control variables that includes share of regional population with higher education, log GRP, GRP growth, quality of judicial system, trust, and regional richness in natural resources.

The main findings

1. A positive payoff for firms from real decentralization is observed even in an environment with weak institutions. Really decentralized Russian firms, on average, demonstrate better economic outcomes: they are more likely to invest, to introduce new products to the market, and to export their production (see Table 1a). At the same time, no difference is observed between centralized Russian firms that hire for top positions through connections, centralized firms that hire for top positions competitively, and cautiously decentralized firms (see Table 1b).

Table 1a. Real decentralization and economic outcomes of Russian firms

	(1)	(2)	(3)
		Firm ...	
	implements investment	brings new products to the market	exports its production
Firm is centralized or cautiously decentralized		<i>Reference category</i>	
Firm is really decentralized	0.17*** (0.06)	0.07* (0.04)	0.09** (0.05)
Control for employment at the firm, age of the firm, quality of human capital, receipt of state support or state orders, presence of state or foreign ownership, belonging to a holding, recent change of main shareholders	Yes	Yes	Yes
Control for location, position of the respondent, sector, region	Yes	Yes	Yes
Observations	1317	1296	1320
R-squared	0.21	0.13	0.18

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, robust standard errors in parentheses

Table 1b. Different decentralization and hiring strategies and economic outcomes of Russian firms

	(1)	(2)	(3)
	implements investment	Firm ... brings new products to the market	exports its production
Firm is centralized and hires through connections		<i>Reference category</i>	
Firm is centralized and hires competitively	0.00 (0.04)	0.03 (0.02)	-0.01 (0.02)
Firm is cautiously decentralized	0.00 (0.06)	-0.00 (0.03)	0.02 (0.04)
Firm is really decentralized	0.17*** (0.06)	0.08* (0.05)	0.09* (0.05)
Control for employment at the firm, age of the firm, quality of human capital, receipt of state support or state orders, presence of state or foreign ownership, belonging to a holding, recent change of main shareholders	Yes	Yes	Yes
Control for location, position of the respondent, sector, region	Yes	Yes	Yes
Observations	1317	1296	1320
R-squared	0.21	0.14	0.18

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, robust standard errors in parentheses

The regressions presented in Table 1a demonstrate that really decentralized Russian firms have better economic outcomes than other firms (centralized or cautiously decentralized). The regressions of Table 1b make it possible to account for differences between firms that use different strategies of decentralization and hiring for top positions – centralized firms that hire for top positions through connections, centralized firms that hire for top positions competitively, cautiously decentralized firms, and really decentralized firms. These regressions support the results of the regressions in Table 1a and confirm that the group of centralized and cautiously decentralized firms – which form the reference category in the regressions of Table 1a – is indeed homogeneous in this analysis.

The results of the regressions of Tables 1a and 1b make it possible to conclude that really decentralized firms are, on average, more economically successful than other firms. These results do not imply that every really decentralized firm, other things being equal, is more economically successful than a comparable centralized or cautiously decentralized firm; however, they demonstrate that decentralization of firms is correlated with better economic outcomes. Furthermore, it is not possible on the basis of these results to establish a causal relationship

between real decentralization and the economic outcomes of the firms. Such a situation is common in studies of the relationship between decentralization – or, more broadly, the quality of management – and firms’ economic performance (see, e.g., Bloom et al., 2012b; Kastl et al., 2013; Aghion et al., 2014). It could be the case that real decentralization increases firms’ economic efficiency, making them more economically successful. Alternatively, it could be the case that more economically efficient, competitive, and innovative firms face more complicated tasks and that the demand at such firms for real decentralization is higher. Both mechanisms in fact can be in operation.

Despite these limitations, the presented result is important. It challenges the belief, widespread in both academic and business circles, that decentralization cannot be successful in an environment with weak institutions. The results presented in Tables 1a and 1b, using the example of Russian firms, demonstrate that successful decentralization is possible even under weak institutions.

2. In Russian regions with higher levels of corruption, the payoff for firms from real decentralization is lower.

Table 2. Corruption and payoff from real decentralization

	(1)	(2)	(3)
		Firm ...	
	implements investment	brings new products to the market	exports its production
Firm is really decentralized	0.19*** (0.07)	0.12** (0.05)	0.13** (0.05)
(Firm is really decentralized) * (Corruption in the region)	-0.90* (0.46)	-0.94*** (0.34)	-0.36 (0.46)
Control for employment at the firm, age of the firm, quality of human capital, receipt of state support or state orders, presence of state or foreign ownership, belonging to a holding, recent change of main shareholders	Yes	Yes	Yes
Control for location, position of the respondent, sector, region	Yes	Yes	Yes
Observations	1048	1035	1050
R-squared	0.21	0.12	0.18

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, robust standard errors in parentheses

The regressions presented in Table 2 modify those in Table 1a: in order to analyze the possible influence of corruption on the payoff for firms from real decentralization, the interaction

of real decentralization of firms with corruption in the region is added to the regression models of Table 1a. The variable for corruption in the region proxies the strength of the distortionary effect of corruption on fair market competition in each Russian region (a more detailed explanation of the construction of the corruption variable is presented in the Appendix).

The regressions demonstrate that under the average (for the Russian regions studied in this analysis) level of corruption, a positive payoff from real decentralization of firms is observed.⁵ When corruption grows, the payoff from real decentralization declines.

3. Correspondingly, in regions with higher levels of corruption, real decentralization is less popular among firms.

Table 3. Corruption and real decentralization of Russian firms

	(1)	(2)	(3)
	Firm is really decentralized		
Corruption in the region	-0.15* (0.08)	-0.17** (0.07)	-0.17** (0.07)
Control for level of education in the region	Yes	Yes	Yes
Control for GRP and GRP growth		Yes	Yes
Control for level of trust and quality of judicial system in the region			Yes
Control for employment at the firm, age of the firm, quality of human capital, receipt of state support or state orders, presence of state or foreign ownership, belonging to a holding, recent change of main shareholders	Yes	Yes	Yes
Control for location, position of the respondent, sector	Yes	Yes	Yes
Observations	1058	1058	1058
R-squared	0.03	0.04	0.04

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$, robust standard errors clustered at the level of regions in parentheses

All the regression results presented in Tables 1a, 1b, 2, and 3 are robust to variation in the set of firm-level control variables and control for the firm's revenue. On top of this, the results of the regressions of Tables 2 and 3 are robust to the use of alternative variables for corruption that measure the effect of corruption on competition. The results of the regressions presented in Table

⁵ The corruption variable is centered around zero, so the average (for the Russian regions covered by this analysis) level of corruption corresponds to the zero value of the corruption variable.

2 are robust to a change of specifications to classic regression models with an interaction term.⁶ The results of the regressions presented in Table 3 are robust to variation in the set of region-level control variables and additional control for the share of firms in the region that did not respond to the question about corruption. Finally, all the regression results presented in this section are robust to estimation via the binary choice (probit) regression models.

Other findings

1. Decentralized European firms, on average, demonstrate better economic outcomes: they are more likely to export their production, to innovate, to introduce new products to the market, and to undertake research and development activities.
2. In European countries, decentralization is more prevalent among larger firms, firms with a higher quality of human capital, firms with better management, and younger firms. Decentralization is less prevalent among firms with higher property concentration, firms whose main shareholders are individuals or groups of individuals, family firms, and firms run by owners. Decentralization is also less prevalent among firms managed by men.
3. In Russia, decentralization is more prevalent among larger firms and firms with foreign property. Decentralization is less prevalent among firms run by men and firms with state property.
4. Among decentralized Russian firms, real decentralization is more prevalent at firms run by men and less prevalent at firms that receive financial or organizational support from the state.
5. In Russia, decentralization is less prevalent in regions with higher levels of corruption; however, no significant influence of quality of judicial system or trust in the region on the prevalence of decentralization among firms is observed.

Contribution

The dissertation research:

1. First demonstrates that, under weak institutions, the payoff for firms from decentralization depends on the strategy of hiring for top positions (competitive vs. through connections).

⁶ Results of the estimation of the classic models with interaction effect are presented in the working paper Levina I. 2018. Decentralization of Firms in a Country with Weak Institutions: Evidence from Russia. IOS Working Paper No.375. In the journal paper Levina I. 2020. Decentralization of Firms in a Country with Weak Institutions: Evidence from Russia. Journal of Comparative Economics, 48 (4), 933-950, according to the recommendations of the reviewers the classic models with interaction effect were substituted for the models with interaction presented in Table 2; such specifications make it possible to control for regional fixed effects and, therefore, provide greater precision of estimates.

Therefore, this research first shows the qualitative heterogeneity of decentralization strategies within firms, which affects the parameters of their efficiency.

2. First studies different decentralization strategies within firms: real decentralization (delegation of decision-making authority to employees hired through an open, competitive procedure) and cautious decentralization (delegation of decision-making authority to employees hired through connections).
3. First empirically shows that the positive payoff from real decentralization of firms is observed even in environments with weak institutions: Russian really decentralized firms, on average, are more likely to invest, to introduce new products to the market, and to export their production.
4. First studies the influence of the quality of the institutional environment not only on the risks of decentralization but also on the potential benefit to firms from decentralization. It also first empirically demonstrates the negative influence of corruption on the payoff for firms from real decentralization and, consequently, on the popularity of real decentralization among firms.

Possible further development of the dissertation research topic

1. The dissertation research demonstrates a correlation between real decentralization of firms and their economic outcomes in an environment with weak institutions; however, it does not allow conclusions to be drawn about the direction of the causal relation. In the future research, it is possible:
 - To explore the instruments for decentralization / real decentralization of firms and estimate the relation between real decentralization and economic outcomes of firms by the method of IV-variables regressions
 - To study the causal relation between decentralization and economic performance of firms through research of the dynamic trajectories of centralized and decentralized firms' development, particularly, in the periods of time that include economic crises
 - To conduct case studies of firms that switched from the centralized to decentralized models of governance (or vice versa) in environments with weak institutions
 - To run laboratory experiments and/or, ideally, field⁷ experiments to study the relation between decentralization and economic outcomes of firms in environment with weak institutions.
2. In the dissertation research, hypotheses about decentralization of firms under weak institutions are tested only on data on Russian firms. The research is based on data on

⁷ Like in Bloom et al. (2013).

manufacturing industry firms and uses a rather general wording of question about decentralization of firms from the EFIGE and RuFIGE surveys. In the future research, it is useful:

- To explore the payoff from decentralization for firms in other countries with weak institutions, particularly other post-Communist countries, using data on firms from different industries, and various wordings of decentralization questions, more detailed wordings in particular.
3. To proxy the distortionary effect of weak institutions on market competition, the dissertation research uses only data on corruption, namely, the BEEPS data on corruption as an obstacle for the firms. In the future research, it is useful:
- To analyze the influence of other aspects of firms' informal activity, common for countries with weak institutions, e.g., of political connections, on the payoff from decentralization.
4. Dissertation research demonstrates that successful decentralization of firms in environment with weak institutions is possible. In the future research, it is interesting:
- To test the hypothesis that successful decentralization of firms in environment with weak institutions requires creation of a special institutional micro-climate (with higher-than-average trust and better-than-average social norms), at least within particular firms. Correspondingly, the creation of such a special micro-climate within successfully decentralized firms is possible in an environment with weak institutions
 - To explore the possible positive externalities from the creation of a special institutional micro-climate (with higher-than-average trust and better-than-average social norms) within successfully decentralized firms in an environment with weak institutions.

List of author's publications

Levina I. 2014. Owners' Motives, Decision-Making Model, and Firm Performance. *Higher School of Economics Economic Journal* 18 (3), 429-453 (in Russian)

Levina I. 2016. By Connection or By Competition? Decentralization of Decision-Making and Hiring Strategies at Russian Firms. *Applied Econometrics* 43 (3), 73-95 (in Russian)

Levina I. 2017. What Limits Decentralization at Russian Firms? *Economic Policy* 12 (5), 62-79 (in Russian)

Levina I. 2018. Decentralization of Firms in a Country with Weak Institutions: Evidence from Russia. *Leibniz Institute for East and Southeast European Studies (IOS) Working Paper No. 375*

Levina I. 2020. Decentralization of Firms in a Country with Weak Institutions: Evidence from Russia. *Journal of Comparative Economics*, 48 (4), 933-950

Approbation of dissertation research results

Annual Conference of the Society for Institutional and Organizational Economics, June 2019, Stockholm, Sweden

Leibniz Institute for East and Southeast European Studies Annual Conference “Firms and Social Change in Eastern and South-Eastern Europe. Historical, Political and Economic Perspectives”, May 2019, Regensburg, Germany

European Public Choice Society Annual Meeting, April 2019, Jerusalem, Israel

Ghent University Russia Platform Ghent-Russia Colloquium, December 2018, Ghent, Belgium

The Silvaplana Political Economy Group Workshop on Political Economy, July 2018, Pontresina, Switzerland

Joint Leibniz Institute for East and Southeast European Studies (IOS), Akademie für Politische Bildung (APB) and European Association for Comparative Economic Studies (EACES) Summer Academy “Firm Behavior in Central and Eastern Europe: Productivity, Innovation and Trade”, June 2018, Tutzing, Germany

Annual Conference of the International Center for the Study of Institutions and Development (ICSID) “Political Economy of Development: Historical and Contemporary Factors”, June 2018, Moscow, Russia

Higher School of Economics (HSE) April International Conference on Economic and Social Development, April 2018, Moscow, Russia

Ludwig-Maximilians University of Munich Chair of Social Sciences and Eastern European Studies Workshop “Growth and Redistribution in Limited Access Orders”, November 2017, Munich, Germany

Annual Conference of the Society for Institutional and Organizational Economics (SIOE), June 2016, Paris, France

European Association for Comparative Economic Studies (EACES) Workshop “Russian Firms in Comparative Perspective”, April 2016, Moscow, Russia

Annual Conference of the International Center for the Study of Institutions and Development (ICSID) “Institutions, Elites and Collective Action in the Developing World”, July 2015, Moscow, Russia

First World Congress of Comparative Economics (WCCE), June 2015, Rome, Italy

European School on New Institutional Economics (ESNIE), May 2015, Corsica, France

Graduate School of Management (GSOM) Emerging Markets Conference: Business and Government Perspectives, October 2015, Saint-Petersburg, Russia

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Appendix. Methodology of construction of key variables

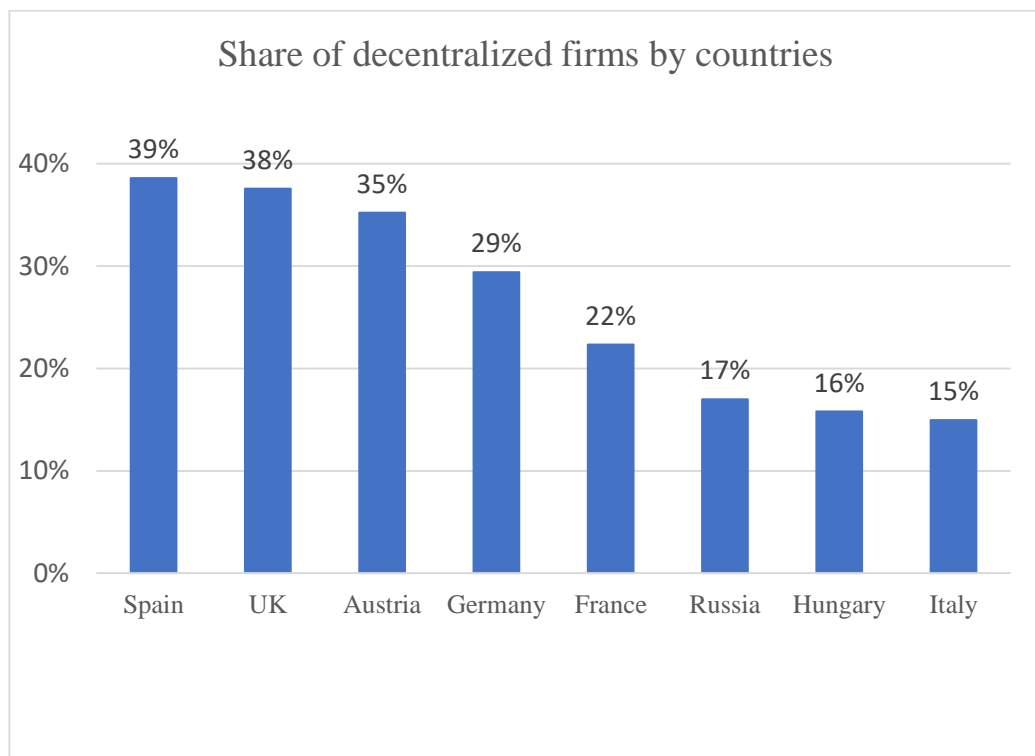
The EFIGE and RuFIGE surveys question about the decentralization of decision-making at firms is formulated as follows:

With the reference to strategic decisions, which of the following statements better describes your firm's situation?

1. Decisions in your firm are centralized: the CEO/owner takes most decisions in every area
2. Decisions in your firm are decentralized: managers can take autonomous decisions in some business areas.

This question about decentralization implies a relatively mild definition of decentralization: firms in which managers can take autonomous decisions at least in some business areas are considered decentralized. However, even with this mild definition, the share of decentralized firms in Europe and Russia is not particularly large. Graph 1 illustrates the spread of decentralization among firms in European countries and Russia.

Graph 1. Share of decentralized firms by country



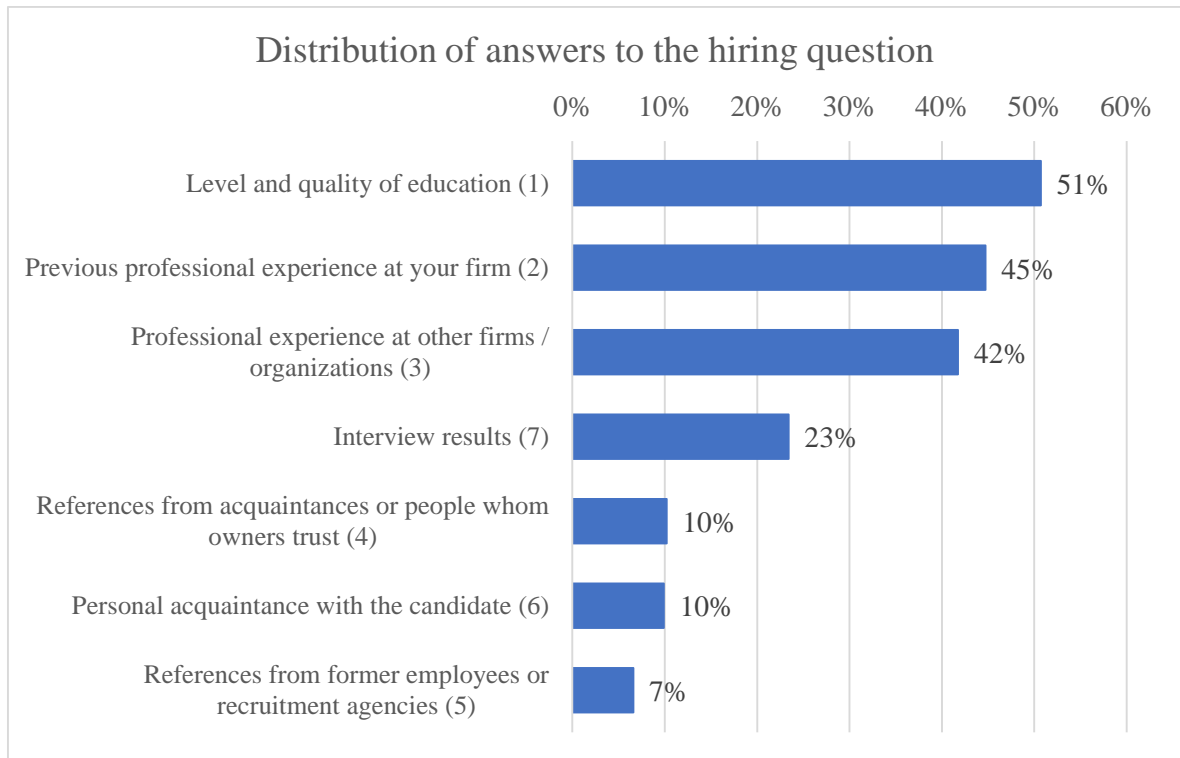
The RuFIGE survey question about strategy of hiring for top positions is formulated as follows:

What are the most important factors the owners/CEO of your firm take into account primarily when they appoint employees to the key managerial positions? Choose the two most important factors:

1. Level and quality of education
2. Previous professional experience at your firm
3. Professional experience at other firms/organizations
4. References from acquaintances or people whom owners/CEO of your firm trust
5. References from former employees or recruitment agencies
6. Personal acquaintance with the candidate
7. Interview results.

The aim of this question, which was designed specifically for this study, is to uncover how firms hire employees for top positions: through an open, competitive hiring procedure or “through connections” – taking factors related to trust (based on acquaintanceship or other relations between owners or CEOs and the candidates) into account. Asking directly whether firms hire for top positions competitively or based on connections could make the question sensitive: firms that hire for top positions based primarily on the factor of connections might be unwilling to disclose this information in response to a direct question. Therefore, in this question we asked firms to choose the two most important factors from the list. This approach makes the question less sensitive: it allows firms that hire through connections to choose a combination of a non-competitive and a competitive factor and thus retain the appearance of a “proper” hiring strategy. Graph 2 illustrates distribution of the responses of Russian firms’ top managers to the question about hiring strategies.

Graph 2. Distribution of answers to the question about hiring strategies



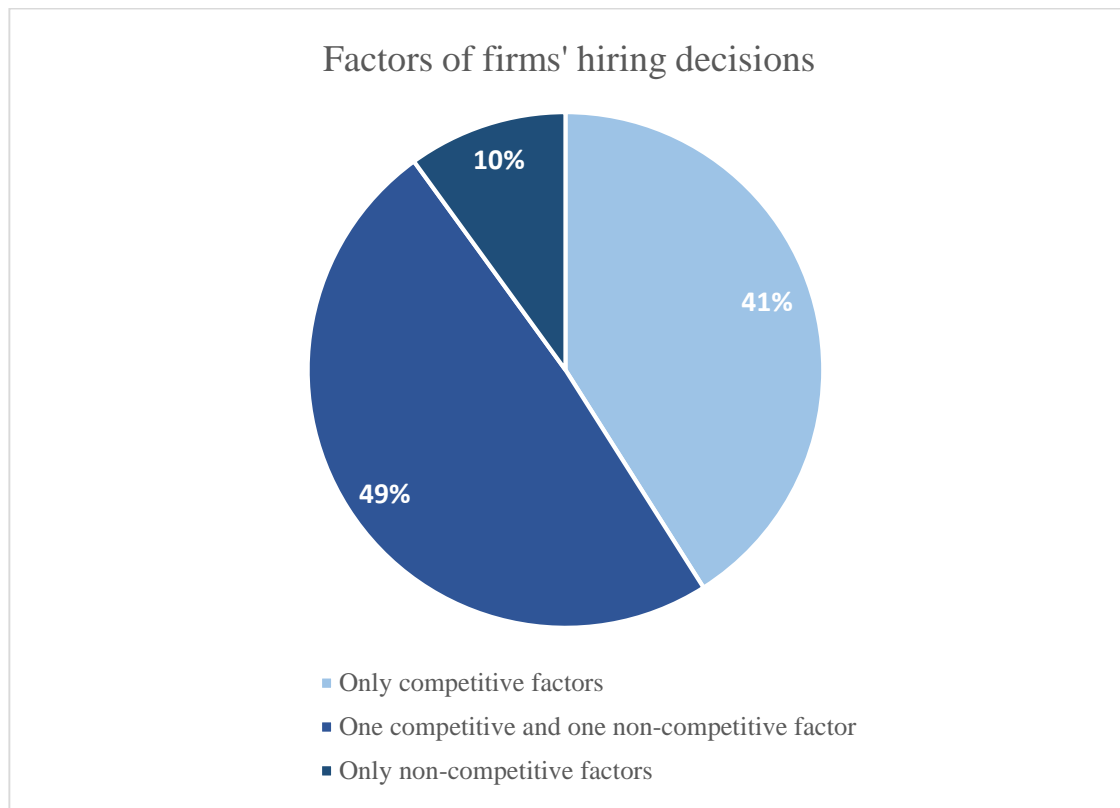
*) For each of the answer choices the graph indicates share of respondents that selected this choice. The question wording allows respondents to select two answer choices, therefore, the shares of respondents at the graph do not sum up to 100%.

Factors 1, 3, 5, and 7 (level and quality of education, professional experience at other firms/organizations, references from former employees or recruitment agencies, interview results) do not imply any non-competitive limitations upon the pool of candidates. These factors are in line with open, competitive hiring strategy. Factors 2, 4, and 6 (previous professional experience at the firm, references from acquaintances or people whom owners/CEO of the firm trusts, personal acquaintance with the candidate) take into account prior interaction of owners or CEOs with the candidates or people who recommended them. Taking these factors into account allows owners and CEOs to select employees for key positions from candidates they feel they can trust; however, it introduces non-competitive (or, at least, not fully competitive) limitations upon the pool of eligible candidates. Therefore, these factors are not in accord with an open, competitive hiring strategy⁸.

⁸ Taking previous professional experience at the firm into account when hiring for key positions is not a definitely uncompetitive factor, however, it introduces deviations from an open fair competition into the

Graph 3 illustrates firms' choices of factors that affect hiring decisions that are in accord or not in accord with an open, competitive hiring strategy.

Graph 3. Firms' choices of competitive or non-competitive hiring strategies



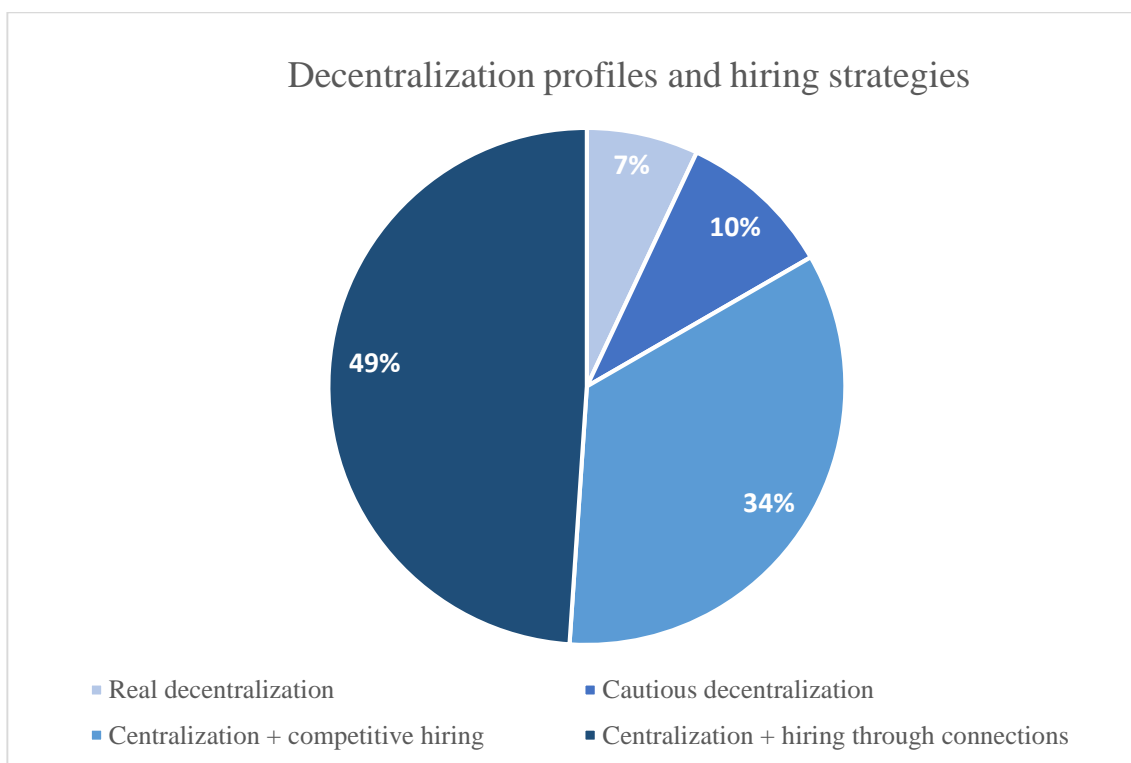
41% of firms selected only factors that are in accord with the strategy of open competitive hiring. Almost half, 49% of firms, selected one factor that is in accord with the strategy of open competitive hiring and one factor that is not in accord with this strategy. Such a “mixed” response still indicates that firm’s hiring choices are affected by factors that are not compatible with open competitive hiring, i.e. the firm’s hiring procedure is not competitive. Only 10% of firms selected only factors that are not in accord with the strategy of open competitive hiring⁹. The variable for hiring strategy is defined based on responses to the question about hiring strategy in the following way: firms that selected only factors that are in accord with an open competitive hiring strategy are treated as *firms that hire for top positions competitively* and

hiring procedure. Allocating the firms that selected this answer choice into a separate group does not influence the results, because it does not affect the definition of really decentralized firms.

⁹ Such a low share of firms that selected only factors that are not in accord with the strategy of open competitive hiring can be due to the unwillingness of some firms to admit that they hire for top positions through connections. Wording of the hiring strategy question allows such firms to select two answer choices: one that is in accord with the strategy of open competitive hiring, and one that is not in accord with this strategy.

firms that selected at least one factor that is not in accord with an open competitive hiring strategy – *as firms that hire for top positions through connections* (or, at least, taking connections into account). According to this definition, 41% of Russian manufacturing firms hire for top positions competitively and 59% through connections. Graph 4 presents the distribution of Russian manufacturing firms by type of decentralization and hiring strategy.

Graph 4. Decentralization and hiring strategies of Russian firms.



Finally, the variable for corruption is used in this dissertation research to proxy the strength of the distortionary effect of corruption on fair market competition. The variable is constructed from the BEEPS question “To what degree is corruption an obstacle to current operations of this establishment?” to which the possible answers are “no obstacle,” “minor obstacle,” “moderate obstacle,” “major obstacle,” and “very severe obstacle.” This question fits well with the purposes of this research because it asks not about firms’ own involvement in corrupt practices but rather about the intensity of the problems corruption creates for them¹⁰. The share of firms in the region that responded that corruption is an obstacle is used as a baseline measure of corruption; for the convenience of analysis and interpretation of the results, this

¹⁰ The variable for corruption is constructed based on the BEEPS 2011-2012 data. Use of sampling weights allows work with this survey sample as with representative at the level of Russian regions, each region includes from 71 to 134 firms surveyed. Such sample design permits estimating corruption at the level of Russian regions, however, the number of observations per region is not enough to build estimates of corruption at the region-industry level.

indicator is centered. Graph 5 illustrates the variation of this measure of corruption by Russian regions.

Graph 5. Corruption as an obstacle to business in Russian regions

