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*THE IMPORTANCE OF INSTITUTIONAL AND ORGANIZATIONAL  
CHARACTERISTICS FOR THE USE OF FIXED-TERM CONTRACTS IN RUSSIA<sup>1</sup>*

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**Abstract:**

Non-renewable fixed-term contracts are becoming more used instead of the traditional model of open-ended employment. The authors examine the influence of institutional and organizational factors on the use of fixed-term contracts in Russia with data from a Survey covering 3313 enterprises for the years 2009 to 2011. Probit and Tobit regressions are used to test several hypotheses derived from the literature. The results indicate that state-owned and unionized enterprises are more likely to use fixed-term contracts; and a high level of perceived dismissal protection for permanent workers is positively associated with fixed-term contracts use. The incidence and intensity of fixed-term contracts are lower at enterprises with flexible wages. Among organizational factors the presence of workers with tenure from 5 to 10 years and high job complexity are negatively related with the use fixed-term contracts.

*JEL Classification:* J5; J41; J21; J63; J23

*Keywords:* fixed-term contracts, non-standard employment, labour flexibility, Russia

The most popular form of non-standard labour contracts in Russia are fixed-term contracts and the level and scope of their use became comparable to Western countries. In 2014, the proportion of employees in the EU28 with a contract of limited duration (fixed-term employment) was 14.0 %, just in between the 28.3 % in Poland and 1.5 % in Romania (Eurofond 2016). The share of employees working under fixed-term contracts at all enterprises in Russia accounts for an average of 6 % of the employed population (Gimpelson/Kapeliushnikov 2006), which is below the corresponding level of 11% in developing countries (Aleksynska/Berg 2016). Our study explains how fixed-term labour contracts became so popular and what the reasons for enterprises' demand for fixed-term contracts in Russia are. Other forms of non-standard labour contracts, like agency work, are not included in the empirical analysis of this paper. If the term “non-standard labour contract” is used in the text, then merely to differentiate such contracts from the standard (open-ended) labour contract.

Our research is based on a widely-used methodology (Houseman, 2001; Hagen 2003; Pfeifer 2005). In this study, like other authors (Liu 2015; Aleksynska/Berg 2016; Van

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Jaarsveld et al. 2009), we consider institutional and organizational reasons for enterprises to use fixed-term contracts. The case of Russia is of interest because it still maintains a strong Soviet-inherited influence of the administrative-command system. Through the example of Russia, we may conclude that an increase in the use of fixed-term contracts can take place not only under the influence of liberal reforms, which have occurred in many European countries since the 70s, but can also take place while maintaining high employment protection, a considerable share of the state property and with the participation of trade unions. Thus, by studying the case of Russia, we can not only test the significance of the impact of institutional and organizational factors on their use, but learn more about the Russian model of a market economy with strong state influence.

We use data for 2009-2011 on 3313 enterprises with more than 50 employees that are representative for Russia, subject to this size constraint. This survey provides information about the economic situation and adopted management practices. We consider the level of perceived dismissal protection for permanent workers, as well as the share of state ownership, trade union influence and wage flexibility (wage arrears, performance-related pay) as institutional factors. We also consider organizational factors that characterize labour management and personnel structure of enterprises, indirectly reflecting their technical and technological level. Among such factors, we consider investment in specific human capital (measured by tenure) and job complexity, measured by the presence of blue collar workers as an indicator of manual work, whose tasks are can be closely supervised (Goldthorpe 2000). We have evaluated the impact of institutional and organizational factors on the likelihood and intensity of use of fixed-term contracts with the help of Probit and Tobit regressions.

This research adds information that helps to elaborate on the impact of institutions and costs of fixed-term contracts on how enterprises align their demand for and supply of labour. The case of Russia adds details for studies about the use of fixed-term contracts during the transition to a market economy, lacking important market institutions and still under strong state influence.

### **Institutional Background**

According to the Russian Federation Labour Code (RFLC), enterprises have the legal right to conclude fixed-term labour contracts for a period of up to five years provided certain reasons apply with exceptions for some categories of workers and jobs (RFLC 2001).

A fixed-term labour contract can be concluded for those cases when labour relations cannot be established for an open-ended period due to the nature of the job or conditions of its realization (Article 58 of RFLC). Reasons for a fixed-term labour contract (Article 57 of RFLC) include:

1. the temporary absence of employees with a valid contract;
2. a job of temporary nature (up to two months or seasonal work);
3. an urgent labour demand for an activity which is different from a regular job;
4. a labour demand for additional production activity in case it is known in advance that these jobs have a temporary nature (up to one year);
5. jobs fulfilled during a probation period and additional professional training;
6. jobs of a preliminary fixed term;
7. when a hired employee is a full-time student, an old-age pensioner or holds more than one job, if employees are hired for the position of top managers or other positions selected in a competition.

Small businesses including individual entrepreneurs can conclude fixed-term labour contracts without restrictions if their total number of employees does not exceed 35 (20 for retail trade and consumer services).

The main advantage of fixed term contracts for employers is the lower cost of dismissal. Employees with a fixed-term contract have the same social entitlements as employees

working under open-ended (standard) labour contracts. But they are not entitled to severance payment when their contract expires.

The use of fixed-term labour contracts is currently restricted by the RFLC:

1. Fixed-term labour contracts are not allowed if it is found that they restrict legitimate rights and insurance arrangements of employees with their (Article 58 of RFLC).
2. Unlike in many European countries, enterprises in Russia do not have any right to renew fixed-term labour contracts in succession with the same employee involved in the same operation. If this fact is established the Court has the right to declare a labour contract as open-ended (Resolution of the Plenum of the Supreme Court of RF, 2004)<sup>4</sup>.
3. Moreover, a fixed-term contract can be declared open-ended if the Court establishes that the employee was forced to sign it.
4. Upon expiration of a fixed-term contract, if the employee continues to work and the employer does not demand the termination of the contract, it becomes open-ended (Article 58 of RFLC).
5. If a fixed-term contract does not specify its duration it is automatically declared as open-ended (Article 58 of RFLC).

### **Literature Review and Hypotheses**

Competition and uncertainty generate adjustment needs for enterprises. Successful performance in a market environment requires some form of flexibility, for instance through restructuring and human resource management (Roca-Puig et al. 2008).

At the firm level, there are three principal means of securing flexibility (Atkinson 1987; Beatson 1995): (1) *External or numerical flexibility* is the ability of enterprises to change the number of workers they employ by making use of ‘non-standard employment’ (part-time, temporary and seasonal employees, and fixed-term contracts, freelance work, and homework or outsourcing). (2) *Internal or functional flexibility* is the ability of enterprises to vary the amount and content of regular labour they use. It is accomplished by allocating workers to different tasks. The internal (functional) flexibility requires employees with a high level of co-operation, time-flexibility, education, extensive training and the use of self-managed teams or job rotation. (3) *Wage (reward) or financial flexibility* is the ability of pay and payment systems to respond to labour market conditions. It includes rewards for improved performance (for example, performance-related pay), but also some degree of loss sharing in case of negative external shocks.

In this article, we consider only fixed-term employment contracts, as one of the types of external labour flexibility. The two basic reasons for the use of fixed-term contracts are to shield regular employees from being laid off when the employer’s demand is temporarily reduced and to have the ability to deal with greater variability in production volume without the need to increase the size of the regular workforce (Valverde et al. 2000; Gramm/Schnell 2001). The benefits associated with this policy are a greater capacity to adapt and the lower fixed labour costs incurred (Matusik/Hill 1998). At the same time, this policy can be counterproductive if its use works against the enterprises commitment to hiring, developing and retaining skilled workers (Appelbaum et al. 2000). Goudswaard/de Nanteuil (2000) provide a classification of various forms of internal and external flexibility and demonstrate with case studies on various sectors that there is a large variety how enterprises use flexibility and what consequences this has for working conditions. An excellent overview of determinants of fixed-term contracts is provided by Aleksynska and Berg (2016). The following hypotheses build on this and other work with the focus on Russia.

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<sup>4</sup> An enterprise will be obliged not only to restore the workplace for an employee, to compensate earning losses, moral damage and to pay a fine, but it will also lose the right to continue its activity for the period of up to three months.

### **Employment protection and cost advantages**

In theory, high levels of dismissal protection for permanent workers and low entry barriers for temporary workers should be associated with a large proportion of the workforce being hired on fixed-term contracts (Kahn 2007; Baranowska/Gebel 2010; Boeri 2011).

One implication of the Mortensen-Pissarides model (Mortensen/Pissarides 1999) is that the share of fixed-term contract workers increases with the strictness of employment (dismissal) protection for open-ended contracts (Boeri 2011). Terminating an employment relationship with permanent workers, at the initiative of employer, usually entails certain costs, including severance payments, costs associated with notification procedures and other compensatory payments if terminations are unfair (Lazear 1990; Lindbeck/Snowder 2001; OECD 2011). The use of fixed-term contracts has often been explained by the significantly lower dismissal costs, as compared to open-ended work contracts. At the end of the fixed-term contract, generally no reasons need to be provided by the employer to justify the end of the employment relationship.

RFLC differentiates strongly between open-ended and fixed-term work contracts (OECD 2011). While regular contracts are more protected than in any OECD country except Portugal fixed-term contracts are much less protected than on average in OECD countries. This is mainly because of a notice period and severance pay obligation of two months, independent of the tenure of the contract in case of job separation of a regular contract. Both regulations are absent for temporary work contracts. This makes an open-ended contract more expensive than a fixed-term work contract in the case of filling a temporary vacancy. Fixed-term contracts are providing a cost saving possibility to achieve numerical flexibility.

However, the results of some researches show that an increase in external flexibility can have a negative or positive effect on enterprises performance, depending on the level of internal flexibility (Roca-Puig et al. 2008). Thus, for example, in enterprises with low internal labour flexibility – that is, those with little investment in training and employees with a low level of education – it could be beneficial to increase the number of employees with temporary contracts. On the contrary, for enterprises with high internal flexibility, an increase in external flexibility could be damaging, with a significant fall of economic performance, if it reduces the degree of co-operation from the regular workers, especially in the case of innovation activities (Michie/Sheehan-Quinn 2001).

*Hypothesis 1:* A high level of perceived dismissal protection for permanent workers is positively associated with the use of fixed-term contracts.

Enterprises can use other or several modes of labour flexibility as they react to demand fluctuations (Pfeifer 2005). They will choose between the different modes of flexibility by comparing their costs. Some researchers (Kalleberg 2001; Lepak/Snel 2002; Lepak et al. 2003; Capelli/Neumark 2004;) state that external and internal labour flexibility are interdependent approaches. While for authors such as Appelbaum et al. (2000) and Tüselmann (1996) the two labour flexibility approaches are substitutes, Kalleberg (2001) and Lepak et al. (2003) consider them as complements. This is a very complex issue which goes beyond the scope of a single paper and some authors even request the establishment of a new discipline dealing with the management of flexibility (Goudswaard/de Nanteuil. 2000).

### **Wage flexibility**

Wage flexibility is an alternative to numerical flexibility (Clarke and Borisov 1999). *Wage flexibility* allows real wages to respond to changing macroeconomic conditions such as adverse shocks. The different modes of labour flexibility can support or substitute each other so that all labour markets develop some forms of adaptability. Alternative combinations of numerical and wage flexibility can achieve a similar level of overall adaptability.

The Russian model of decentralised wage determination responds to the economic situation at the individual enterprise level. Survey information about wage flexibility includes

arrears of wages and performance-based pay. Performance-based pay dominates since 1992 (Kapeliushnikov 2007). The start of market reforms in Russia meant the abolition of most administrative constraints that had operated under the former economic regime. Enterprises were granted the right to make decisions on most issues relating to the setting and change of wages. A strong positive connection between performance indicators and the level of wages is not just valid "in fact", but formalized and enshrined in the existing staff remuneration systems. According to some estimates, in 60% of enterprises the payroll fund is formed in direct proportion to revenues (Kapeliushnikov 2007). Performance-related pay in such an institutional environment means that enterprises are willing to "share" with their workers part of the gains while workers are willing to carry part of the losses.

From 1992 to 2008, direct government regulation remained only in the public sector where the single tariff scale was introduced. In the centrally planned system, the enterprise autonomy index in wage policy was equal to slightly over 30 points, whereas since the beginning of reforms, it fluctuates in the range of 70-80 points (Kapeliushnikov 2007). When setting wages, heads of enterprises have more freedom than in setting prices for manufactured products (Kapeliushnikov 2007).

Wages arrears are a Russian phenomenon, which practically does not exist anywhere else (Earle/Sabirianova Peter 2004). In 2006 the Russian Labour Code has been amended with the article on the liability of the employer for violation of the terms of payment of wages (Article 142 of RFLC). This increased the cost for enterprises to use wage flexibility in the form of wage arrears. Due to possible fines, this made simultaneously fixed-term contracts more attractive for enterprises.

Wage flexibility and numerical flexibility (fixed-term contracts) are therefore more likely substitutes than compliments. In this case, if the costs of labour adjustment by wage flexibility are higher than the adjustment costs of fixed-term contracts, the enterprises will be more likely to use fixed-term contracts and vice-versa.

*Hypothesis 2:* Wage flexibility is negatively associated with the use of fixed-term contracts.

### **State ownership**

State-owned enterprises (SOEs) have softer budget constraints than private enterprises (Kornai 1979; Earle/Estrin 2003). Therefore, the state-owned enterprises will not necessarily use fixed-term work contracts for saving costs.

SOEs in Russia usually serve a stable market, dominated by public procurement (Augustynowicz 2014). For this reason, they will have fewer incentives than private enterprises to use fixed-term contracts to adapt to fluctuations in demand.

Nevertheless, SOEs may use fixed-term work contracts to reduce the cost of implementing projects with funding from the State. If savings can be kept, these funds can be directed to the promotion of regular employees.

In addition, SOEs in Russia often should downsize an inherited, oversized labour force from Soviet times (Kapeliushnikov 1998). To achieve a gradual release of employees they can replace permanent jobs by temporary jobs. They will transfer a portion of permanent workers on fixed-term employment contracts.

*Hypothesis 3:* State ownership is positively associated with the use of fixed-term contracts.

### **Trade unions**

According to dual labour market theory and the core-periphery hypothesis, non-standard employment can be interpreted as a firm's peripheral workforce, while regular employment is the core workforce (Kalleberg 2001; Cappelli and Neumark 2004). The core-periphery hypothesis implies that the regular employees gain more job security due to the use of a flexible workforce, since non-standard employment is used as a "buffer", which is ad-

justed to demand fluctuations (Booth et al. 2002). Moreover, the core workforce has better working conditions including a higher income. This should lead to lower layoffs and quits among the regular employees, which results in higher job stability.

Trade unions mainly have members belonging to the core workforce and tolerate an internal dual labour market if this does not lead to the substitution of the core through the marginal work force. This also explains why the local trade union in a company usually accepts such initiatives from the management, although the central trade union opposes them in principle (Atkinson 1987). In Germany, the probability of non-standard contracts increases with the existence of a collective agreement (Kaiser/Pfeiffer 2000) and the ambivalent influence of labour councils is confirmed empirically (Boockmann/Hagen 2003).

In Russia about 45% of the total numbers of workers employed at enterprises of all forms of ownership are organized in a trade union (Kozina 2007). Like in other countries, a decrease in the share of industrial production personnel due to technological development and innovation has been leading to the weakening trade unions' positions (Vermuyten 2004).

In addition, there are purely Russian features characterizing the position of trade unions. Firstly, the Soviet past left its mark on Russian trade unions. In Russia, trade unions did not become independent organizations able to negotiate better working conditions for employees. Also, Russian trade unions have been extremely slow in gaining awareness of their independent role of a representative of workers' interests.

Secondly, trade unions are somewhat heterogeneous in Russia. At present, there are two types of trade unions at Russian enterprises: the so-called "old" ones, which constitute the majority and act on the principles of the past Soviet life, in fact performing the function of social patronage over workers (Sobolev 2007), and the "new" trade unions, which are relatively small organizations that appeared in response to intensification of contradictions in the labour sphere and try to act within the framework of classical trade unionism (Kozina 2007).

Thirdly, the growing importance of transnational corporations (MNC), followed by the introduction of new management practices, has resulted in a reduction of trade union members at the expense of highly skilled groups of workers and managers. At the same time, it revealed the need to strengthen the protection of workers' rights. The traditional activity of Russian trade unions in distribution of social services and exchange of information with employees, inherited from the Soviet past, has proved inadequate in the new economic situation.

Fourthly, the legislation directs unions to interact with employers at the enterprise level. However, in practice such cooperation appears to be difficult, since the real owner to negotiate with can only be introduced at the level of the company management. This requires the establishment of horizontal and vertical links between professional organizations of different companies that are part of a corporation (holding), which are hampered by regional and sectorial differences in the interests of primary trade unions, and often face resistance from management.

Nevertheless, after the exodus of union members in the years of economic reforms, in recent years there has been a revival of trade union membership. Still, trade unions in Russia have not yet become a full-fledged party, equal in strength in the negotiation process. In this regard, they are too weak and fragmented to confront the expansion of non-standard employment contracts offered by management.

*Hypothesis 4: A weak trade union is positively associated with fixed-term contracts.*

### **Specific human capital**

Enterprise specific human capital is a long run investment. Hence, if the contract of employees ends after a relative short period, there is little incentive for enterprises to invest in the specific human capital of these employees. Therefore, an increasing share of fixed-term contracts should go in line with decreasing investments in enterprises specific human capital (Arulampalam et al. 2004, Booth et al. 2002). Moreover, enterprises offering further training

tend to make use of regular contracts rather than temporary employment (Albert et al. 2005; Shire et al. 2009). Enterprises, that do not provide vocational training, have higher shares of temporary workers. Consequently, an increasing share of employees with temporary contracts is reducing labour productivity due to lower investments in firm specific human capital.

Enterprises need to ensure that they have sufficient, knowledgeable staff to carry out the core operations of the enterprise and ensure its survival. Thus, enterprises seek the right balance between stability and flexibility in their workforce. Economists have long recognized that enterprises operate with this consideration in mind. Within an enterprise there are essentially two labour markets, a primary, or internal market consisting of jobs that are well-paid, stable and with career opportunities and a secondary, or external, market, which is lower-paid, lower-skilled and with fewer career opportunities (Doeringer/Piore 1971).

This dualism can arise along the permanent-temporary workers divide endogenously as a response to demand fluctuations (Saint-Paul 1996). As adjusting labour to demand fluctuations is costly, enterprises will have an incentive to differentiate contract forms between scarce qualified workers and unqualified workers, who are easy to replace.

As fixed-term workers are found in the secondary segment, workers will become trapped in a cycle of fixed-term jobs and unemployment and experience low wages and low wage growth.

In general, researchers have found fixed-term workers to earn less than comparable permanent employees, although this wage differential falls when unobserved heterogeneity is accounted for (Booth et al. 2002; Mertens and McGinnity 2004; Gash 2008). Workers with fixed-term contract in Spain earn nearly 50 per cent less than permanent workers, compared with 32 per cent less in Germany. When accounting for differences between jobs and individuals, the mean penalty falls to 18 per cent in both countries.

A partial labour market reform could provide an incentive for employers to use fixed-term contracts for employing more low-educated workers (Blanchard and Landier 2002; Esping-Andersen/Regini 2000). However, empirical evidence suggests that, for example, in Germany fixed-term contracts are certainly not confined to the low-skilled sector (Giesecke and Groß, 2003; Buchholz and Kurz 2005). And in Spain, Polavieja (2006) found that the segmenting consequences of fixed-term contracts occurred in both high-skilled and low-skilled occupations. And although in Spain, fixed-term contracts are predominantly low skilled jobs, performed by individuals with low qualifications, then in Germany fixed-term contracts workers have more heterogeneous skill profile (Mertens et. al. 2007). In France employers increased the concentration of low-educated workers in temporary jobs with low adjustment costs (DiPrete et al. 2006).

Moreover, the fixed-term contract may have different implications for professionals and for unskilled manual workers. In Germany there is a non-linear (U-form) relationship between a workers' educational level and the risk of holding a temporary employment contract. High shares of temporary contracts are observed for low-educated persons without vocational training but also for holders of university degrees (Giesecke and Groß 2003; Hagen 2004; McGinnity et al. 2007; Mertens and McGinnity 2004). Furthermore, there are differences in the wage penalty between high-skilled and low-skilled fixed-term workers (Mertens and McGinnity 2005).

Since 1994 in Russia, the stability of employment and the accumulation of specific human capital has substantially declined, and specific human capital was not valued (Malzeva 2009). Not only employees have not received any positive return on specific human capital, but they also have faced a penalty for their specificity. On average, in 2000-2006 a one-year increase in the duration of the relationship with the same employer led to a decrease in wages of 0.8%.

This happened for several reasons. Firstly, mobility proved more favourable to employees in the context of economic reforms. *Ceteris paribus*, individuals who changed their jobs between 2000 and 2006 gained 14.22% in wages compared to those who continued to work in the same place (Malzeva 2009). Secondly, due to economic globalization and development of the service sector, many business processes have become standardized. They require common competencies, not specific ones. In addition, management practices like outsourcing reduce the scope for internal labour markets, and labour productivity in several occupations does not change when people change companies. When accumulation of specific human capital is reduced, we can expect an increase in the level of demand for fixed-term contracts. This could also be the case for highly skilled specialists. Their employment in enterprises can fill gaps, but is not likely to initiate productivity increasing interactions, which need time to materialize. However, given the information in our sample, this hypothesis can only be tested on a very general level. Future research could shed more light to which extent technologies in enterprises with a higher share of highly qualified temporary workers becomes more standardized with limited possibilities for enterprises specific innovations.

*Hypothesis 5:* The demand for fixed-term contracts increases with falling enterprise-specific human capital requirements.

### **Job Complexity**

Technological change and accompanying innovations have an influence on the structure of the workforce. On one side, such innovations can simplify work and downgrade skill requirements. On the other side, innovations can also require higher qualifications (skill-biased technological change), for instance computer and internet literacy.

Computerization (digitalization) changes the distribution of job tasks. According to OECD estimates, less than 10% of workers, on average in the OECD area, are in jobs that are at risk of being replaced by machines, but 25% are in jobs where a high percentage of tasks (50-70%) could be automated (Arntz et al. 2016). This underlines the need for flexible skills that allow workers to shift to new tasks that are difficult to automate. As a result, workers today, for example in Germany, compared to those in the 1970s, must have a more varied skill set enabling them to perform multiple tasks rather than one specific task (Becker and Muendler 2015).

Global employment trends are such that physical, routine and machine-use tasks are in decline, while intellectual tasks, social tasks and ICT use are experiencing steady growth. Technological progress leads to job polarization (Autor, Levy and Murnane 2003; Autor, Katz and Kearney 2006, 2008; Autor and Dorn 2013 for the US; Goos and Manning 2007 for GB; Goos, Manning and Salomons 2009 for 16 European countries). Job polarization decreases the demand for medium-skilled labour relative to both skilled and unskilled labour. In recent years, routine task methods have shrunk in structural terms (because the most routine occupations are in decline), while at the same time traditionally non-routine occupations have become considerably routinized. At the same time, the growth of regular work contracts (core employment) is increasingly confined to top-quintile, well-paid jobs; in all other quintiles of the wage distribution, it is decreasing and partly replaced by nonstandard employment (Eufond 2016).

At the same time, heterogeneity of workers and jobs are the main reasons for labour market segmentation, generating a core and periphery at the enterprise level.

The digitalization (computerization) is having profound impacts on the design of organizations and human resource practices within firms (Holmstrom and Milgrom 1994; Milgrom and Roberts 1995; Laing 2011). Modern human resource management is diverse and depends on finding the right mix of policies that fit the firm's overall organizational design. Human resource management practices are becoming more important (Bloom, Sadun and Van Reenen 2012). For example, US-owned firms exploit information from people man-



agement practices (concerning promotions, rewards, hiring and firing) to increase productivity. An emerging literature has shifted the focus to trade in tasks rather than trade in physical output (Grossman/Rossi-Hansberg 2008). The authors argue that the traditional view to classify workers as skilled or unskilled fails capturing the complexity of production. Workers should be classified according to the task they perform rather than their level of education. In routine jobs that require low levels of tasks, the demand for knowledgeable workers is limited. And vice versa, fixed-term employment contracts are less likely concluded for jobs with high complexity levels. Substitution of regular work contracts through fixed-term work contracts is more likely for low productivity workplaces, for which effort and human capital play a less important role and control costs are usually low.

According to studies of stages of economic growth (Acemoglu et al. 2006; 2007), Russia is classified as a catching-up country (Gorban et al. 2010). The country has an innovative model of the "garage" type (Schumpeter model - 1). It is based on common and available knowledge, and within its framework enterprises prefer to hire workers from outside their business environment, and not to 'grow' them to accumulate the necessary knowledge and skills.

Due to import and adaptation of advanced technologies, big enterprises serve as the main drivers of productivity growth. However, using the technology and the experience of foreign enterprises, their level of innovative activity remains relatively low. In this regard, Russian enterprises still have a high proportion of manual workers (blue-collar employees) performing routine tasks. In Russia the share of blue-collar workers among all is almost 3 times higher (38%) than in the United States (13.6%). However, their number has in 2000-2015 decreased by about 20% for unskilled and about 10% for skilled blue-collar workers while total employment increased by about 11% (Kapeliushnikov, 2017). Many skills to perform these tasks can be applied by employees regardless of their occupations. Such skills and knowledge are gained relatively rapidly, and thus workers can be easily replaced.

*Hypothesis 6:* The presence of blue collar workers increases the demand for workers with fixed-term contracts.

## **Methods**

### **Sample**

Data used for the present study were obtained from a representative Survey of Enterprises in Russia (RES) in 2009-11. The sample was created on two criteria: firm size and type of sectors. Data were formed based on interviews with managers.

The sample included 3313 enterprises with more than 50 employees operating in mining, manufacturing, construction, transport and communication, trade, finance, and business services. The sample is not a panel, and each year surveyed enterprises change. The questionnaires for a year repeat almost 90% of the questions in the preceding years.

The data base obtained includes both current and retrospective information covering enterprises' main characteristics, which are subdivided into four groups. The first group includes factors characterizing the employment structure, and its demographic composition. The second includes factors showing enterprises' strategic behaviour (innovations and investments, organizational characteristics), their personnel policy (recruiting and dismissal share, vacancies, employees training, and employees leave without payment, part time employment, and reduction of wages). The third group includes factors of enterprise characteristics (enterprise age, ownership status, size, industrial sector, and region). And finally, the fourth group includes factors of enterprise's external appraisal of the present economic and institutional situation (changes over time, labour legislation appraisal, assessments of factors creating obstacles and threats for enterprise activity). RES was specifically designed for research about the use of fixed-term contracts by enterprises.

## Measures

In this paper, we analyse one type of non-standard labour contracts as dependent variable: general fixed-term contracts including all types of fixed-term contracts signed by an enterprise with an employee for a specified period.

We examine both incidence and intensity of fixed-term contracts use (Houseman 2001; Olsen/Kalleberg 2004). First, we asked whether respondents used fixed-term workers. Second, we asked what percentage of the work force was covered by fixed-term contracts. Based on the responses to these questions, we constructed measures to reflect the incidence of use - whether these arrangements were in use at all - and intensity of use - the extent to which they were being used.

Two categories of independent variables are included in our analysis: institutional characteristics and organizational characteristics. To evaluate institutional characteristics, we included the *perceived dismissal protection level* (stringency of law enforcement), with the value of 10 assigned to maximum level of perceived dismissal protection for permanent workers, and 1 as minimum level. Theoretically this variable could be subject to endogeneity. However, fixed-term contracts are not subject to dismissal protection. It is therefore unlikely that a higher share of fixed-term contracts leads to a response from management of a higher perceived dismissal protection. We estimate also the extent *wage flexibility* as institutional characteristic. Wage flexibility was defined as a combination of wage arrears and performance-based pay. Enterprises use flexible wages (wage flexibility = 1), if it has either wage arrears or uses performance-based pay. Also in this case endogeneity should not pose a problem, because fixed-term contracts are usually only paid the base wage and do not receive bonuses, which depend on a minimum tenure. Even in the case of wage arrears it is likely that holders of temporary work contracts behave differently from workers with a standard work contract. A temporary worker has nothing to gain from tolerating wage arrears, because she cannot be rehired for legal reasons. A formal treatment of the endogeneity problem turned out not to be feasible. The data do not form a panel and no appropriate instrumental variable could be found. Pressures on enterprises from institutional constituents to use fixed-term contracts were also measured by *state ownership* and *trade union presence*. We operationalized *state ownership* using a dummy variable indicating whether the enterprise was predominately (>50%) owned by a state institution (coded as 1). *Trade Union* presence measured whether a union was present in the enterprise (coded as 1).

We created two sets of indicator variables to measure organizational characteristics: (1) whether the *average tenure of workers was 5-10 years* (coded 1) and whether it was *more than 15 years* (coded 1); and (2) whether *job complexity* in the enterprise characterizes the execution of tasks using blue-collar workers (coded 1 if the enterprise has blue collar workers, 0 - have only other workers)<sup>5</sup>.

These are very crude measures of organizational characteristics. An item for future research could be to acquire more information about the qualification of employees as well as different management practices.

We included an array of control variables in the analysis based on previous research (Shire et al. 2009). Because larger organizations have more resources than smaller ones to create internal labour markets (Davis-Blake/Uzzi 1993), we measured size as a log transformation of the number of workers at an enterprise. A larger size can allow firms to adjust to varying demand by internal reorganization, including training of new employees, over a larger base (Knoke/Kalleberg 1994).

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<sup>5</sup> Our survey data of enterprises allow selecting only three groups of employees: blue-collar workers, managers, and engineering staff. According to the definition of international statistics, blue-collar workers perform manual work, but they can be either low skilled or highly qualified.

We also controlled for other enterprise characteristics that previous research investigated, including: the enterprises age (age groups), sectors and years (Houseman, 2001; Kal-leberg and Reynolds 2000; Uzzi and Barsness 1998). The vector of control variables includes 9 age groups of enterprises (1:  $\leq 1$  year; 9:  $> 40$  years) and seven industry dummies (mining, manufacturing, construction, transport and communication, trade, finance, business services).

Enterprises in sectors with highly volatile demand are more likely to recur to fixed-term work (Cappelli and Keller 2013). Aggregate influences (e.g. macroeconomic conditions) are taken into consideration with dummy variables for the years 2009-2011.

We controlled for agglomeration effects (1 = city with a population over 1 million; 4 = city with a population less than 100 thousand). The enterprises in urban areas are more likely to use non-standard labour contracts mainly because the supply of such workers is higher and costs are lower (Abraham and Taylor, 1996).

Differences in the employment structure of enterprises are considered by the variable: share of female workers in total employment.

Assessing the incidence of fixed-term contracts use, we analyse the data using Probit regressions, the recommended analytical approach for estimating models with dichotomous dependent variables. In evaluating the intensity of use of fixed-term contracts, we employed left-censored Tobit analysis (Maddala 1992).

## Results

### Descriptive Findings

Tables A.1 and A.2 in the Appendix present descriptive statistical information about the variables used for the analysis.

On average 30% of enterprises used fixed-term contracts in 2009-11 (Table A.1). The share of enterprises with fixed-term contracts increased between 2009 (20%) and 2010 (38%), and fell again in 2011 (31%) (Table A.2). In comparison, about 40% of enterprises in developing countries employ temporary workers (Aleksynska and Berg 2016).

Together with the increasing number of enterprises using fixed-term labour contracts, the number of employees recruited under the conditions of these contracts was growing as well. In 2009-11, the percentage of employees working on fixed-term contracts of the total number of employees increased from 5% to about 6% (Table A.2). In comparison, the average share of temporary workers in developing countries is 11% (Aleksynska and Berg 2016).

The intensity of using fixed-term labour contracts is characterized by the proportion of employees in enterprises which use such contracts. In 2009-11 on average 19% of employees of enterprises using fixed term contracts worked on such contracts. In comparison in developing countries, among those enterprises that employ temporary workers, the average share is 27.5% (Aleksynska and Berg 2016).

The intensity of use of fixed-term contracts was highest in 2009 (24.6%). Then (2010) the enterprises with fixed-term contracts have reduced the number of employees with such contracts (14%). However, with the economic recovery (2011) the number of employees with fixed-term contracts in enterprises has increased again (20.3%) (Table A.2).

8% of the surveyed enterprises were owned by the State, and unions were present in 18% of the sample. On average, 23% of enterprises used wage flexibility and they evaluated dismissal protection at an average of 3.5 (max=10) (Table A.1). The mean number of workers with tenure from 5-10 years was 27% and number of workers with tenure more than 15 years only 7%, reflecting the high turnover on the Russian labour market (Demmou and Wörgötter 2015). The proportion of enterprises with blue-collar workers in the sample was 42%, and of female workers 34% (Table A.1).

Half of the enterprises in the sample (50%) were up to 10 years old and 15% were over the age of 40 years. More than half of enterprises (58%) are in cities with a population

over 1 million. 20% of enterprises are in cities with a population of between 500000 and 1 million people (Table A.1).

Most enterprises in the sample belong to the industry sector (26%), on the second and third place are enterprises of trade (16%) and construction (15%), and the fourth and fifth place is occupied by enterprises of transport and communication (13%) and finance (13%) (Table A.1).

### **Empirical Results of Hypotheses Testing**

The results of the pooled sample Probit and Tobit models together with their marginal effects are presented in Table 1. Appendix tables A.3-A.4 contain detailed estimation results where institutional and organizational factors are included separately as well as altogether. While Models 1 to 5 in Table A.3–A.4 present partial effects, Model 6 shows the results of the full model.

The estimation results provide strong support for the first four hypotheses. Specifically, state-owned, and unionized enterprises are respectively associated with 6% and 10% more fixed-term contracts than non-state-owned and non-unionized enterprises (Model 2 and 3; Table A.3). But these effects remained significant and positive only for the unionized enterprises in the full model (Model 6; Table A.3, Table 1).

The impact of the various institutional and organisational factors on the shares of fixed-term contracts in total employment is estimated with a pooled sample Tobit model (Table A.4, Table 1). The results show that in state-owned and unionized enterprises not only the probability of using fixed-term contract is higher but also the intensity of its use. Both effects are significant in the full model (Table 1).

The relation between the utilization of fixed-term contracts and the presence of trade unions is also linked with enterprise size. Large enterprises have more often powerful trade unions. Fixed-term labour contracts provide a possibility for trade unions to protect incumbent employees (who are more likely their members) from dismissal. Thus, the subdivision of employees into insiders (with open-ended contracts) and outsiders (with fixed-term contracts) was in complete correspondence with trade unions policy to protect their members. Our estimates find that the incidence and intensity of fixed-term labour contract at large enterprises (Table A.3-A.4) and enterprises with trade unions are rather high (Table 1).

An increase of the level of perceived dismissal protection for permanent workers leads to a higher probability that enterprise uses fixed-term contracts: a one-unit increase in the level of perceived dismissal protection for permanent workers is associated with 6% more fixed-term contracts in Model 1 (Table A.3) and Model 6 (Table A.3, Table 1). Also, an increase in the level of perceived dismissal protection of open-ended contracts leads to an increased intensity in the use of fixed-term contracts (Table A.4, Table 1).

In addition, the presence of wage flexibility is significantly negatively correlated with the probability and intensity of using fixed-term contracts (Table 1). Enterprises with flexible wage schemes are 17% less likely to use fixed-term contracts. In enterprises with wage flexibility the share of workers with fixed-term contracts is by about 4% lower than in enterprises that do not have a flexible wage (Table 1).

These results give support to the Hypotheses 1-4 that enterprises in Russia use of fixed-term contracts under the influence of institutional factors.

The estimation results for the organization factors (tenure and share of blue-collar workers) are presented also in Tables A.3-A.4 and Table 1. When testing the Hypothesis 5, we proceeded from the fact that the average tenure of employees is a proxy for the accumulation of firm specific human capital. Our results show that the influence of tenure on the use and share of fixed-term contracts is mostly significant only for enterprises with an average tenure between 5 and 10 years. For these enterprises, the expected negative sign is confirmed (Model 4; Table A.3-A.4). These effects also remain significant and negative in the full mod-

el (Table 1). The share of workers with tenure of more than 15 years is significantly positively correlated with the probability of using fixed-term contracts (Model 4; Table A.3-A.4) but it is not significant in the full model (Table 1). This finding might indicate the complexity of internal labour markets in Russia. For example, hiring and training costs are often larger for skilled workers so that fixed-term contracts using skilled workers are less attractive. Furthermore, skilled workers cannot be replaced easily by temporary workers with lower levels of human capital. From a labour supply perspective, skilled workers have better overall employment chances (e.g., lower unemployment), which should lead to lower acceptance of fixed-term contracts among skilled workers (Pfeifer 2005).

Our results are consistent with previous results on the impact of investments in specific human capital on the Russian labour market (Malzeva 2009). We find also that enterprises differently evaluate investments in specific human capital. If the tenure of workers exceeds 15 years (tenure > 15 years), the probability and intensity of fixed-term contracts are increasing. These workers have accumulated specific human capital in Soviet times, and they face little demand from enterprises. However, if the level of investments in specific human capital is less than 10 years (tenure ≤ 10 years), enterprises often have open-ended contracts with workers and are less likely to have workers with fixed-term employment contracts. Enterprises evaluate human capital higher if it is accumulated in the post-Soviet era (Malzeva 2009).

*Table 1. Incidence and intensity of fixed-term contracts (Model 6 in Table A.3 and A.4)*

Variables	Incidence of fixed-term contracts (Probit model)		Intensity of fixed-term contracts (Tobit model)	
	dy/dx	Std. Err.	dy/dx	Std. Err.
<i>Institutional Characteristics</i>				
Dismissal protection level (max=10)	0,06**	0,03	1,68**	0,79
Wage flexibility (1= yes)	-0,17***	0,02	-4,10***	0,58
Union Presence (1= yes)	0,08***	0,02	1,21**	0,58
State ownership (1= yes)	0,04	0,03	1,45*	0,76
<i>Organizational Characteristics</i>				
Workers with tenure from 5 to 10 years (1=yes)	-0,07**	0,03	-2,43**	0,91
Workers with tenure >15 years (1= yes)	0,06	0,05	0,77	1,40
Blue-collar workers in teams (1= yes)	0,11***	0,03	3,15***	0,73
N <sup>a</sup>	3296		3296	

*Note:* Levels of significance: \* - 0.10%; \*\* - 0.05%; \*\*\* - 0.01%.

<sup>a</sup> After eliminating outliers the sample size is 3296 observations.

Not only the qualification of workers, but also the quality of jobs has an impact on the use of fixed-term contracts. The lower the technology level, the lower the skill requirement. The greater the share of manual works in teams, the higher the proportion of blue-collar. Such workers are easier to find on the external labour market. They are easier to replace. Therefore, blue-collar workers are more likely employed with fixed-term contracts than workers who perform more complex work. Our findings show, that an enterprise with blue-collar workers is more likely to use fixed-term contracts; this is in line with Hypothesis 6 (Model 5; Table A.3-A.4).

Most of the control variables were significant in Probit and Tobit models (Table A.3–A.4). Medium and large enterprises (more than 500 employees) more often use fixed-term contracts. The availability of labour market infrastructure, like employment service suppliers

(search of employees, selection, training, and manpower records management, etc.), is correlated with the probability of using fixed-term contracts. An insufficient development of such market services, including labour market services, observed in remote regions and in small and medium sized cities (with the population of less than 1 million people) positively affected the utilization of fixed-term contracts by enterprises.

Enterprises with a large share of female workers tend to use more often fixed-term contracts, as female workers have a higher rate of temporary absence (Table A.3). However, the share of female workers has no significant effect on the intensity of fixed-term contracts (Table A.4). The age of enterprises has a positive effect only on the probability of the use of fixed-term contracts. Enterprises with an age from 25 to 30 years more often use fixed-term contracts than other enterprises (Table A.3). But the age of enterprises has no effect on the intensity of the use of fixed-term contracts (Table A.4). Fixed-term contracts are used more often and in greater numbers in construction enterprises than in the mining industry. Less incidence and intensity of fixed-term contracts were observed in trade and finance, compared with mining industry (Table A.3–A.4).

### **Conclusions**

Non-standard labour contracts started to be widely used in Russia since the reform period of the 1990s. They include different types of fixed-term contracts. In Soviet times, the Russian Federation Labour Code limited the application of fixed-term contracts and the assignment of employees to their workplaces with minimal use of outside, auxiliary workers was the rule. Under the influence of reforms, the activity of enterprises in Russia became exposed to demand fluctuations and business cycles, increasing the number of temporary workplaces. In 2009–11 on average 30% of enterprises used fixed-term contracts; the percentage of employees working on fixed-term contracts in the total number of employees was about 6%. Thus, after 2000 the presence of fixed-term labour contracts in Russia became like in other countries.

Using enterprises-level survey data, we find that a high level of perceived dismissal protection for permanent workers, state ownership (of over 50%) and trade union presence are positively associated with the increased use of fixed-term contracts (Hypotheses 1, 3, 4). These factors contribute to a dualization of the labour market in Russia and further aggravate the high inequality of incomes and chances (OECD 2011).

The probability to use fixed-term contracts is lower at enterprises with wage flexibility (Hypothesis 2). Wage flexibility includes wage arrears and performance-based pay. Our results suggest that wage flexibility is an alternative strategy of coping with external shocks. In this respect wage flexibility and using fixed-term labour contracts are substitutes.

The impact of organizational factors is confirmed for fixed-term contracts. On the one hand, in the face of market-based competition for a skilled and stable labour force, employers in Russia use tactics to promote long-term employment. Enterprises use less fixed-term contracts, if they have workers with tenure of more than 5 and less than 10 years (Hypothesis 5).

On the other hand, to gain competitive advantages enterprises search for ways to reduce costs. All risks of cost reduction are borne by workers who perform standardized (fewer complex interactions between workers and production processes) functions, who can be easily found in the labour market and replaced without any additional training. Such employees are often blue-collar workers, although they also can have specialized skills. The results we have obtained demonstrate that enterprises with blue-collar workers are more likely to use fixed-term contracts, and at a larger scale (Hypothesis 6). This is a further indication that fixed term contracts can contribute to a dualization on the labour market.

Our results show also, that the intensity of employees with fixed-term contracts increases with the number of employees. The highest level of fixed-term contracts incidence and intensity is observed in construction.

The use of fixed-term contracts makes the Russian labour market more flexible. Fixed-term labour contracts reduce job stability and they make employment precarious. Additional risks of labour flexibility are borne by workers with a non-standard contract. As our research has shown, the expansion of state ownership (an increase in the number of state-owned enterprises), and the influence of trade unions in Russia do not limit the use of fixed-term contracts. On the contrary, under market conditions state owned firms and firms with a trade union use fixed-term contracts more widely.

The likelihood of using fixed-term contracts is falling with investment in firm-specific human capital and higher job complexity. Increasing the level of professional skills and investing firm-specific human capital can secure employees against fixed-term contracts (Eichhorst/Marx 2015). For example, labour market reforms in Germany and France have generally promoted developments in which the status and privileges of labour market insiders remain relatively well protected. Flexibility, necessary to stabilize the core, being achieved at the expense of a growing number of workers in “atypical” or “nonstandard” employment relationships (Palier/Thelen 2010). In general, employment prospects are favourable where human capacities and skills are complementary to technological possibilities (Eichhorst 2017). Workers, able to perform at a high level are not easily found on the external labour market, and these types of tasks cannot be easily outsourced or automated. In such cases strict dismissal protection can foster innovation (Acharya et al 2013).

This study represents only a first step in understanding how some institutional and organizational factors influence the use of fixed-term contracts in Russia. The limitations of the study are suggestive of possible research extensions. Future studies could examine the effect of other organizational factors. For example, what is the impact of training or outsourcing on the use of fixed-term contracts? It is not clear in advance whether more trained workers will either increase or decrease the number of fixed-term contracts. Business process outsourcing is accompanied by changes of the organizational structure of the enterprises to get rid of non-core functions. Outsourcing increases the flexibility of enterprises and reduces job heterogeneity inside the enterprise. However, it increases the heterogeneity of jobs outside and can lead to labour market segmentation. Further research is needed to investigate whether outsourcing will increase the number of fixed-term contracts. Another area for research is the influence of digitalization on the structure of employment, the ratio of core and periphery in Russia and other emerging economies in comparison with more advanced economies.

In addition, our study does not cover considerations of more long-term nature. Kalleberg (2003) for instance argues that more numerical flexibility in form of non-standard labour contracts increases the insider-outsider divide of the labour force of a company. This could have negative consequences for teamwork and informal coordination, which eventually could lead to lower productivity. Indeed, Wang and Heyes (2017) find for a large sample of EU firms that a higher share of fixed term contracts is associated with a lower level and under certain conditions also lower growth of labour productivity. On the other side, Roca-Puig et al. (2008) find that the relations between flexibility and performance are not linear. There is no undisputed way how flexibility is implemented by employers and experienced by workers. Our investigation offers a small, but significant part of an overall mosaic, for its completion more research will be needed.

Further research could shed some light on how greater labour flexibility associated with non-standard labour contracts affects hiring and job creation, as well as innovation and productivity of enterprises in Russia. Furthermore, it should be investigated whether the employment of highly skilled temporary workers is following a similar pattern as the employment of temporary workers with standard skills.

## Appendix

*Table A.1. Descriptive statistics*

Variable	Mean	Std. Dev.
Incidence of use of fixed-term contracts (1=yes)	0,30	0,46
Workers with fixed-term contract, %	5,61	16,15
Dismissal protection level (max=10)	3,46	2,89
Wage flexibility (1= yes)	0,23	0,42
Union presence (1= yes)	0,18	0,38
State ownership (1= yes)	0,08	0,27
Workers with tenure from 5 to 10 years (1=yes)	0,27	0,26
Workers with tenure >15 years (1= yes)	0,07	0,16
Blue-collar worker in Teams (1= yes)	0,42	0,32
Female workers (1=yes)	0,34	0,29
Age, years	19,89	24,85
Age (ln)	2,43	1,09
Age groups:		
1 - =< 5 years	0,21	0,41
5 - <= 10 years	0,23	0,42
10 - <= 15 years	0,13	0,34
15 - <= 20 years	0,16	0,37
20 - <= 25 years	0,02	0,15
25 - <= 30 years	0,01	0,10
30 - <= 40 years	0,03	0,17
>40 years	0,15	0,36
Size(ln)	4,56	1,51
Location size:		
500 thousand - 1 million	0,20	0,40
100 thousand -500 thousand	0,10	0,30
< 100 thousand	0,12	0,33
Sectors:		
Industry	0,26	0,44
Construction	0,15	0,35
Trade	0,16	0,36
Transport and Communications	0,13	0,34
Finance	0,13	0,33
Business Services	0,06	0,25



Table A.2. Fixed-term contracts in 2009-11, %

Types of contracts	Years			
	2009	2010	2011	2009-2011
Total	20.23 (40.19)	38.16 (48.60)	31.12 (46.32)	29.79 (45.74)
Share of employees with fixed-term contracts (basis: all enterprises)	4.98 (16.12)	5.35 (14.39)	6.31 (17.37)	5.61 (16.15)
N (all enterprises)	1038	980	1295	3313
Share of employees with fixed-term contracts (basis: enterprises with fixed-term contracts)	24.61 (28.36)	14.01 (20.53)	20.29 (26.21)	18.83 (25.04)
N (enterprises with fixed-term contracts)	210	374	403	987

Note: The numbers in brackets are standard deviations

Table A.3. Incidence of fixed-term contracts (Probit model)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.
<i>Institutional Characteristics</i>												
Perceived dismissal protection level (max=10)	0,06**	0,03									0,06**	0,03
Wage flexibility (1= yes)	-0,17***	0,02									-0,17***	0,02
Union presence (1= yes)			0,10***	0,02							0,08***	0,02
State ownership (1= yes)					0,06**	0,03					0,04	0,03
<i>Organizational Characteristics</i>												
Workers with tenure from 5 to 10 years (1=yes)							-0,07**	0,03			-0,07**	0,03
Workers with tenure >15 years (1= yes)							0,11**	0,05			0,06	0,05
Blue-collar worker in teams (1= yes)									0,10***	0,03	0,11***	0,03
<i>Control Variables</i>												
Female workers (1=yes)	0,06**	0,03	0,07**	0,03	0,07**	0,03	0,07**	0,03	0,08**	0,03	0,06**	0,03
Age Groups:												
1 - =< 5 years	0,07*	0,04	0,08**	0,04	0,08**	0,04	0,09**	0,04	0,08**	0,04	0,08**	0,04
5 - <= 10years	0,05	0,04	0,06	0,04	0,06	0,04	0,08**	0,04	0,06*	0,04	0,07*	0,04
10 - <= 15 years	0,01	0,04	0,02	0,04	0,02	0,04	0,04	0,04	0,02	0,04	0,03	0,04
15 - <= 20 years	0,06	0,04	0,07	0,04	0,07	0,04	0,08**	0,04	0,07*	0,04	0,07*	0,04
20 - <= 25 years	-0,01	0,06	-0,01	0,06	-0,01	0,06	0,01	0,06	0,00	0,06	-0,01	0,06
25 - <= 30 years	0,21**	0,09	0,21**	0,09	0,21**	0,09	0,22**	0,09	0,21**	0,09	0,19**	0,09

30 - <= 40 years	0,09	0,06	0,07	0,06	0,08	0,06	0,10*	0,06	0,10*	0,06	0,07	0,06
>40 years	0,10**	0,04	0,10**	0,04	0,11**	0,04	0,12**	0,04	0,12***	0,04	0,08*	0,04
Size (ln employ- ment)	0,05***	0,01	0,05***	0,01	0,06***	0,01	0,05***	0,01	0,05***	0,01	0,04***	0,01
Years: (2009=ref.)												
2010	0,09***	0,02	0,07***	0,02	0,08***	0,02	0,07**	0,02	0,08***	0,02	0,09***	0,02
2011	0,03	0,02	0,02	0,02	0,02	0,02	0,01	0,02	0,02	0,02	0,03	0,02
Location, Cities with population: (>1 million=ref.)												
500 thousand - 1 million	0,06**	0,02	0,07***	0,02	0,07***	0,02	0,06***	0,02	0,07***	0,02	0,05**	0,02
100 thousand -500 thousand	0,03	0,03	0,05*	0,03	0,06**	0,03	0,06**	0,03	0,06**	0,03	0,03	0,03
< 100 thousand	0,09***	0,03	0,10***	0,03	0,10***	0,03	0,11***	0,03	0,11***	0,03	0,08***	0,03
Sectors: (Min- ing=ref.)												
Industry	0,01	0,03	0,01	0,03	0,00	0,03	0,01	0,03	0,01	0,03	0,00	0,03
Construction	0,08**	0,03	0,07**	0,03	0,07**	0,03	0,07**	0,03	0,06**	0,03	0,08**	0,03
Trade	-0,07**	0,03	-0,06**	0,03	-0,07**	0,03	-0,07**	0,03	-0,06**	0,03	-0,06**	0,03
Transport and Communications	-0,03	0,03	-0,03	0,03	-0,03	0,03	-0,03	0,03	-0,03	0,03	-0,03	0,03
Finance	-0,03	0,03	-0,02	0,03	-0,03	0,03	-0,02	0,03	0,01	0,04	0,00	0,03
Business Services	0,04	0,04	0,04	0,04	0,04	0,04	0,05	0,04	0,08*	0,05	0,06	0,04
Log pseudo likeli- hood	-1823,39		-1855,01		-1861,78		-1860,5		-1858,1		-1798,75	
Wald chi2	337,85***		296,25***		279,47***		283,18***		290,46***		384,43***	
Pseudo R2	0,09		0,08		0,07		0,08		0,08		0,11	
Correctly classified	71,74%		71,77%		71,42%		71,26%		72,04%		72,42%	
Number of obser- vation	3298		3298		3296		3298		3298		3296	

Note: Levels of significance: \* - 0.10%; \*\* - 0.05%; \*\*\* - 0.01%.

Table A.4. Intensity of fixed-term contracts (Tobit model)

Variables	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.
<i>Institutional Characteristics</i>												
Perceived dismissal protection level (max=10)	1,63**	0,79									1,68**	0,79
Wage flexibility (1= yes)	-4,02***	0,58									-4,10***	0,58
Union presence (1= yes)			1,72**	0,57							1,21**	0,58
State ownership (1= yes)					1,67**	0,76					1,45*	0,76
<i>Organizational Characteristics</i>												
Workers with tenure from 5 to 10 years (1=yes)							-2,48**	0,92			-2,43**	0,91
Workers with tenure >15 years (1= yes)							1,69	1,40			0,77	1,40
Blue-collar worker in teams (1= yes)									2,91***	0,73	3,15***	0,73
<i>Control Variables</i>												
Female workers (1=yes)	0,77	0,84	0,99	0,84	0,99	0,84	1,01	0,84	1,12	0,84	0,71	0,84
Age Groups	yes		yes		yes		yes		yes		yes	
Size(ln)	0,62***	0,18	0,58***	0,18	0,68***	0,18	0,67***	0,18	0,65***	0,18	0,35*	0,18
Years: (2009=ref.)												
2010	2,55***	0,61	2,15***	0,61	2,29***	0,61	1,94***	0,62	2,16***	0,61	2,33***	0,62
2011	1,89***	0,62	1,62***	0,57	1,65***	0,56	1,39**	0,57	1,70***	0,56	1,78***	0,62
Location, Cities with population: (>1 million=ref.)												
500 thousand - 1 million	0,67	0,56	0,95*	0,56	0,96*	0,56	0,88	0,56	0,92	0,56	0,59	0,56
100 thousand -500 thousand	0,66	0,73	1,12	0,74	1,31*	0,74	1,26*	0,74	1,24*	0,74	0,66	0,73
< 100 thousand	1,63**	0,71	2,03**	0,72	2,06***	0,72	2,12***	0,72	2,07***	0,72	1,56**	0,71

Sectors: (Mining=ref.)												
Industry	-0,65	0,76	-0,70	0,77	-0,78	0,77	-0,65	0,77	-0,64	0,76	-0,83	0,76
Construction	2,54**	0,92	2,27**	0,91	2,21**	0,92	2,19**	0,91	2,23***	0,90	2,47**	0,91
Trade	-2,30**	0,87	-2,17**	0,88	-2,26**	0,88	-2,25***	0,87	-2,01**	0,87	-2,13***	0,87
Transport and Communications	-1,17	0,87	-1,21	0,87	-1,39	0,88	-1,25	0,87	-1,13	0,86	-1,39	0,86
Finance	-1,94**	0,94	-1,73*	0,94	-1,83**	0,95	-1,82**	0,94	-0,85	0,99	-1,00	0,98
Business Services	0,94	1,24	1,09	1,26	1,01	1,26	1,16	1,26	2,09	1,31	1,76	1,30
LR chi2(28)	190,9***		140,7***		136,6***		141,8***		147,5***		229,2***	
Log likelihood	-5908,87		-5933,98		-5930,88		-5933,42		-5930,59		-5884,63	
Number of observation	3298		3298		3296		3298		3298		3296	

*Note:* Levels of significance: \* - 0.10%; \*\* - 0.05%; \*\*\* - 0.01%.

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