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European Journal of Political Economy

journal homepage: www.elsevier.com/locate/ejpeAutocratic governors in public procurement[☆]Andrey Tkachenko^{a,b,*}, Daniil Esaulov^a^a National Research University Higher School of Economics, Russia^b Bocconi University, Italy

ARTICLE INFO

JEL classification:

H57

H83

D44

Keywords:

Public procurement

Tenure in office

Governor

Competition

Efficiency

Contract execution

ABSTRACT

The personal role of sub-national rulers is crucial for regional development in countries with weak institutions. This paper studies the impact of regional governors' tenure in office and their local ties on procurement performance in Russia. To identify the causal effect, we construct instruments for governor's tenure by exploiting the regional vote share of ruling party in past parliament elections. We find the evidence that governors who do not have pre-governing local ties in the region (outsiders) demonstrate predatory behaviour, compared to governors with local ties (insiders). Namely, governors-outsiders restrict the competition at awarding stage significantly more than governors-insiders. Moreover, for governors-outsiders this restriction becomes stronger with tenure in office, while governors-insiders do not demonstrate such negative tenure effect. We argue that this restriction of competition by governors-outsiders cannot be explained by the intention of better contracts execution: the delays in execution and the probability of contract termination either increase or keep stable with tenure for governors-outsiders and these outcomes decrease with tenure for governors-insiders.

1. Introduction

The quality of regional governance and regional institutions is considerably important for state–business relations. Public procurement constitutes one of the main mechanisms of state-business interactions and it plays a significant role in national economies.¹ In imperfect democracies and autocracies, the personal role of governors is crucial for state-business interactions because the quality of regional governance is largely determined by governors and it depends on their incentives. These incentives evolve over time and are vulnerable to the risk of the governors losing power. Traditionally, the explanation of autocrat's behaviour is related to the theory of 'stationary' and 'roving' bandits (Olson, 1993). A 'stationary' (looking-forward) ruler limits rent-seeking behaviour in the short-run to exchange the larger portion of a revenue for a smaller portion of a larger revenue (Tullock, 2002), while a 'roving' (myopic) ruler enjoys the short-run rent-seeking behaviour in the face of a forthcoming loss of power. The empirical testing of this theory, on both the national and sub-national levels, has led to controversial conclusions. On the one hand, the stability of an autocrat's power, as measured by his/her tenure, is favourable for shaping the business environment and improving institutions, whereas political uncertainty, as

[☆] We are grateful to Andrei Yakovlev, Paola Valbonesi, Luigi Moretti, Francesco Decarolis, Paolo Pinotti, Koen Schoors, Israel Marques, David Szakonyi, Vitezslav Titl for helpful discussion; and to two anonymous referees and participants of the VI International ICSID Conference, the Paris Workshop on Public Procurement 2018, the 11th Russian Summer School on Institutional Analysis for comments. The study was implemented in the framework of the Basic Research Program at the National Research University Higher School of Economics (HSE) in 2018.

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¹ In 2017 public procurement expenditures constitute 12% of GDP in OECD countries and up to 40% in developing countries.

<https://doi.org/10.1016/j.ejpoleco.2019.101825>

Received 31 July 2018; Received in revised form 24 October 2019; Accepted 28 October 2019

Available online 6 November 2019

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measured by incidents of turnover, negatively impacts economic growth and investment. On the other hand, a high rate of turnover may produce higher accountability of rulers, decrease political distortion in the economy and increase institutional quality. The more focused studies have shown that the latter effect is more pronounced when a ruler has local business interest or local ties, so that good quality of institutions would 'insure' that he/she would not lose his/her property after a turnover. Therefore, in addition to tenure and turnover rate, the ruler's local ties play an essential role in shaping regional institutions.

This paper analyses the impact of autocratic governors' tenure and their biographical local ties on public procurement performance on a sub-national level. It is quite natural to use the procurement outcomes of the subordinated local public organizations as governor's performance indicators. Local public contracts are financed from the local budgets and, therefore, the contracts' allocation may reveal the governor's incentives. We conduct our analysis for sub-national regions in Russia that are of interest by several reasons. First, due to the transparency requirements in Russia, the information about population of procurement contracts is open. Second, Russia is characterized by weak democracy, where the federal center either directly appoints and dismisses regional governors or has strong control over regional governors' election. Third, the governors' stability in office is mostly determined by their political loyalty to center, while governors have enough freedom to shape regional economic development. Combination of these factors enables to use Russia as wonderful example to study the role of autocratic governors for public procurement performance.

We collect the contract-level data for population of procurements of road construction and repair works in Russian regions during 2011–2014. These procurements were conducted by regional and municipal authorities and, potentially, could be supervised by regional elites. The database accounts for more than 120,000 contracts. Our main focus is to study the impact of governors' tenure in office² and local ties on the level of competition at auctions. However, to have an unambiguous interpretation, we also study executional stage of the contracts. Procurement competition is measured by the number of bidders at auctions. At the executional stage, we consider delay and termination in contract execution. Since tenure in office is endogenous, in order to have causal interpretation, we construct instruments for governor's tenure by exploiting the regional vote share of ruling party in past parliament elections. The choice of road construction and repair procurement is motivated by two reasons. First, this type of procurement constitutes a significant part of annual regional budget expenditures.³ Second, road construction projects are close to the financial interests of local elites. Two are the examples of corruption scandals in procurement of road constructions works resulting in the arrest of governors Alexander Solovoyov⁴ and Boris Dubrovsky.⁵

We find the evidence that the local ties and the tenure of governors are important to explain the level of competition at auctions and contracts' execution. The auctions conducted during the period of governors with local ties ('insiders') being in office, on average, demonstrate a 5% higher level of competition than the auctions of governors without local ties ('outsiders'). Moreover, for governors-outsiders, we observe a negative effect of tenure on competition, with a reduction of competition by 2.5% for incumbent governors, while for governors-insiders there is no effect of tenure. The restriction of competition by governors-outsiders may be interpreted in two different ways. The first interpretation says that the restriction of competition indicates favouritism in contract allocation. The second interpretation argues that the deliberate restriction of competition is aimed to exclude incompetent and non-qualified participants, so the contracts are better executed. To disentangle these two interpretations, we further analyse the executional stage of the contracts by considering delays and terminations of the contracts. On average, delays in contract execution are 16% (of contract duration) lower for governors-insiders, while the probabilities of contract termination are equal for insiders and outsiders. For governors-insiders longer time in office causes the reduction of both delay and probability of contract termination. For governors-outsiders, the delays increase by 20% for incumbent governors and probability of contract termination keeps stable over time in office. Therefore, we do not find a support for the second interpretation of competition restriction by governors-outsiders and conclude that there is favouritism in their behaviour.

The paper contributes to the literature in two ways. First, this study is closely related to that of Coviello and Gagliarducci (2017). Authors use Italian procurement data and show that longer time in office of municipal majors cause lower procurement competition with a higher probability of contracts being allocated to locally based firms. Unlike Italy, the electoral accountability of Russian governors is significantly lower. Therefore, our analysis is for a different political setting – autocracy, where the stationary and roving bandit theory can be tested. Moreover, following the literature, we take into account local ties together with political stability of governors, which makes this paper different from that of Coviello and Gagliarducci (2017). Second, the paper adds to the strand of empirical literature on stationary and roving bandits by considering public procurement as governors' performance outcomes, while other papers consider the quality of regional institutions as outcomes (investment activity, taxation, corruption, and property rights). The paper confirms that governors-outsiders demonstrate 'predatory' behaviour (Libman et al., 2012) and that the presence of local ties reduces this negative effect (Polishchuk and Syunyaev, 2015).

The article is structured as follows. The next section presents an overview of the literature and state the hypotheses. Section 2 explains the institutional background in Russia. Section 3 is devoted to a description of procurement and governors' data. In Section 4, we formulate the empirical strategy, and the results are presented in Section 5. We conclude with Section 6.

² Time in office of the governor up to the date of contract signing.

³ According to the Federal Treasury information on execution of budgets (<http://www.roskazna.ru/ispolnenie-byudzhetov/konsolidirovannye-byudzhetny-subektov>) annual share of regional road construction and repair expenditures is approximately 8–10% of regional budgets spending.

⁴ <http://tass.com/politics/939186>.

⁵ <https://en.crimerrussia.com/gover/chelyabinsk-governor-resigns-to-avoid-arrest>.

2. Literature review and hypotheses

There is a strand of literature that shows that the quality of regional governance and institutions significantly impacts public procurement performance. Using French and EU data, [Chong et al. \(2012\)](#) and [Chong et al. \(2013\)](#) demonstrated the impact of political institutions, such as political competition and quality of public administration, on the procurers' choice for more transparent procurement procedures. Exploiting Italian procurement data, [Coviello et al. \(2017\)](#) showed that in the localities with less efficient courts, contracts are more often awarded to larger suppliers and are subject to longer delays.

In view of weak institutions in developing countries, the quality of regional government is basically determined by regional elites and depends on their incentives and business interests. The connection of business with high-level bureaucrats and politicians exists in both developed and developing countries and is usually considered as a 'conflict of interest'. However, such relations occur more frequently in countries with higher corruption ([Faccio, 2006](#)). In the literature, these relations are investigated from the perspectives of both business and politicians.

The former strand of literature on firms' political connections and public money allocation consistently demonstrates that the government tends to grant benefits and subsidies to politically connected enterprises ([Wu et al., 2012](#)). Also, it has been shown that politically connected firms have more open access to public procurement ([Goldman et al., 2013](#); [Amore and Bennedsen, 2013](#)). In the case of Russia at the end of 2010s ([Szakonyi, 2018](#)), showed that firms whose CEOs were elected to regional parliaments had higher access to public contracts. [Mironov and Zhuravskaya \(2016\)](#) demonstrated the association between political cycles in regional elections in Russia and illicit financial transactions to politicians from procurement winning firms. The favouritism in procurement contracts allocation toward firms-donators of political parties was shown for several countries: Brazil ([Boas et al., 2014](#)), Lithuania ([Baltruonaite, 2019](#)), Czech Republic ([Titl and Geys, 2019](#)).

The latter strand of literature studies bureaucrats' and politicians' incentives to connect with businesses. In imperfect democracies and autocracies, the low accountability of elites to society opens opportunities for them to pursue their own interests ([McGuire and Olson, 1996](#); [Acemoglu, 2006](#)). [Olson \(1993\)](#) proposed the theory of stationary and roving bandits to explain the empirical fact that not all autocrats demonstrate predatory behaviour. According to this theory, stationary bandits limit their rent-seeking behaviour in the short-run to extract higher revenue in the long-run, while roving bandits extract short-run revenue in the face of a forthcoming loss of power. From the perspective of this theory, the autocratic ruler's tenure and probability of being replaced determine institutional and economic development. However, two strands of empirical literature coexist showing quite the opposite impact of an autocratic ruler's tenure and turnover on economic development.

On the one hand, autocrat stability, measured by tenure, has a positive impact on improving the quality of institutions ([Holcombe and Boudreaux, 2013](#)). Simultaneously, political uncertainty, measured by incidents of autocrat turnover, negatively impacts economic growth and investment activity ([Alesina et al., 1996](#); [Aisen and Veiga, 2013](#); [Fatas and Mihov, 2013](#)). From this perspective, foreign and domestic firms value political stability and the predictability of rules, and they try to avoid investment activity under uncertainty ([Brunetti et al., 1998](#); [Asiedu, 2006](#)). This logic holds even in the case of uncertainty over corruptive behaviour. [Malesky and Samphantharak \(2008\)](#), using the case of highly corrupted Cambodia, showed that governors turnover reduces firms' investment activity because uncertainty about firms' 'bribe schedule' increases. The same result relating to the level of uncertainty of corruption and investment activity was shown for Russia ([Levina et al., 2016](#)).

On the other hand, a high rate of turnover may produce greater accountability of autocratic rulers, increase the quality of institutions ([Besley and Kudamatsu, 2008](#); [Besley et al., 2012](#)) and decrease political distortion in the economy ([Acemoglu et al., 2011](#)). This can be explained by the high probability of an autocrat being replaced causing his/her concern over the quality of institutions and property rights to protect his/her well-being after losing the power. Following this argument, [McGuire and Olson \(1996\)](#) stated that elites with business interests have more incentives to enhance the quality of institutions and property rights. [Polishchuk and Syunyaev \(2015\)](#) theoretically and empirically (using cross-country data) showed that the turnover of elites is positively associated with the protection of property rights and that this effect is especially pronounced for elites with strong business interests. Therefore, the presence of business interest of an autocrat might be even more important in explaining his/her 'like stationary bandit' behaviour rather than turnover or tenure.

Reconciling these two strands of the literature, some authors have also claimed that turnover and tenure have a non-linear effect. However, the direction of non-linearity is also arguable. According to a theoretical paper from [Acemoglu and Robinson \(2006\)](#), political elites have stronger incentives for economic development when they are either highly stable or when they face a high degree of political instability. On the contrary, using cross-country data ([Campante, Chor, and DO, 2009](#)), showed the U-shaped relationship between corruption and political stability with minimal corruption in the middle.

The aforementioned literature on relations of political stability with economic development is mainly based on cross-country studies and theoretical modelling. Moreover, this literature does not provide a particular form of relations between political stability and institutional development. This might also be explained by the variety of countries' specifics. In this paper, we focus on the sub-national level of a large developing country – Russia. The literature reflects substantial attention being paid to sub-national autocracies and the behaviour of regional governors ([Gibson, 2005](#); [Gervasoni, 2010](#); [Reuter and Robertson, 2012](#); [Libman et al., 2012](#); [Sidorkin and Vorobyev, 2017](#)). To clarify the possible relations between governors' stability and institutional development, we first describe the existing literature on governors' incentives in Russia.

Using Russian and Chinese cases, [Rochlitz et al. \(2015\)](#) showed that the incentives of governors for regional development is determined by their future career opportunities. In the case of Russia, governors usually do not have any chance for further promotion, and the governor's office is their final position. [Zhuravskaya \(2010\)](#) found that governors have weak incentives to improve regional investment climate because the dominant part of regional taxes is directed to the federal center. Moreover, the stability of the governors'

position generally depends on political loyalty to the central authority. In particular, this stability is determined by the share of votes in the region for the ruling party in federal parliament elections, while regional economic growth is not important (Reuter and Robertson, 2012).

The analysis of the pre-governing period of Russian governors showed that local origin, business-interest and job position in the administration of the same region play an essential role in regional development. Libman, Kozlov, and Schultz (2012) and Shurchkov (2012) showed that new regional elites appointed by the federal government from the outside in the middle of 2000s were characterized by more repressive behaviour in terms of taxation and cared less about the development of small- and medium-sized enterprises compared with locally embedded governors. Rochlitz (2014) reinforced these findings and found that in regions where governors have local ties, raider attacks on businesses are less likely. Sharafutdinova and Steinbuks (2017) showed that firms demonstrate a strong preference for locally embedded governors, who can maintain pre-existing inter-elite connections in terms of regional state–business relations. Therefore, the pre-existence of the local ties for governors-insiders and their responsibility for regional development, described in the abovementioned literature, provide grounds for the following hypothesis, which we link with procurement outcomes:

Hypothesis 1. *Auctions conducted in the period of governors-insiders being in office have better procurement outcomes.*

The abovementioned literature at the cross-country level showed that an autocrat ruler's tenure is an important factor in explaining the quality of institutions. The analysis at the sub-national level in Russian regions also maintains this finding. Buckley-Farlee (2017) showed that if an incumbent governor wants to be re-elected or re-appointed, he/she tries to reduce regional corruption. Nevertheless, at the end of their career and without further perspective to be re-elected or to be promoted, governors try to increase their own revenue, which leads to a higher levels of regional corruption (Sidorin and Vorobyev, 2017). These results on tenure, combined with Hypothesis 1, lead us to the second hypothesis.

Hypothesis 2. *High tenure in office of governors-outsiders negatively impacts procurement performance. Governors-insiders have a less salient tenure effect on procurement performance compared to governors-outsiders.*

Hypothesis 2 is in line with the result of Coviello and Gagliarducci (2017), which showed that the longer tenure of Italian municipal majors in office result in a lower procurement competition. Nevertheless, Hypothesis 2 is formulated under the assumption of an autocratic political setting with differentiation between insiders and outsiders.

3. Institutional background

3.1. Elections and appointments of governors in Russia

In Post-Soviet Russia between 1992 and 1996, the process of selecting regional governors differed across regions: in some regions, they were directly elected by the population, and in others, they were appointed by local parliaments or by the president. After 1996, governors had to be elected across all regions. This lasted until late 2004 when Russian president Vladimir Putin cancelled governors' elections and introduced a system of appointments by the federal center. Previously elected governors had to be replaced or reappointed after the expiration of their current terms. The last elected governor's term expired in the end of 2009. The term in office for appointed governors constituted either four or five years depending on regions.

Governors' elections were restored in October 2012. However, federal center kept control over the elections through "municipal filters" – the law that prescribes a candidate for gubernatorial office to have a support of 5%–10% of municipal deputies in order to be registered to participate in gubernatorial elections. Since most of the municipal deputies were partisans of ruling party United Russia, this mechanism was efficient to filter out undesirable candidates from opposition (Ross, 2018).⁶ As a consequence of the "municipal filters", in all 43 regions where governors' elections were conducted in 2012–2014, all the elected governors had been acting regional heads before the elections.

As a consequence of the construction of 'vertical power', governors were more accountable to the federal center rather than to the population, independently of whether they were elected or appointed. Reuter and Robertson (2012) showed that the important criterion for a Russian governor to keep his/her position was a sufficient level of regional electoral support for the ruling party United Russia in parliament elections, while regional economic or institutional development was irrelevant. Therefore, governors obtained significant freedom in shaping the regional economy, judicial system, property rights and other important regional institutes. Further analysis of governors' characteristics found that governors with local ties took care of regional economic and institutional development (Rochlitz, 2014; Sharafutdinova and Steinbuks, 2017), while governors without local ties did not (Libman et al., 2012; Shurchkov, 2012).

3.2. Public procurements in Russia

In Russia, public organizations are required to procure goods, works and services through open public tenders. As a response to the problems of a high level of corruption and poor public services in the beginning of the 2000s, a major reform of public procurements was implemented with the adoption of Federal Law on Public Procurement (94-FL) in 2005. This law had quite rigid regulation regarding the choice of procurement procedures and criteria for selecting suppliers. The four possible procurement procedures were strictly pre-determined: (i) *open auction* is a descending English auction, which is considered as the main procurement procedure and it is obligatory for procurements valued in excess of 500 K RUR (~17 K USD); (ii) *requests for quotations* is a minimal price sealed-bid auction, which is

⁶ See also <https://www.rferl.org/a/russia-filters-out-competition-regional-elections/28685869.html>.

used for procurements of small amounts (up to 500 K RUR); (iii) *single-source contracting* is a non-competitive procedure to procure from predetermined suppliers with procurement value under 300 K RUR (~10 K USD); (iv) *tender* is scoring rule auction, i.e. it is maximal score sealed-bid auction with option for quality criteria. Tender can be used for procurements of complex works and services such as R&D, consulting, complex construction.

Each procurement on road construction and repair in our sample is administrated by the manager of the public organization, which is responsible for the state of roads in a region/municipality. The procurement is financed directly from regional/municipal budget. These expenditures are planned in advance and fixed in the budget's spending for the forthcoming year. By communicating with the regional/municipal administration, the manager is responsible for preparing the technical specification of procurement, which includes the following: (i) the maximal price the buyer is ready to pay (i.e., the reserve price); (ii) a detailed description of the repair/construction object, (iii) the requirements for applicants.

The technical specification is announced in advance, and its description is open for everybody on the official website www.zakupki.gov.ru. When firms submit their applications, the evaluating commission assesses them. The evaluating commission consists of the members of the manager's organization (including the manager), representatives from regional/municipal administration and, if needed, experts on road construction. If the constructed road is managed by the municipality and has regional significance, then the municipality might also invite the representative of regional administration to participate in the commission. The commission evaluates each application and makes conclusions about its compatibility with the requirements in the technical specification. Only the firms with consistent applications are allowed to compete further. For *Open auction*, the next round of open bidding is held for the firms with consistent applications, where the firm with the minimal price wins the contract. If only one application is consistent, then the contract is signed at the reserve price with such firm. The winner of *Requests for quotations* is the firm with consistent application and the minimal price, which is specified in the same application. The winner of *Tender* is the firm with consistent application and the maximal score. The score is calculated by the Commission by accounting for the proposed price and qualification of the firm with appropriate weights (the weights are described in the technical specification). When the winner is determined, the manager concludes the contract with the firm and monitors its execution. If poorly executed, the contract might be terminated with partial (possible zero) payment on it when both sides agree. If one side disagrees, the decision regarding the amount of payment is conducted through an arbitrage court. To complete the work detailed in the terminated contract, the organization runs a new auction with appropriate adjustments to its size.

This procedure of the supplier selection allows regional/municipal administration to participate in two stages: preparation of the technical specification and evaluation of the applications. Thus, the governors' favouritism might show up in both of them. In the former stage, the technical specification might be excessively demanding, so few firms might try to satisfy it and other firms do not apply. In the latter stage, by using discretionary power, unwilling firms might be excluded from competition.

4. The data

To test the hypotheses of Section 2, we analyse open contract-level data on public procurements merged with public organizations' information, regional and governors' characteristics. The main corpus of the data consists of the contract information on road construction and repair works in Russia in 2011–2014. The primary source of information on public contracts is available on the official website www.zakupki.gov.ru that was run in 2011. All public buyers must place their auction announcements and contracts of the value in excess 100 K RUR into this website. This information includes all of the life-cycle stages: call for auction, awarding stage, contract characteristics, execution payments and dates. As we use contract-level data, we also need to control for procurers' and suppliers' characteristics (Ohashi, 2009; De Silva et al., 2008; Decarolis et al., 2018), such as procurer activity and size. This information was collected from the website www.clearspending.ru, which presents annual information on procurers and suppliers. As the regional quality of institutions plays an important role in determining the procurement outcomes, we exploited the regional information collected from the federal statistical website www.fedstat.ru about regional procurement budgets, GRP and quality of roads. The full description of the collected data and their sources are presented in Table A1 of the Appendix.

The initial contract-level data consists of around 157,000 contracts on road construction and repair awarded between 2011 and 2014. To collect information about executional stage, these contracts are followed until the date of completion or April 30, 2017, whichever comes first. For the purpose of our research, we chose only contracts signed by procurers of the regional and municipal subordination level.⁷ As a result, we have a sample of 144,149 contracts. These contracts were awarded through different procurement procedures: both competitive (open auctions, request for quotations, tenders) and non-competitive (single-source contracting). We deliberately exclude small contracts of the value below 100 K RUR (~3 K USD) as they are underrepresented in the official website and are out of interest for governors. We also exclude contracts with unrealistically short duration (10 days or lower) and unrealistically long delays as outliers. Thus, after cleaning the data and excluding some observations with important missing or unreliable information, the database is reduced to 120,180 contracts containing all types of procedures from 2011 to 2014. This sample does not differ from the population in its basic characteristics (see Table A5 of Appendix).

The database for analysis contains the following characteristics: (i) call for auction and bidding information including procurement procedure and level of competition during the bidding process (reserve price, the number of applicants, number of bidders and winning

⁷ Federal-level road construction procurements are managed by public organization of federal-level subordination, so we assume that they hardly can be manipulated by regional governors.

bid); (ii) contract information (including contract values, terms of delivery, ID codes of procurers and suppliers); (iii) information on annual contract numbers and contract values by each procurer and supplier during 2011–2014⁸; (iv) information on the factual contract execution date and status. Table A2 in the Appendix presents the descriptive statistics of the variables by groups of characteristics. Noteworthy, that open auction is the main procurement procedure, which constitutes 77% of all contracts. Moreover, the type of procedure is important in explaining both competition at auctions and execution of contracts (Decarolis, 2014). Therefore, we will provide results for both the total sample and the sample of open auctions separately.

The average contract duration is 147 days for all types of procurement procedures and 157 days for open auctions. The average contract price is equal to 1.6 M RUR (~53 K USD). The share of contracts signed with suppliers from the same region as the procurer constitutes on average 92% in quantity and 66% in contract value. On average, 91% of the suppliers have at least one contract in their region. Moreover, road construction contracts constitute significant part of procurement contracts of these suppliers: on average, 27% by number of contracts and 59% by their value.

In order to control for regional diversity in dynamics, we use procurers' ID to identify their regions and add the following regional information: (i) logarithm of regional public spending per capita; (ii) logarithm of GRP per capita; (iii) regional road accident rate; (iv) share of roads of regional significance with good quality. Descriptive statistics of regional characteristics are presented in Table A3 of the Appendix. This table shows the considerable variation in regional characteristics from the perspective of budgets and institutions.

Finally, we use a dataset on Russian governors used in previous studies⁹ (Reuter and Robertson, 2012; Libman et al., 2012). This dataset contains information on all of the regional governors during 2000–2014. In particular, for each governor this database includes the following: (i) exact start and end of governor's terms; (ii) birth date; (iii) information on governor's positions before becoming a governor including region of the previous job; (iv) information on whether the governor was elected or appointed. Using this data, we also define regional governor as *insider* if he/she had the job position in the same region during the pre-governance period for at least a total of three years. For 2011–2014, we have information on 125 different governors in 83 Russian regions. The governors' characteristics are presented in Table A4 of the Appendix. This table shows that half of all governors had at most five years' tenure in office and almost 25% of all governors had tenure longer than nine years. Nevertheless, there are some governors with extremely long tenures. Almost 69% of governors are insiders, and only 34% of governors have ever passed through the election process (i.e., 66% of them were assigned by central authority and were never elected). For our analysis it will be important to understand the turnover of the governors in regions. During 2011–2014, governor turnover occurred in 38 regions¹⁰; and a governor-insider was replaced by an outsider or vice versa in 20 regions.¹¹ By using the signing date of each contract, we match the procurement information with information on the corresponding governor in office. This matching procedure naturally yields the restriction on the period we analyse. Procurement data starts from 2011, while the governors' information is bounded by 2014 above. For each contract, we compute the governor's tenure in the office by the date of the contract signing.

Our main interest is to estimate the impact of the governor's status as an insider and his/her tenure on procurement performance. We consider the following procurement outcomes: number of bidders in auction; normalized delay in contract execution¹²; and indicator of contract execution to be terminated. The first variable characterizes procurement competition, while the last two variables describe the problems with the contract's execution. A small number of bidders may indicate competition restriction and/or the supplier's low incentives to participate in auctions. Note that we define the number of bidders only for competitive procurement procedures. Thus, analysis of this variable naturally excludes nearly 7500 *single-source contracts*, where supplier is selected in uncompetitive manner. Table 1 shows that the average number of bidders is 1.59. This fact demonstrates a low level of competition in procurement of road construction. We deliberately do not consider price rebates as auction outcome because interpretation of results with this variable is ambiguous. A high rebate might be a consequence of a high reserve price as well as a low winning bid. Moreover, a price rebate does not indicate the competition restriction. The delays in contract execution and contract terminations characterize the efficiency of the contract execution. Table 1 shows that on average, contracts are executed 5–6 days before the deadline, and contract terminations occur in 7–8% of cases.

5. Empirical strategy

To verify the impact of local ties and the tenure of governors on procurement competition and contract execution, we run a set of regression models using contract-level data.

As the main independent variables, we consider governor's insider status (*Insider*) as a dummy variable and exact number of years in office by the date of the contract signing (*Tenure in office*). As an alternative to *Tenure in office* we also consider governor's number of terms in office by the date of the contract signing (*Term in office*), or dummy variable *Incumbent*, which equals to zero if the date of contract signing corresponds to the first governor's term in office and one if this is his/her second term or larger. We use these two alternative measures of tenure by two reasons. First, as we discuss below, governor's tenure is likely to be endogenous. However, given the term in office, the tenure is determined by the date of contract signing. Therefore, this is the number of terms in office that makes

⁸ Each procurer and supplier may have contracts other than road construction and repair.

⁹ <https://iims.hse.ru/en/csid/databases>.

¹⁰ Total number of contracts signed in these regions is 66,625 out of 120,180.

¹¹ Total number of contracts signed in these regions is 33,669 out of 120,180.

¹² Delay normalized with respect to contract duration. Computed as the delay divided by the difference between the predetermined contract execution date and signing date.

Table 1

Descriptive statistics for the dependent variables.

Procurement outcome	All procedures			Open auctions		
	mean	sd	no. of obs.	mean	sd	no. of obs.
Number of bidders	1.59	0.91	112,620	1.51	0.92	92,733
Delay, days	-6.07	102.4	96,651	-4.90	105.1	74,562
Normalized delay	0.26	1.86	96,651	0.29	1.88	74,562
Terminated contract, dummy	0.075	0.26	99,767	0.085	0.28	76,947

Note: the first block uses the whole sample of contracts, the second block uses sample of open auctions. Descriptive statistics for the *Number of bidders* were computed using sample without single-source contracts for the first block. *Delay* is the number of days between the actual execution date and the contract execution date. *Normalized delay* is *Delay* divided by the contract duration. *Terminated contract* is dummy variable equal to one if the execution of contract was terminated. *Delay*, *Normalized delay* and *Terminated contract* were computed by the date of data collection (April 30, 2017), so the contracts with execution in process by this date are excluded.

Tenure in office endogenous. Second, we can have more accurate estimates by using *Term in office* as we are planning to use instruments that vary over this factor, but not over *Tenure in office* given particular term. Moreover, [Coviello and Gagliarducci \(2017\)](#) also use *Term in office* rather than *Tenure in office* when they approach to IV estimates. The set of other control variables in regression models includes the characteristics of governors, contracts, procurers, suppliers, and regions, including regional fixed effects. The complete list of controls and their descriptive statistics is presented in [Table A2](#) of the Appendix. The following procurement outcomes are considered as dependent variables: (i) the number of bidders in auction; (ii) the normalized delay in contract execution; (iii) the indicator of contract to be terminated. The first variable measures the level of competition at the awarding stage and the last two variables measure quality of contract execution.

The basic model specification has the following linear form:

$$y_{it} = [\beta I_{it}] + \gamma T_{it} + \delta_1 W_t + \delta_2 X_{it} + \delta_3 Z_{it} + u_r + \varepsilon_{it}, \quad (1)$$

where y_{it} is the outcome of the auction with the sequential number t held during the term of the i th governor at region r . Here, I_{it} is an indicator of governor-insider, T_{it} is the governor's *Tenure in office* (*Term in office* \textit{Incumbent}), W_t is a vector of the contract/suppliers/procurer characteristics, X_{it} is a vector of the governor's characteristics, Z_{it} is a vector of the regional characteristics and u_r is the regional fixed effect. Note that vector Z_{it} controls for regional heterogeneity in dynamics through some observed characteristics, and u_r controls for fixed unobserved regional heterogeneity. Such control for unobserved regional heterogeneity is important to disentangle the regional effect from the governor effect as well as to take into account that historically regions are subject to different institutional settings. The square brackets of the first summand in (1) means that in some specifications we exclude insider status of the governor from the regression. Namely, this happens when we estimate equation (1) for subsample of insiders and outsiders separately.

The main focus is on the estimates of coefficients β and γ . Coefficient β shows the average difference in procurement outcomes between insiders and outsiders. Coefficient γ shows the average increment of the dependent variable if *Tenure in office* increases by one year or *Term in office* \textit{Incumbent} increases by one. To address the problem of heteroscedasticity of errors, we use the White's correction of estimators for standard deviations of coefficients. The regional fixed effects are introduced as a set of dummy variables.

In previous section it was shown that 77% of all the contracts were concluded through *Open auctions*. Moreover, this procedure is mandatory for procurements with reserve price above 500 K RUR (~17 K USD). Therefore, we will show the estimation result both for all the procurement procedures and for the sample of contracts concluded through *Open auctions*.

As we stated in [Hypothesis 2](#), the effect of *Tenure in office* might vary depending on the *Insider* status of governors. Therefore, we run regression models for insiders and outsiders separately by dividing the data into two subsamples. Moreover, we interpret the tenure effect only for these subsamples because the interpretation of tenure in the combined sample might be vague.

5.1. Time in office and parliament elections

The main concern in estimation of casual effect of time in office on the procurement outcomes is that time in office is endogenous (see e.g. [Coviello and Gagliarducci \(2017\)](#)). For example, close to a new election, if the incumbent governor believes that he/she might be re-elected, he/she may intensify efforts to successfully execute publicly valuable contracts (such as road constructions) in order to attract even more votes, and in such manner, to increase probability to be re-elected. On the contrary, if governor has strong belief not to be re-elected, then he/she might intensify corruption in the end of his/her term, in order to extract short-run revenue in the face of a forthcoming loss of power. While the former argument may have lower support in weak democracies, for the latter argument we have strong support for the case of Russia ([Sidorkin and Vorobyev, 2017](#)). As we mentioned before, in the period 2005–2012 governors were directly appointed by president, and governors' elections were restored only in October 2012. However, even under elections of governors, the central government kept control over the election results through municipal filters. Under such conditions, the time in office of governor is highly determined by his loyalty to the central authority. Indeed, [Reuter and Robertson \(2012\)](#) showed that governor's future re-appointment strongly depends on the share of votes in the region for the ruling party United Russia (UR) in parliament elections, which were held by this governor. This hints to exploit regional and federal election results for UR in region as instruments for the governor's tenure. In what follows, we explain the way of construction of these instruments.

Elections in federal parliament are held on the same day all over the regions. There are two federal parliament elections that are

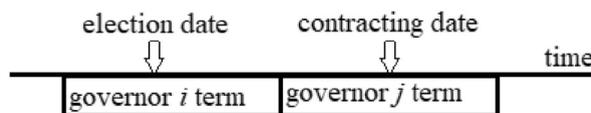


Fig. 1. Time line of the contract signing date and election date for instruments.

relevant to us: December 2007 and December 2011. Elections in regional parliaments are not unified all over the regions and must be conducted once in 4–5 years. UR is represented in all the regions and historically has different share of its supporters over the regions. We construct two instruments basing on UR share of votes in region for federal and regional parliament elections separately. Namely, in our 2011–2014 procurement data for each contract-level observation and corresponding governor who manages this contract, we consider federal\regional election, which was held during the previous term of this governor or during the last term of the former governor (see Fig. 1). We take the UR share of votes in region in this election as a value of instrumental variable for the observation. Therefore, we have two instrumental variables corresponding to preceding federal and regional elections. We keep them separately, as impact of the federal election may be thought of higher importance to influence the probability of re-appointment/re-election compared to the regional election results.

Intuitively, these instruments are relevant due to the following reason. If UR had high share of votes in election then the governor, who managed this election, would be kept for the next term. Therefore, at the date of contract signing the governor's term would likely be higher than one. This situation corresponds to the case in Fig. 1, when governor i and j is the same person. On the contrary, if UR had low share of votes in election then the governor, who managed this election, would be fired. Thus, at the date of contract signing the new governor's term should be one. This situation corresponds to the case in Fig. 1, when governor i and governor j are different persons.

It is noteworthy, that our instruments vary over governor's terms, but not over exact time in office, so these instruments may have not enough variability to properly explain *Tenure in office*. Therefore, in interpretation of IV estimates we will focus on *Term in office* and *Incumbent* controls, rather than *Tenure in office*. Moreover, by the construction, the instruments have enough explanatory power to disentangle the first governor's term from others, but they cannot disentangle terms larger than one. Therefore, we think of IV with *Incumbent* measure of time in office as the most efficient estimate.

These instruments are likely to be valid, i.e. they satisfy the exclusion restriction from equation (1). Indeed, given the re-appointment/re-election decision by the central government, the results of past parliament elections in the *previous term* do not impact the current contract performance. This intuitively should be true, since the results of past parliament elections in the *previous term* determines reappointment decision of a governor by the federal centre, but when the appointment decision is done, those results of past parliament elections are no more relevant for the governor to take care (as those parliament elections were held in previous term). Moreover, in our 2SLS estimates we control for regional unobserved heterogeneity through regional fixed effects as we do in equation (1), so any regional historical specificities are captured by them. In particular, historical time-invariant bias of regional population to\against UR will be captured by these fixed effects. Thus, at the first stage we estimate the following model

$$T_{ir} = [a_{ir}] + b_1 UR_Reg_{ir} + b_2 UR_Fed_{ir} + c_1 W_t + c_2 X_{ir} + c_3 Z_{ir} + u_r + \varepsilon_{ir}, \quad (2)$$

where T_{ir} is the i th governor's *Term in office* (*Incumbent* indicator) at the contract signing date t at region r , $UR_Reg_{ir} \setminus UR_Fed_{ir}$ is the regional UR vote share in regional\federal election in the previous term, and rest of controls are similar to equation (1). At the second stage we estimate (1) with heteroscedasticity robust standard errors.

6. Empirical evidence

6.1. Main results

Panel A of Table 2A presents the OLS estimates of model (1) for the number of bidders, where time in office is measured through *Tenure in office*.¹³ The level of competition in the auctions conducted during the governing of insiders is higher, on average, by approximately 0.05 bidders in comparison to outsiders (Panels A–C, Columns 1 and 2). In relative values, it corresponds to 3% in the level of competition. While for insiders we do not observe effect of tenure in office on competition (Panel A Columns 3 and 4), competition for outsiders decreases with tenure, on average, by 0.07 bidders per year (Panel A Column 5), which corresponds to 4.5% of annual decrease. For the sample of *Open auctions*, the reduction of competition with tenure is even larger (Panel A Column 6). Panels B and C of Table 2A show similar results for alternative measures of time in office: *Term in office* and *Incumbent*. The insignificance of *Term in office* for outsiders in Panel B might be related to endogeneity. Results in Table 2B resolve the endogeneity problem.

Table 2B reports the first stage and 2SLS estimates for number of bidders for two measures of time in office: *Term in office* and *Incumbent*. The first stage estimates show that our instruments are relevant to explain *Term in office* (Panel A) and *Incumbent* (Panel B) for

¹³ Since the number of estimated models is large, in the paper we present only variables of interest: insider and time in office. However, the paper is supplemented with Stata 15 data file and the corresponding do file. When launched it estimates and puts all the regression models of the paper in the extended form on local computer.

Table 2A
OLS estimates for the number of bidders.

Variables	All procedures	Open auctions	All procedures	Open auctions	All procedures	Open auctions
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Tenure in office (OLS)						
Tenure in office	0.0026** (0.0011)	0.0033*** (0.0013)	0.00067 (0.0013)	0.00094 (0.0015)	-0.073*** (0.014)	-0.10*** (0.017)
Insider	0.053*** (0.013)	0.057*** (0.016)				
R-squared	0.517	0.507	0.538	0.526	0.498	0.497
Panel B: Term in office (OLS)						
Term in office	0.020*** (0.0050)	0.025*** (0.0056)	0.026*** (0.0058)	0.029*** (0.0065)	-0.018 (0.015)	-0.013 (0.017)
Insider	0.048*** (0.013)	0.050*** (0.016)				
R-squared	0.517	0.507	0.538	0.526	0.497	0.496
Panel C: Incumbent (OLS)						
Incumbent	0.028*** (0.0085)	0.033*** (0.0096)	0.020* (0.012)	0.018 (0.014)	-0.035** (0.015)	-0.031* (0.016)
Insider	0.053*** (0.013)	0.057*** (0.016)				
R-squared	0.517	0.507	0.538	0.526	0.497	0.496
Observations	112,620	92,733	76,208	62,839	36,412	29,894
Sample	Ins&Outs	Ins&Outs	Insiders	Insiders	Outsiders	Outsiders

Significance levels: **** 0.01 *** 0.05 ** 0.1.

Note: The table reports OLS estimates from model (1). Robust standard errors are in parentheses. The dependent variable is *Number of Bidders* - number of bidders in the procurement procedure. Time in office measures are: *Tenure in office* - the exact governor's time in office by the date of contract signing (Panel A); *Term in office* - the number of governor's terms in office by the date of contract signing (Panel B); *Incumbent* - equals zero if Term in office is 1 and equals one if Term in office is larger than 1 (Panel C). *Insider* - dummy equal to one if the governor is an insider. Other control variables include the governor's age, governor's age squared, indicator that the governor had been elected at least once, dummy variables for year of contract signing, procurement procedure, logarithm of the reserve price, number of applicants, contract duration, number of items, procurer/supplier/regional controls, and regional dummy variables. *Sample* reports the sample selection used for estimation: columns 1 and 2 use the combined sample of insiders and outsiders, columns 3 and 4 use the sample of insiders, and columns 5 and 6 use the sample of outsiders. Columns 1, 3 and 5 report the results of estimation using all procedures except for single source. Columns 2, 4, 6 report the results of estimation using only the sample of open auctions.

both insiders and outsiders. We do not observe the significant effect of *Insider* status on number of bidders in the model with *Term in office* (Panel A Columns 1–2), while the coefficient is positive and its magnitude is comparable with corresponding OLS estimate. This might happen because (i) the instruments have low explanatory power to disentangle the terms of governors larger than one due to the way the instruments are constructed (ii) the insiders, on average, have more terms in office compared to governors-outside (see Table 6). Therefore, the estimates with *Incumbent* measure of time in office (Table 2B Panel B) are the most efficient, especially for the combined sample (Columns 1–2). The model with *Incumbent* shows that auctions of governors-insiders, on average, have by 0.08 bidders more (Panel B Columns 1–2), which corresponds to 5% of the level of competition. From Table 2B (Columns 3–4) we observe that the effect of *Term in office* and *Incumbent* is insignificant for insiders (with positive coefficients), while for incumbent governors-outside competition decreases by 0.039 bidders, which corresponds to 2.5% of the level of competition (Columns 5–6).

From Table 2B we can conclude that insiders, on average, have higher competition in auctions, and time in office is relatively neutral to the level of competition for them. On the contrary, for governors-outside, time in office causes reduction in the level of competition. Such restriction of competition during the governing of outsiders might be interpreted in different ways. The first interpretation says that restriction of competition indicates favouritism in contract allocation, which even becomes more pronounced when a governor-outsider is settled (i.e., with high tenure). The second interpretation argues that deliberate restriction of competition helps to exclude incompetent and non-qualified participants, so the contract may be better executed. Under the second interpretation, the increase in the governor's tenure indicates growth of his/her experience in the selection of well-qualified suppliers, so it results in lower competition.

To disentangle these two interpretations, we further analyse the executional stage of the contracts by considering delays and terminations of the contracts. Table 3 demonstrates OLS and 2SLS estimates for normalized delays in contracts execution.¹⁴ Panel E (as well as OLS estimates of panels A–C) shows that, on average, insiders have lower delays by 16–26% of contract duration (Columns 1, 2) compared to outsiders. For panel D the effect of *Insider* is insignificant. This can be explained by the same argument as we mentioned for Table 2B Panel A: low efficiency of the estimate for combined sample (Columns 1–2) due to the low explanatory power of instruments

¹⁴ The first stage results of 2SLS estimates are similar to Table 2B, so we do not present them in Tables 3 and 4

Table 2B
2SLS estimates for the number of bidders.

Variables	All procedures	Open auctions	All procedures	Open auctions	All procedures	Open auctions
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Term in office						
First stage estimates						
UR regional share	0.014*** (0.00036)	0.016*** (0.00040)	0.020*** (0.00053)	0.024*** (0.00059)	0.013*** (0.00016)	0.013*** (0.00018)
UR federal share	0.0033*** (0.00033)	0.0017*** (0.00037)	0.019*** (0.00054)	0.017*** (0.00060)	-0.045*** (0.00022)	-0.045*** (0.00024)
2 SLS estimates						
Term in office	0.067** (0.028)	0.052* (0.028)	0.027 (0.023)	0.036 (0.026)	-0.036** (0.015)	-0.039** (0.017)
Insider	0.013 (0.026)	0.029 (0.028)				
R-squared	0.516	0.507	0.538	0.526	0.497	0.496
Panel B: Incumbent						
First stage estimates						
UR regional share	0.0095*** (0.00028)	0.012*** (0.00031)	0.0095*** (0.00042)	0.012*** (0.00046)	0.017*** (0.00017)	0.017*** (0.00019)
UR federal share	-0.0031*** (0.00023)	-0.0038*** (0.00025)	0.0050*** (0.00029)	0.0052*** (0.00031)	-0.038*** (0.00029)	-0.039*** (0.00030)
2 SLS estimates						
Incumbent	-0.048 (0.037)	-0.053 (0.035)	0.064 (0.059)	0.060 (0.054)	-0.039** (0.016)	-0.039** (0.018)
Insider	0.082*** (0.020)	0.090*** (0.021)				
R-squared	0.516	0.506	0.538	0.526	0.497	0.496
Observations	112,620	92,733	76,208	62,839	36,412	29,894
Sample	Ins&Outs	Ins&Outs	Insiders	Insiders	Outsiders	Outsiders

Significance levels: '***' 0.01 '**' 0.05 '*' 0.1.

Note: The table reports First stage as well as 2SLS estimates from models (1) and (2). Robust standard errors are in parentheses. The dependent variable is *Number of Bidders* - number of bidders in the procurement procedure. Time in office measures are: *Term in office* (Panel A); *Incumbent* (Panel B). The rest of description is similar to Table 2A.

for *Term in office* and substantial difference in the number of terms in office between governor insiders and outsiders. With respect to the effect of time in office, governors-outsiders demonstrate growth of delays by 19–20% of contract duration per term (Table 3, Panel D, Columns 5–6) or by 20–21% for incumbent governors (Panel E, Columns 5–6). Similar results are observed for OLS estimates (Panels A–C, Columns 5–6). For governors-insiders 2SLS estimates demonstrate significant reduction of normalized delays with time in office (Table 3, Panels D–E, Columns 3–4), while OLS estimates do not show any significant association between time in office and normalized delays (Panels A–C, Columns 3–4).

The results of contract terminations are presented in Table 4. There is no difference between insiders and outsiders in terms of the probability of the contract to be terminated for both 2SLS and OLS estimates (Columns 1, 2). For governors-outsiders the OLS estimates of time in office are ambiguous as different measures of time in office have different directions and level of significance (Panels A–C, Columns 5–6). However, the 2SLS estimates, which are thought to be unbiased, are either statistically significant only at 10% level (Panel D, Columns 5–6) or insignificant (Panel E, Columns 5–6). This means that higher time in office just marginally reduces the probability of contract termination for governors-outsiders. For governors-insiders we observe that higher time in office substantially reduces the probability of contract termination: 2SLS estimates are significant at 1% level and magnitude of coefficients are more than 6 times larger compared to governor-outsiders for both Term in office and Incumbent (Table 4, Panels D–E, Columns 3, 4).

Abovementioned empirical evidence on contract executions does not support the second interpretation we proposed for restriction of competition. That is, the restriction of competition does not lead to better execution of the contracts for governors-outsiders; on the contrary, execution is either stable for them or becomes worse with time in office. At the same time, governors-insiders, on average, have both higher competition and better executions and time in office is either insignificant or it helps to improve procurement performance.

6.2. Robustness check

In this subsection, we check robustness of our results in three steps by varying the specifications of the empirical model, sample of analysis, and measurement of delays in contract execution.

The first step of the robustness check concerns the nature of dependent variable, which measures competition in auctions. *Number of bidders* has a countable nature, it is always positive and there are many auctions with only one participant, so there is significant mass at unity. These features of the dependent variable are not captured by the linear model. In order to overcome this issue, we use exponential rather than linear functional form for *Number of bidders*:

$$y_{it} = \exp([\beta I_{it}] + \gamma T_{it} + \delta_1 W_t + \delta_2 X_{it} + \delta_3 Z_{it} + u_t + \varepsilon_{it}) \quad (3)$$

Table 3
OLS and 2SLS estimates for normalized delays in contract execution.

Variables	All procedures	Open auctions	All procedures	Open auctions	All procedures	Open auctions
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Tenure in office (OLS)						
Tenure in office	0.0029 (0.0036)	-0.00074 (0.0042)	-0.000041 (0.0042)	-0.0071 (0.0050)	0.19*** (0.051)	0.19*** (0.053)
Insider	-0.16*** (0.035)	-0.18*** (0.042)				
R-squared	0.065	0.067	0.066	0.067	0.070	0.079
Panel B: Term in office (OLS)						
Term in office	0.050*** (0.018)	0.039* (0.020)	0.034 (0.022)	0.014 (0.026)	0.20*** (0.044)	0.19*** (0.045)
Insider	-0.18*** (0.034)	-0.22*** (0.041)				
R-squared	0.065	0.067	0.066	0.067	0.071	0.079
Panel C: Incumbent (OLS)						
Incumbent	0.078** (0.031)	0.067** (0.033)	0.023 (0.047)	-0.022 (0.055)	0.24*** (0.050)	0.25*** (0.051)
Insider	-0.17*** (0.034)	-0.21*** (0.041)				
R-squared	0.065	0.067	0.066	0.067	0.071	0.080
Panel D: Term in office (2SLS)						
Term in office	-0.36*** (0.12)	-0.10 (0.12)	-0.44*** (0.095)	-0.36*** (0.11)	0.19*** (0.049)	0.20*** (0.050)
Insider	0.13 (0.097)	-0.11 (0.096)				
R-squared	0.059	0.067	0.060	0.063	0.071	0.079
Panel E: Incumbent (2SLS)						
Incumbent	0.039 (0.14)	0.21 (0.13)	-0.94*** (0.25)	-0.58** (0.25)	0.20*** (0.055)	0.21*** (0.055)
Insider	-0.16*** (0.059)	-0.26*** (0.059)				
R-squared	0.065	0.067	0.059	0.065	0.071	0.080
Observations	96,651	74,562	64,106	49,997	32,545	24,565
Sample	Ins&Outs	Ins&Outs	Insiders	Insiders	Outsiders	Outsiders

Significance levels: '****' 0.01 '***' 0.05 '**' 0.1.

Note: The table reports OLS estimates in Panels A–C and 2SLS estimates in Panels D–E from models (1), (2). Robust standard errors are in parentheses. The dependent variable is *Normalized delay* - delay divided by the duration of the contract. Time in office measures are: *Tenure in office* - the exact governor's time in office by the date of contract signing (Panel A); *Term in office* - the number of governor's terms in office by the date of contract signing (Panels B, D); *Incumbent* - equals zero if Term in office is 1 and equals one if Term in office is larger than 1 (Panels C, E). *Insider* - dummy equals one if the governor is an insider. Other control variables include the governor's age, governor's age squared, indicator of repeated contract, indicator that the regions of procurer and supplier coincide, indicator that the governor had been elected at least once, dummy variables for year of contract signing, procurement procedure, logarithm of the contract price, contract duration, number of items, procurer/supplier/regional controls, and regional dummy variables. The contracts with execution in process by April 30, 2017 are excluded. *Sample* reports the sample selection used for estimation: columns 1 and 2 use the combined sample of insiders and outsiders, columns 3 and 4 use the sample of insiders, and columns 5 and 6 use the sample of outsiders. Columns 1, 3 and 5 report the results of estimation using all procedures. Columns 2, 4, 6 report the results of estimation using only the sample of open auctions.

Such specification also allows to interpret coefficients β and γ as semi-elasticities, so they show a relative rather than absolute increment in the number of bidders. We estimate model (3) in two ways. First, assuming exogeneity of the time in office, we estimate it via negative binomial regression. Second, by relaxing the exogeneity assumption, we use the logarithm transformation of (3) and estimate it through 2SLS for two measures of time in office - *Term in office* and *Incumbent*.¹⁵

Table 5 reports results of both the negative binomial estimates (Panels A–C) and 2SLS estimates for logarithm of *Number of bidders* (Panels D, E). Similarly to results of Table 2B (Panel B), 2SLS estimates of model (3), with *Incumbent* as a measure of time in office, show that competition in auctions conducted by governors-insiders is, on average, higher by 3–4% and this effect is significant (Table 5, Panel E, Columns 1–2). Estimates from negative binomial model support this result (Table 5, Panels A–C, Columns 1–2). Insignificance of *Insider* for the model with *Term in office* as a measure of tenure (Table 5, Panel D, Columns 1–2) is related to the same problem of low

¹⁵ Similarly to OLS, estimates from negative binomial model can be interpreted only in terms of association, but not in terms of causality. As negative binomial model is non-linear, the non-linear IV implementation is available either via control function approach or via non-linear GMM (see e.g. (Cameron and Trivedi, 2005, 2010)). The control function approach requires too restrictive assumption of independence (rather than zero correlation) of instrument and error terms of the structural and first stage equations (Wooldridge, 2015). Non-linear GMM in exponential models can suffer from poor convergence (Nichols, 2008). Therefore, as Nichols (2008) suggests, we make logarithm transformation of exponential equation (3) and exploit standard 2SLS to overcome the endogeneity problem.

Table 4
OLS and 2SLS estimates for termination in contract execution.

Variables	All procedures (1)	Open auctions (2)	All procedures (3)	Open auctions (4)	All procedures (5)	Open auctions (6)
Panel A: Tenure in office (OLS)						
Tenure in office	−0.00070 (0.00048)	0.00017 (0.00059)	−0.00087 (0.00059)	0.00022 (0.00073)	0.034*** (0.0057)	0.033*** (0.0073)
Insider	0.0021 (0.0050)	−0.0054 (0.0061)				
R-squared	0.123	0.133	0.139	0.149	0.099	0.111
Panel B: Term in office (OLS)						
Term in office	−0.011*** (0.0024)	−0.0090*** (0.0029)	−0.011*** (0.0030)	−0.0079** (0.0037)	−0.015** (0.0061)	−0.017** (0.0071)
Insider	0.0077 (0.0050)	0.0022 (0.0061)				
R-squared	0.123	0.134	0.139	0.150	0.097	0.109
Panel C: Incumbent (OLS)						
Incumbent	−0.012*** (0.0041)	−0.014*** (0.0049)	−0.016** (0.0066)	−0.016* (0.0082)	−0.017*** (0.0064)	−0.022*** (0.0075)
Insider	0.0040 (0.0049)	0.00050 (0.0059)				
R-squared	0.123	0.134	0.139	0.150	0.097	0.109
Panel D: Term in office (2SLS)						
Term in office	−0.018 (0.015)	−0.023 (0.016)	−0.057*** (0.010)	−0.076*** (0.013)	−0.011* (0.0062)	−0.012* (0.0073)
Insider	0.013 (0.012)	0.013 (0.014)				
R-squared	0.123	0.133	0.136	0.145	0.097	0.109
Panel E: Incumbent (2SLS)						
Incumbent	−0.017 (0.017)	−0.025 (0.018)	−0.15*** (0.026)	−0.17*** (0.028)	−0.010 (0.0069)	−0.011 (0.0081)
Insider	0.0056 (0.0080)	0.0045 (0.0088)				
R-squared	0.123	0.134	0.132	0.142	0.097	0.109
Observations	99,767	76,947	66,561	51,920	33,206	25,027
Sample	Ins&Outs	Ins&Outs	Insiders	Insiders	Outsiders	Outsiders

Significance levels: **** 0.01 *** 0.05 ** 0.1.

Note: The table reports OLS estimates in Panels A–C and 2SLS estimates in Panels D–E from models (1), (2). Robust standard errors are in parentheses. The dependent variable is *Terminated contract* - dummy variable equal to one if the execution of the contract was terminated and zero otherwise. For the rest of details see note of [Table 3](#).

efficiency of the estimate for combined sample as the one mentioned above (see results for [Tables 2B and 3](#)). For governors-outsiders time in office significantly reduces the competition (Panels D–E, Columns 5–6), while for governors-insiders time in office has no detrimental effect (Panels D–E, Columns 3–4).

The second step of the robustness check concerns the governor's time in office. It is worth noting that the number of contracts, where governor's time in office is longer than three terms is significantly larger for insiders compared to outsiders (see [Table 6](#)). Thus, estimates of the coefficients for time in office in the regression models for insiders and outsiders might be driven by different intervals of tenure. Due to this fact, we exclude contracts corresponding to time in office longer than three terms and run 2SLS estimates with *Incumbent* as endogenous measurement of time in office. The results of the first stage and 2SLS estimates are presented in [Table 7](#). Similarly to the main results, [Table 7](#) shows that governors-insiders, on average, have higher competition (Panel A, Columns 1–2), lower normalized delays (Panel B, Columns 1–2) and there is no significant difference in probability of contract termination (Panel C, Columns 1–2) compared to governors-outsiders. Moreover, incumbent governors-insiders do not deteriorate competition (Panel A, Columns 3–4), and they reduce delays and probability of contract termination (Panel B-C, Columns 3–4). On the contrary, incumbent governors-outsiders deteriorate competition (Panel A, Columns 5–6), increase delays (Panel B, Columns 5–6) and do not reduce probability of contract termination (Panel C, Columns 5–6).

In the third step of the robustness check, we consider delays instead of normalized delays as a proxy of the quality of contract execution. The results are presented in [Table 8](#). These results support the main findings of [Table 3](#). On average, governors-insiders show lower absolute delays by 17–22 days ([Table 8](#), Columns 1–2) and delays become even shorter with time in office ([Table 8](#), Columns 3–4). Oppositely, delays of governors-outsiders increase by 22–24 days per term or by 24–26 days for incumbent ([Table 8](#), Columns 5–6).

7. Conclusion

In this paper, we present the evidence regarding to what extent and what type of autocratic governors at the sub-nation level may distort public procurement outcomes. In particular, we study the impact of the tenure of autocratic governors and their local ties on the restriction of competition in public procurement. We exploit contract-level procurement data on road construction in Russian regions

Table 5
Estimates for the exponential functional form of the number of bidders.

Variables	All procedures	Open auctions	All procedures	Open auctions	All procedures	Open auctions
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Tenure in office (Neg. binomial, <i>Number of Bidders</i> is dependent variable)						
Tenure in office	0.0016* (0.00084)	0.0022** (0.0010)	0.00025 (0.00094)	0.00020 (0.0011)	-0.062*** (0.0097)	-0.087*** (0.013)
Insider	0.035*** (0.013)	0.039** (0.016)				
Panel B: Term in office (Neg. binomial, <i>Number of Bidders</i> is dependent variable)						
Term in office	0.016*** (0.0037)	0.021*** (0.0044)	0.019*** (0.0043)	0.023*** (0.0051)	-0.010 (0.010)	-0.0025 (0.012)
Insider	0.030** (0.013)	0.032* (0.016)				
Panel C: Incumbent (Neg. binomial, <i>Number of Bidders</i> is dependent variable)						
Incumbent	0.016** (0.0064)	0.022*** (0.0076)	0.012 (0.0089)	0.0096 (0.010)	-0.027** (0.011)	-0.022* (0.012)
Insider	0.035*** (0.013)	0.040** (0.016)				
Panel D: Term in office (2SLS, ln(<i>Number of Bidders</i>) is dependent variable)						
Term in office	0.031** (0.015)	0.021 (0.015)	0.013 (0.012)	0.015 (0.013)	-0.014* (0.0079)	-0.017* (0.0089)
Insider	-0.00059 (0.013)	0.0097 (0.014)				
Panel E: Incumbent (2SLS, ln(<i>Number of Bidders</i>) is dependent variable)						
Incumbent	-0.030 (0.020)	-0.033* (0.019)	0.015 (0.031)	0.012 (0.028)	-0.014* (0.0087)	-0.016* (0.0097)
Insider	0.034*** (0.0100)	0.039*** (0.010)				
Observations	112,620	92,733	76,208	62,839	36,412	29,894
Sample	Ins&Outs	Ins&Outs	Insiders	Insiders	Outsiders	Outsiders

Significance levels: '***' 0.01 '**' 0.05 '*' 0.1.

Note: The table reports estimates from model (3) by using negative binomial model for *Number of Bidders* (Panels A–C) and 2SLS for ln(*Number of Bidders*) (Panels D, E). Robust standard errors are in parentheses. For the rest of details see Note of Table 2A.

Table 6
Number of observations corresponding to different intervals of tenure.

	Insiders	Outsiders	Total
1st term	46,178	28,836	75,014
2nd term	9557	10,028	19,585
3rd term	12,072	795	12,867
4th term	10,571	42	10,613
5th term	2101	0	2101

Note: The table reports the number of contracts signed during each of the corresponding governor's term. The total sample size is 120,180 observations. Column 1 reports the number of contracts for governors-insiders, Column 2 – for governors-outsiders.

during 2011–2014 and biographical information of governors. To overcome the problem of endogeneity of governor's tenure in office we exploit instruments based on the regional vote share of ruling party in past parliament elections. We show that governors without local ties in regions (*outsiders*) demonstrate predatory behaviour by restricting the level of competition in auctions. Such behaviour becomes worse with tenure in office. In contrast, governors with local ties in regions (*insiders*) demonstrate a higher level of competition and no tenure effect. These results persist after controlling for auction, procurer and regional characteristics and regional and year fixed effects. To have an unambiguous interpretation of these results, we also use ex-post data on contract execution.

The contracts of governors-outsiders have longer delays and tenure in office deteriorates this auction outcome, while delays of governors-insiders decrease with tenure. Moreover, governors-outsiders do not reduce the probability of contract termination with tenure, but governors-insiders do. Therefore, the restriction of competition by governors-outsiders, which worsens with tenure in office, cannot be explained by better contract execution. Thus, we conclude that favouritism operates in public contract allocation by governors-outsiders. Several robustness checks using subsamples, different model specifications and alternative measures of contract execution lead to similar results.

For weak democracies or sub-national autocracies, where results of democratic elections are manipulated, our findings provide the

Table 7
2SLS estimates for different dependent variables for sample with at most 3 terms.

Variables	All procedures	Open auctions	All procedures	Open auctions	All procedures	Open auctions
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Number of bidders						
First stage estimates						
UR regional share	0.011*** (0.00031)	0.013*** (0.00033)	0.012*** (0.00050)	0.016*** (0.00054)	0.016*** (0.00017)	0.017*** (0.00019)
UR federal share	-0.0035*** (0.00024)	-0.0044*** (0.00027)	0.0046*** (0.00033)	0.0050*** (0.00036)	-0.040*** (0.00024)	-0.039*** (0.00026)
2 SLS estimates						
Incumbent	-0.044 (0.035)	-0.053 (0.033)	0.089 (0.057)	0.067 (0.051)	-0.045*** (0.016)	-0.040** (0.018)
Insider	0.11*** (0.020)	0.12*** (0.022)				
Observations	100,833	82,845	64,461	52,968	36,372	29,877
R-squared	0.513	0.504	0.533	0.522	0.497	0.496
Panel B: Normalized delay (2SLS)						
Incumbent	0.042 (0.13)	0.15 (0.11)	-1.01*** (0.22)	-0.72*** (0.21)	0.20*** (0.055)	0.21*** (0.056)
Insider	-0.18*** (0.054)	-0.27*** (0.055)				
Observations	86,356	66,641	53,843	42,087	32,513	24,554
R-squared	0.062	0.065	0.053	0.059	0.070	0.080
Panel C: Terminated contract (2SLS)						
Incumbent	-0.0030 (0.016)	-0.012 (0.017)	-0.11*** (0.025)	-0.15*** (0.026)	-0.010 (0.0069)	-0.011 (0.0081)
Insider	0.0034 (0.0074)	-0.000026 (0.0083)				
Observations	89,027	68,667	55,853	43,651	33,174	25,016
R-squared	0.120	0.131	0.134	0.143	0.098	0.110
Sample	Ins&Outs	Ins&Outs	Insiders	Insiders	Outsiders	Outsiders

Significance levels: '***' 0.01 '**' 0.05 '*' 0.1.

Note: The table reports First stage estimates as well as 2SLS estimates from models (1) and (2) for time in office measured through *Incumbent* and different dependent variables: *Number of bidders* (Panel A), *Normalized delay* (Panel B), *Terminated contract* (Panel C). We present first stage estimates only for *Number of bidders*, since for other dependent variables the first stage estimates are similar. Sample includes only contracts with *Term in office* not larger than 3. Robust standard errors are in parentheses. For the rest of details in estimation see Notes of Tables 2A-4 for corresponding dependent variables.

Table 8
2SLS estimates for delays (in days) in contract execution.

Variables	All procedures	Open auctions	All procedures	Open auctions	All procedures	Open auctions
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Term in office						
Term in office	-5.38 (6.60)	7.29 (6.79)	-16.7*** (4.99)	-10.9* (6.09)	21.8*** (2.44)	23.7*** (2.79)
Insider	-3.87 (5.21)	-17.5*** (5.65)				
R-squared	0.131	0.132	0.130	0.130	0.139	0.143
Panel B: Incumbent						
Incumbent	24.9*** (7.56)	28.0*** (7.71)	-33.6** (13.4)	-14.6 (14.0)	24.4*** (2.70)	26.0*** (3.06)
Insider	-17.1*** (3.24)	-21.9*** (3.45)				
R-squared	0.132	0.132	0.130	0.131	0.140	0.144
Observations	96,651	74,562	64,106	49,997	32,545	24,565
Sample	Ins&Outs	Ins&Outs	Insiders	Insiders	Outsiders	Outsiders

Significance levels: '***' 0.01 '**' 0.05 '*' 0.1.

Note: The table reports 2SLS estimates from model (1). Robust standard errors are in parentheses. The dependent variable is *Delay* - difference between the actual execution date and the contract execution date. For the rest of details in estimation see Note of Table 3.

grounds for the implementation of policies wherein locally based governors are preferred compared with governors-outsiders. Moreover, there is an evidence that procurement regulation should limit the discretionary power of governors over public procurement outcomes.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ejpoleco.2019.101825>.

Appendix

Table A1

Variables and their sources

Name	Description	Type	Source
Procurement outcomes			
Number of bidders	Number of bidders in auction	Quantitative	www.zakupki.gov.ru
Delay	Difference between the actual execution date and contract execution date (days)	Quantitative	www.zakupki.gov.ru
Normalized delay	Delay normalized with respect to the contract duration period. Computed as the delay divided by the difference between the contract execution date and signing date	Quantitative	
Terminated contract	If contract was terminated during the execution period	Factor (1-yes, 0-no)	www.zakupki.gov.ru
Governors controls			
Tenure in office	Exact governor's time in office by the date of contract signing, (years)	Quantitative	https://iims.hse.ru/en/csid/databases
Term in office	Sequential number of the governor's term by the date of contract signing	Quantitative	
Incumbent	If the governor is in the office for the second or more terms by the date of contract signing	Factor (1-yes, 0-no)	
Age	Age of the governor by 01.01.2011, (years)	Quantitative	https://iims.hse.ru/en/csid/databases
Elected	If at the contract signing date the governor was elected (after October 2012).	Factor (1-yes, 0-no)	https://iims.hse.ru/en/csid/databases
Insider	If the governor had the job position in the same region during the pre-governance period for at least a total of three years	Factor (1-yes, 0-no)	https://iims.hse.ru/en/csid/databases
Contract controls			
Repeated contract	If the pair of procurer/supplier had 3 or more repeated contracts during 2011–2014. The first two contracts are not marked as repeated	Factor (1-yes, 0-no)	
Log contract price	Logarithm of contract price, (ln RUR)	Quantitative	www.zakupki.gov.ru
Log reserve price	Logarithm of reserve price, (ln RUR)	Quantitative	www.zakupki.gov.ru
Number of items	Number of different items specified in contract to be implemented	Quantitative	www.zakupki.gov.ru
Duration	Duration of contract (in days)	Quantitative	www.zakupki.gov.ru
Procurement procedure	Dummy variable for one of the four procurement procedure: open auction, request for quotation, tender, single source	Factor	www.zakupki.gov.ru
Bidding controls			
Number of applicants	Number of applicants to participate in auction	Quantitative	www.zakupki.gov.ru
Customer controls			
Log procurer contracts sum	Logarithm of the sum of procurer contracts' during the corresponding year, (ln RUR)	Quantitative	www.clearspending.ru
Regional subordination	If firm subordination type is regional	Factor (1 – yes, 0 – no)	www.clearspending.ru
Municipal subordination	If firm subordination type is municipal	Factor (1 – yes, 0 – no)	www.clearspending.ru
Activity: public administration	If firm's OKVED (Russian classification of economic activities) corresponds to "Public administration, military security and social services"	Factor (1-yes, 0-no)	www.clearspending.ru
Activity: unknown	If firm's OKVED (Russian classification of economic activities) is unknown	Factor (1-yes, 0-no)	www.clearspending.ru
Supplier controls			
Log supplier contracts sum	Logarithm of the sum of supplier contracts' during the corresponding year, (ln RUR)	Quantitative	www.clearspending.ru
Same region	If supplier and customer are from the same region	Factor (1-yes, 0-no)	
Regional controls			
Log spending	Logarithm of overall regional spending per capita during the corresponding year, (ln RUR)	Quantitative	www.clearspending.ru
Log GRP	Logarithm of GRP per capita during the corresponding year, (ln RUR)	Quantitative	www.gks.ru
Accident rate	Number of road accidents with injured people	Quantitative	www.fedstat.ru
Good roads share	Share of roads complying with standards, (in %)	Quantitative	www.fedstat.ru

Table A2
Descriptive statistics

Variable	All procedures				Open auctions			
	mean	sd	min	max	mean	sd	min	max
Number of bidders	1.585	0.91	1	19	1.505	0.92	1	16
Delay	-6.07	102.4	-442	654	-4.90	105.1	-442	654
Normalized delay	0.26	1.86	-0.996	51	0.29	1.88	-0.996	51
Terminated contract	0.075	0.26	0	1	0.085	0.28	0	1
Governors controls								
Tenure in office	5.15	5.04	0.00	21.24	5.21	5.06	0.00	21.24
Age	52.9	7.87	35	71	52.9	7.93	35	71
Elected	0.09	0.29	0	1	0.1	0.3	0	1
Insider	0.67	0.47	0	1	0.68	0.47	0	1
Term number	1.71	1.08	1	5	1.72	1.08	1	5
Incumbent	0.38	0.48	0	1	0.38	0.49	0	1
Contract/bidding controls								
Repeated contract	0.47	0.50	0	1	0.51	0.50	0	1
Log contract price	14.3	1.65	11.5	23.2	14.6	1.56	11.5	23.2
Log reserve price	14.3	1.66	11.5	23.2	14.7	1.58	11.5	23.2
Duration	147	179	11	3702	157	189	10	3702
Number of applicants	2.14	2.03	1	38	2.26	2.26	1	38
Open auction	0.77	0.42	0	1	1	-	-	-
Tender	0.01	0.07	0	1	-	-	-	-
Request for quotations	0.16	0.37	0	1	-	-	-	-
Single source	0.06	0.24	0	1	-	-	-	-
Number of items	1.08	1.08	1	122	1.08	1.17	1	122
Procurer controls								
Log procurer contracts sum	18.3	2.59	11.5	25.55	18.6	2.42	10.6	25.77
Regional subordination	0.20	0.40	0	1	0.20	0.40	0	1
Municipal subordination	0.80	0.40	0	1	0.80	0.40	0	1
Activity: public administration	0.68	0.47	0	1	0.67	0.47	0	1
Supplier control								
Log supp. contracts sum	17.7	2.25	10.2	25.8	18.0	2.03	10.6	25.8
Same region	0.92	0.27	0	1	0.92	0.27	0	1
Regional controls								
Log spending	10.2	0.58	5.26	12.25	10.2	0.56	5.26	12.25
Log GRP	12.6	0.51	11.1	15.3	12.6	0.50	11.06	15.3
Accident rate	3967	2876	24	12,010	3999	2832	24	12,010
Good roads share	0.41	0.19	0.008	0.95	0.41	0.19	0.008	0.95
Year controls								
Sign year 2011	0.19	0.39	0	1	0.17	0.38	0	1
Sign year 2012	0.30	0.46	0	1	0.29	0.46	0	1
Sign year 2013	0.34	0.47	0	1	0.35	0.48	0	1
Sign year 2014	0.17	0.38	0	1	0.19	0.39	0	1

Table A3
Regional characteristics

	min	q25	median	q75	max	mean	sd
Population	42,906	774,751	1,194,781	2362 928	2,035,490	1729 044	1,742,850
GRP per capita (RUR)	85,191	181,088	256,256	340,473	3,971,959	376,999	521,351
Overall spending per capita (RUR)	445	17,774	23,508	31,989	169,826	31,848	29,302
Number of road traffic accidents with injured	28	1010	1960	3111	11,617	2431	2098
Share of roads of regional significance with good quality (%)	3	25	36	50	84	38	18

Table A4
Governors characteristics

	Mean	sd	min	q25	median	g75	max
Tenure in office (up to the end of 2014 or leaving the office, in years)	6.52	5.26	1	2	5	9	22
Age (by 2011)	52.71	8.08	35	47	53	59	71
Governor was elected after October 2012 - dummy	0.34	0.48					
Insider - dummy	0.69	0.46					

Table A5
Comparing means for initial reduced samples

Variable	Population		Sample of analysis	
	Mean	Number of contracts	Mean	Number of contracts
Number of bidders	1.59	120,356	1.585	112,620
Normalized delay	0.60	119,851	0.26	96,651
Terminated	0.075	119,851	0.075	99,767
Duration	149	144,149	147	120,180
Repeated contract	0.46	144,149	0.47	120,180
Log contract price	14.175	144,149	14.3	120,180
Open auction	0.76	144,149	0.77	120,180
Tender	0.006	144,149	0.01	120,180
Request for quotations	0.17	144,149	0.16	120,180
Single source	0.06	144,149	0.06	120,180
Regional subordination	0.19	144,149	0.20	120,180
Municipal subordination	0.81	144,149	0.80	120,180

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