Governance of Commons in a Large Nondemocratic Country: The Case of Forestry in the Russian Federation

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A substantial portion of Elinor Ostrom’s work critically examines the interplay between decentralization and efficient governance of commons. Ostrom’s suggestion is to shift from the dichotomous view of decentralization versus centralization to a more complex picture, labeled “polycentric governance.” This article applies this theory and uses a novel data set to test how the allocation of jurisdictions between the center and the regions affects forest governance in the Russian Federation. The main finding confirms the central argument of polycentricity, that is, the combination of federal involvement and the involvement of subnational interest groups improves the efficiency of forestry management. However, when either federal government or subnational nongovernmental actors dominate forest governance, the efficiency of forest management decreases.

The concept of “polycentric governance” forms the core of Elinor Ostrom’s view of the much-disputed issue of the decentralization of resource governance. Generally, E. Ostrom’s approach to the governance of the commons demands that one acknowledges the multiplicity of institutional arrangements and investigates the details of particular institutions; otherwise, oversimplified pictures can result in harmful policy advice (E. Ostrom 1990, 2012). In a similar way, the major element of polycentric governance, as developed by Vincent and Elinor Ostrom, is its focus on the interplay of various decision-making centers (V. Ostrom, Tiebout, and Warren 1961), specifically, central and local, governmental and private, instead of a search for a single “optimal” governance unit (McGinnis 1999; E. Ostrom 2008, 2010; Nagendra and E. Ostrom 2012).

This article analyzes the decentralization of forest governance in the Russian Federation within the theoretical framework of polycentric governance and the research agenda outlined by Andersson and E. Ostrom (2007). As Tucker and
E. Ostrom (2005, 102) note, “while political science has looked closely at institutional arrangements, few theories or approaches have looked explicitly at linkages across levels and scales.” Our focus is on the allocation of authority in the governance of forestry in the Russian regions. Since the early 1990s, Russia has experimented with the reallocation of authority between the center and the regions in general and in forestry in particular. These experiments appear unsuccessful. An example of highly inefficient management in the Russian forest industry is the disastrous forest fires of 2010, which resulted in a massive loss of lives, economic costs, and the destruction of forests.

Moreover, there is substantial variation in the efficiency of forest governance in Russia. Russian regions differ in the level of interaction among actors at various levels (federal, regional, and local bureaucrats and politicians, as well as nongovernmental organizations and businesses). We use this variation to test the main implication of E. Ostrom’s agenda that combining different actors across the various levels is the optimal strategy for securing a high level of efficiency in the governance of the commons. We test the theoretical premises of E. Ostrom’s agenda with quantitative work based on a novel data set regarding the performance of Russian forestry, including data on the quality of forestry management and the participation of various actors in it.

The article proceeds as follows. The next sections outline E. Ostrom’s theory of polycentric governance followed by a summary of comparative studies of governance in the Russian regions and description of governance of forests in Russia. We derive hypotheses based on polycentric governance theory, describe the variables, and present the results of the econometric analysis and the general findings.

**Polycentric Governance and Natural Resources**

The central point in E. Ostrom’s analysis of resource governance is that decentralization is associated with both advantages and disadvantages. On the one hand, decentralization can be beneficial because of its ability to use the relevant actors’ knowledge of local circumstances, reduced enforcement costs and redundancy in institutional arrangements and the involvement of trustworthy participants in the governance of resources. On the other hand, first, self-organization at the local level may fail or even never be created, depending on the motivations of the actors involved. Second, decentralization may be associated with discrimination in terms of access to natural resources. Third, although decentralization may be better in terms of the use of local knowledge, it is often inferior to centralized governance with respect to benefitting from scientific knowledge regarding the optimal use and replenishment of resources.
Fourth, decentralization is often unable to cope with large-scale resource issues (E. Ostrom 1999).

A particular case in which decentralization fails to deliver the expected outcomes occurs when it "seems to have further strengthened the dominant group of [local, regional] political and economic elites" (the terms in brackets are ours; Andersson and E. Ostrom 2007, 2). Specifically, E. Ostrom’s work calls attention to phenomena such as so-called "local tyranny" where some subnational regions may be dominated by a local leader or an elite who only change rules for his own advantage (Andersson and E. Ostrom 2007, 10). Absent local accountability, the decentralization of resource governance is unable to deliver positive outcomes (Larson 2003; Yilmaz, Beris, and Serrano-Berthet 2010). A number of researchers have analyzed the problem of elite capture in local resource governance (Platteau 2004; Platteau and Gaspart 2003; Dasgupta and Beard 2007). This factor plays an important role in the post-Socialist context (Theesfeld and Schmidt 2011).

Ultimately, decentralization per se "does not uniformly lead to better or worse local governance" (Andersson and E. Ostrom 2007, 2); hence, one must study the "nestedness of political actors within larger political systems" and consider that "a particular political order depends on the relationships among governance actors at different levels and the problems they are addressing" (Andersson and E. Ostrom 2007, 3). This element is key to the polycentric governance perspective: Although individual actors could contribute to more efficient governance, the combined involvement of various actors is what delivers optimal quality governance. The involvement of these multiple actors is meant to be complementary and "exist at higher or lower levels of governance that can help offset some of the imperfections" (Andersson and E. Ostrom 2007, 3). The effectiveness of resource governance is determined not by the formal assignment of authorities but rather the interaction of combined efforts from various levels of governance and their provision of incentives to one another.

The ideas associated with E. Ostrom’s polycentric governance have been empirically assessed over the years (Andersson and E. Ostrom 2008; Andersson 2003, 2013; Alcorn and Toledo 1998). This article adds to that literature by applying the polycentric governance approach to the context of Russian federalism and the decentralization of forestry and answering this question: Why have some Russian regional governments been more effective than others in governing their forests?

Decentralization and Governance in Russia

The heterogeneous outcomes of decentralization in different countries in terms of the quality of governance have spurred a large comparative literature (Faguet 2014). In addition to cross-country variation, decentralization often results in substantial
within-country variation, as has also been the case in Russia. Russian regions differ in terms of both political regimes (Stoner-Weiss 1997; Gel’man 1999; Hale 2003; Sharafutdinova 2006; Obydenkova 2012) and bureaucratic practices (Isakova and Plekhanov 2011). A particularly important feature of the variation is that, in many cases, it occurs despite homogenous legal norms across all regions that are, however, implemented or enforced differently by regional bureaucrats (Lambert-Mogiliansky, Sonin, and Zhuravskaya 2007; Gimpelson, Kapelyushnikov, and Lukyanova 2010; Yakovlev and Zhuravskaya 2013; Schultz, Kozlov, and Libman 2013).

Our work, therefore, fits into a more general literature which examines why certain regions in Russia exhibit higher quality governance than others. One strand of this research examines how institutional variation across Russian regions affects economic growth and business performance at the regional level (Van Selm 1998; Popov 2001; Mau and Yanovsky 2002; Brown, Earle, and Gehlbach 2009; Libman 2012; Ahrend 2005, 2012). A second set of studies investigates how these parameters influence the market entry of entrepreneurs (Gerber 2001), firms (Bruno, Byutchkova, and Estrin 2013), and foreign investors (Stoner-Weiss 2000; Obydenkova 2008; Ledyaeva, Karhunen, and Kosonen 2013). A number of studies link these two approaches, assessing both the effects of entrepreneurship on growth and institutions on entrepreneurship (Berkowitz and DeJong 2003, 2005, 2011). The third set of studies considers the level of corruption as a function of regional institutional characteristics (Dinino and Orttung 2005; Sharafutdinova 2010). The fourth strand of literature investigates the quality of public goods provision, primarily in education, healthcare, and utilities (Hauner 2008; Freinkman and Plekhanov 2009; Vasilyeva and Nye 2013).

A number of studies highlight the crucial role contacts with local interest groups and businesses played in the determining the quality of governance in a region. In the 1990s, many Russian regions experienced "state capture" where regional governments created alliances with a number of privileged firms in their regions. These firms received support and protection from the federal government (Cai and Treisman 2004; Slinko, Yakovlev, and Zhuravskaya 2005; Polishchuk 2004) and in turn supported the autocratic regimes developing in the regions (McMann 2006; Obydenkova and Libman 2012; Libman and Obydenkova 2013). In the early 2000s, these alliances were threatened by both the centralizing pressure of the Vladimir Putin government and the development of large, inter-regional business groups (Orttung 2004; Guriev, Yakovlev, and Zhuravskaya 2010). Nevertheless, in many sectors and regions, these alliances remained highly resilient or were re-established by new dominant firms and new governors (Nureev 2010).

We contribute to the fourth literature (also emphasizing the importance of regional interest groups) by focusing on the governance of natural resources and, specifically, of forestry. While some recent research has analyzed the variations in
resource governance across Russian regions (Libman 2013; Wendland, Lewis, and Alix-Garcia 2014), the variation in the efficiency of resource governance, driven by interplays of various actors, has yet to be addressed. This is the issue we investigate using the polycentricity framework.

**Governance in Russian Forestry**

Governance in Russian forestry has three important components: property rights and forest users, decentralization of forest governance, and incentives of regional bureaucrats.

**Property Rights and Forest Users**

Russia controls the largest forest area in the world, accounting for approximately 20 percent of global wooded area (FAO 2011). Its share in the lumber output is lower. It is the second largest producer of industrial roundwood in the world, accounting for approximately 10 percent of global production; the fourth largest producer of sandwood with 8 percent of global production; and has a much smaller share in the world output of wood fuel, wood panels, pulp, and paper. Russian forests have a long history of mismanagement, resulting in both low productivity and the systematic overuse of resources (Carlsson 2000).

In Russia, all forests (with some minor exceptions) are state-owned. There are two means to access these forests. The first is established for the local population, which under certain conditions is allowed to use forest resources for noncommercial purposes. In recent years (and particularly during the period of investigation), the bureaucratic barriers faced by this group increased. However, the enforcement of forest law is limited by forest agencies’ lack of personnel and the prevalence of informal norms of forest use.

The second access is for commercial forest users who in contemporary Russia emerged as an outcome of the transformation of the Soviet “lespromkhoz” the territorial organization responsible for both forest use and forest development. After the reforms were implemented, most lespromkhoz were privatized, resulting in a highly fragmented logging industry. The privatization process was generally nontransparent in many cases the primary owners turned out to be former Soviet managers and local administrators (in others, the companies remained at least partially owned by regions and municipalities). Over the past decade, there was a trend toward concentration in the logging industry, driven by pulp and paper companies attempting to secure a stable flow of raw materials. However, the current share of small logging companies remains substantial. (See Supplementary Appendix A-1 for more information on the industrial organization of the Russian logging sector.)
As forests are state-owned, logging companies receive forest use rights through different types of temporary contracts with the government, particularly fixed-term lease agreements and timber plantation purchase agreements (see Supplementary Appendix A-2 for more details). Generally, forest use rights should be allocated through auctions. In reality, in many territories there are strong ties between the logging companies and the local administration; the auctions are conducted such that only these affiliated companies actually have opportunity to win (Yaroshenko 2008). The logging rights in the lease agreements are limited by regular governmental approvals. The leaseholders are required to implement measures ensuring protection and development of forests (including reforestation) according to a plan agreed to by the government. For forests covered by short-term timber plantation purchase agreements, the government performs these activities, typically based on a procurement contract with a private entity.

This institutional framework could give rise to a variety of possible outcomes. On the one hand, coalitions among local commercial forest companies and the regional and local administrations may behave in a predatory manner, extracting rents and disregarding the replenishment of forest resources. For commercial forest users, the absence of protected property rights could be incompatible with incentives to invest in the replenishment of natural resources. Furthermore, the Soviet practice of considering forests an “unlimited resource,” which does not require protection (which is a form of the more generic attitude of Soviet citizens toward public property, see Timofeev 2000), persists in many regions (CNSI 2005). Russian bureaucrats have limited incentives to care for forests (as shown below). Finally, the nontransparent privatization of logging companies could result in a significant presence of short-term investors in this area, who would have no long-term strategic plans (or may use logging to exert market pressure against pulp and paper and wood processing companies). These informal rent-seeking alliances can be considered one of the major problems facing the contemporary Russian forest sector.

On the other hand, the behavior of forest users is not necessarily predatory. Torniainen et al. (2010) report the results of a survey on the attitudes of Russian forest users and argue that the majority of them believe that private forest users should invest in the development of forests and are planning new investments. Furthermore, different Russian regions are characterized by different levels of competition among logging companies (Torniainen and Saastamoinen 2007). In more competitive environments, the rent-seeking coalitions are more difficult to develop. This is also the case if decision making in the forest sector is more pluralistic and transparent and involves a variety of stakeholders (including the local population). However, involvement of stakeholders does not necessarily result in adherence to formal laws contained in the Forest Code; in many cases, Russian territories develop systems of informal rules, which are accepted by all local
forest users. Empirical case studies demonstrate that there is a difference between "grey" and "black" illegal logging; while the former is accepted and even endorsed by forest users, the latter is condemned and results in public disapproval. Regional and local bureaucrats are often more familiar with these informal rules than with formal regulations (CSNI 2005). The informal rules can, to some extent, prevent predatory forest use.

The interactions among the local population, commercial forest users and governments are influenced by various nongovernmental organizations (NGOs). In Russia, environmental NGOs at the regional and local levels are relatively weak (Carlsson and Lazdins 2004). The low level of social activism in Russia hampers their development. Moreover, in recent years, Russian law became more hostile to NGOs. A further problem is that at the subnational and national levels, Russia has a long tradition of government-organized NGOs, which are often established by the regional administrations with the purported goal of protecting the environment, but in fact merely support any decisions made by the government (Usacheva 2011). However, the level of NGO activity differs from region to region. For example, the Komi Republic has both, a number of large and active NGOs and an active, well-organized local population willing to participate in public hearings regarding forest governance decisions and engage in negotiations with forest users (see Supplementary Appendix A-3 for more information on this and other cases of involvement of regional nongovernmental actors).

**Decentralization of Forest Governance**

The behavior of governmental agencies and bureaucrats is influenced by the pattern of decentralization in forest governance. We define the concept of decision-making decentralization as a system where subnational bureaucrats and politicians have exclusive authority over making certain decisions, which are difficult for the central government to reverse (Treisman 2007). Decision-making decentralization may have various origins. In a classical federalism design, decision-making decentralization results from a legal framework guaranteeing that certain decisions are exclusively made in the lower-tier jurisdictions. In many cases, however, this decentralization is not *de jure* but *de facto*: where a lack of control over subnational decision makers allows the latter to capture a measure of the central government’s authority. There is substantial evidence that such *de facto* decision-making decentralization played an important role in Russia, at least in the 1990s (Stoner-Weiss 2006; Libman 2010) and may explain the differences in bureaucratic practices.

Over the past two decades, Russian forest governance has had several consecutive reforms (Torniainen, Saastamoinen, and Petrov 2006; Wendland et al. 2011; Ulybina 2014). Until 2007, the development of Russian forest governance was
characterized by two trends: a consistent centralization process regarding decision making with respect to forest access rights and (since 1997) the federal government’s exclusive responsibility for reforestation and the replenishment of forest resources (implemented through a specialized agency). The new Forest Code, which was passed in 2006, changed the situation (see Supplementary Appendix A-2). The federal government’s responsibilities as outlined by the new Code include: determining the minimal standards of forest use, assessing regional compliance with these standards, and determining the legal provisions for forest auctions. All other responsibilities were transferred to subnational governments including establishing specific standards for forest use for particular locations (which should comply with federal standards), determining the allocation of forest access rights to particular private leaseholders and procurement contracts (the federal government merely establishes the procedure in this respect), and implementing on-site monitoring of leaseholders’ activities. All noncommercial forest use by the local population is the sole jurisdiction of regional governments.

This system makes regions powerful players in terms of both de jure and de facto decision-making authorities. In terms of the former, the federal government has no legal control over one of the most crucial issues of forest governance: who actually receives access to forest resources. In terms of de facto decision making, on-site monitoring is performed by regional bureaucrats and the strong role of informal norms in forestry allows the regions to impose very different conditions for different forest users (even deviating from the federal standards). Therefore, while the federal government still establishes the basic rules for forest use, it cannot actually ensure compliance with these rules. Legally, most of the authorities described by the Code are federal responsibilities delegated to the regional governments, because, according to the Constitution, forests are federal property. This has two implications. First, the federal government can, under certain conditions, retract delegated authority, but this option has yet to be employed or seriously considered thus far (in any event, the federal government does not have the necessary manpower to implement on-site forest governance since regional branches of the federal agency existing before 2006 were disbanded). Second, most payments for forest use continue to flow to the federal budget. Therefore, the federal government instituted a system of transfers to regions for their forest-related functions, with a substantial discretionary component.

Incentives of Regional Bureaucrats

The incentive structure faced by regional bureaucrats in the forest governance is suboptimal. At the time of our study the highest-ranked regional bureaucrat in Russia the governor was appointed by the federal government (this was abolished
in 2012). These appointments were made generally based on political loyalty to the central government rather than the economic performance of the regions or the provision of regional public goods (Reuter and Robertson 2012; Rochlitz 2013). The lower-level bureaucrats have very low job and payment security and can be easily fired, particularly if their superiors change (Schultz, Kozlov, and Libman 2013). This uncertainty can make the regional bureaucrats myopic and generally not interested in improving the quality of forest governance. Furthermore, the allocation of public funding to individual agencies and the salaries of individual bureaucrats are typically established based on a number of formal quantitative criteria, which have to be fulfilled by public officials. Regional bureaucrats, therefore, focus on fulfilling these formal criteria instead of being concerned with the actual results of their policies, often leading to disastrous consequences (Paneyakh 2011). Moreover, Russian governmental authorities typically punish bureaucrats in the case of undesired attention such as massive public protests or high-profile media conflicts.

Thus, one could hypothesize that Russian bureaucrats are motivated by three factors. First, given the lack of control by the federal government and their myopic behavior, the bureaucrats could concentrate on extracting rents from forest users leading to increased corruption. For example, in the Leningradskaya Oblast, decentralization resulted in the de facto capture of the forest sector by the regional governor’s family (for more detail see Supplementary Appendix A-3). Second, bureaucrats could exploit their greater autonomy in decision making and control over enforcement to attempt to maintain (or even, to some extent, formalize) the informal norms in many regions either because the bureaucrats internalized them (being from the region and having spent their careers in the forest sector) or they may be concerned by the potential for substantial public disapproval in the event that these norms are ignored. Third, bureaucrats could primarily attempt to maximize federal funding, which would require a particular focus on fulfilling the quantitative indicators established by the federal administration. Such a focus might lead bureaucrats to ignore specific regional characteristics.\(^3\)

For the purposes of this article, it is necessary to note that the extent to which each of these motives dominates the behavior of regional bureaucrats is likely to vary across regions. Different regions discharged the responsibilities transferred to them by the federal government with varying degrees of efficiency and adjusted to the new regulations at different rates (Rosselkhoz 2007). Similarly, the central government implemented heterogeneous subsidies to the regions for forestry management. We hypothesize that the spatial variation in governance modes occurring after the reform should affect the effectiveness of forest governance.

Below, we will attempt to operationalize particular characteristics affecting forest governance and formulate hypotheses with respect to their effects. We must stress that while the Forest Code introduced a number of important institutional changes (including a transition toward an increased commercialization of forests), the
provisions of the Code were established to apply identically to all Russian regions. Thus, we primarily investigate cross-sectional variation: how under a set of identical legal provisions, different regions created different models of governance with different outcomes in terms of efficiency.

Hypotheses

In line with the polycentric governance framework, we will attempt to determine how vertical and horizontal linkages affect forest governance. By horizontal linkages, we mean the intensity of ties between bureaucrats and what we call regional nongovernmental actors: forest users (commercial and noncommercial) and NGOs. This broad definition is necessary in the Russian context. While these groups of actors are legally distinct, in reality the border between the groups is vague. For example, logging by noncommercial users may be done for commercial purposes (reselling timber through intermediaries); commercial users may operate at a substantial loss merely to prevent increased poverty; or, forest users may establish NGOs to represent their interests. By vertical linkages, we mean the intensity of connections between the regional and federal governments.

The vertical and the horizontal linkages are only meaningful if the respective actors are involved in the decision-making process and have a substantial influence over it. In terms of the horizontal linkages, this involvement is particularly easy to identify if it occurs within an institutionalized structure (forest councils, public hearings, or systematic negotiations between different groups of forest users), which exist in certain regions but not in others. In case of the Komi Republic provides numerous examples of how this institutionalized involvement could function (see Supplementary Appendix A-3). We acknowledge that involvement of forest users may be associated with unobserved connections; however, if such involvement is institutionalized, it is more likely to be particularly strong and regular.

In terms of the vertical linkages, the federal bureaucrats are not allowed to intervene in the day-to-day decisions of forest authorities, with the exception of selected monitoring activities (e.g., the approval of Forest Plans). However, they are likely to indirectly affect such decision making by manipulating federal transfers. The monitoring effort of federal bureaucrats is also unlikely to be equally distributed and it is reasonable to hypothesize that it is stronger in regions where federal funding is higher. In line with Andersson (2003) and Andersson and E. Ostrom (2008), we capture the vertical linkages by examining the magnitude of subsidies the federal government pays to the regions.

Based on E. Ostrom's conceptual framework applied to the Russian forest sector, we can formulate the following set of hypotheses concerning the effect of horizontal linkages. The first hypothesis is that involvement of local forest users and NGOs
will limit rent-seeking due to the increased importance of informal norms and the desire to prevent substantial public disapproval, which would be noticed by the federal government. Conversely, the involvement of local forest users may result in the emergence of coalitions between bureaucrats and logging companies focusing on the exploitation of resources. The examples of the Komi and the Chuvashia Republics demonstrate the consequences of both scenarios. Therefore, we propose two contradictory hypotheses:

H1a: The performance of a subnational government with respect to resource management will improve if regional nongovernmental actors are more strongly involved.
H1b: The performance of a subnational government with respect to resource management will worsen if regional nongovernmental actors are more strongly involved.

In terms of the effect of the vertical linkages, again, two hypotheses are possible. On the one hand, strong vertical linkages could make regional bureaucrats particularly focused on complying with quantitative criteria established by the federal government. This could result in a decline in the quality of forest governance, as these top down criteria could be inadequate for the region-specific forest governance issues. On the other hand, strong vertical linkages are associated with stronger federal control over how federal subsidies are spent. It may prevent outright rent-seeking by coalitions of regional bureaucrats and forest user. Again, we formulate two conflicting hypotheses.

H2a: The performance of a subnational government with respect to resource management will improve if the federal government is more strongly involved.
H2b: The performance of a subnational government with respect to resource management will weaken if the federal government is more strongly involved.

The polycentric governance framework suggests that we also have to consider further hypotheses, associated with the interaction of multiple linkages. In regions where both vertical and horizontal linkages are particularly developed, this could further augment the quality of forest governance. Even if we find that performance weakens with the involvement of the federal government or nongovernmental actors, it may be that the presence of both vertical and horizontal linkages alleviates the problems we have described. On the one hand, the rent-seeking motives of regional interest groups may be kept at bay by the interventions of the federal government. On the other hand, as regional bureaucrats must consider the positions of regional nongovernmental actors to some extent, they also cannot behave in an entirely opportunistic manner, or merely satisfy the requirements of the federal government. Furthermore, the involvement of regional
nongovernmental actors in resource governance guarantees some flow of local knowledge to the relevant decision makers such flows should occur simply by virtue of regular contacts with those who actually have access to this knowledge. Thus, we conjecture that:

H3: The performance of a subnational government with respect to resource management will improve if there is strong involvement on the part of both regional nongovernmental actors and the federal government.

The third hypothesis is the central one for our research, as it reflects the key argument of polycentric governance theory the combination of multiple actors interacting across various levels is the best possible strategy for improving the governance of forestry.

Operationalization of Variables and Empirical Strategy

As the primary outcome of interest with respect to forest governance in the Russian regions and our dependent variable, we employ an indicator of reforestation activity (total territory (in hectares) covered by reforestation measures in 2009, the first year following the transition period when the decentralization measures were in full effect). The reforestation data are reported by the Russian Statistical Agency and the Russian Forest Agency. It is reasonable to assume that in regions with significant reforestation activity (\textit{ceteris paribus} the size of the forest area and various measures of forest disturbance), forest governance is organized in a way that prevents degradation of the commons. The particular reforestation measures in each region are determined by the Reforestation Projects passed by the local and regional authorities and mandatory for all forest users. These projects should follow requirements established in the Reforestation Rules of the federal government, although deviations from the rules have occasionally been reported for individual regions.\textsuperscript{5}

The main explanatory variables we employ capture the interaction of the regional government with two key types of actors involved in polycentric governance: the federal government and regional nongovernmental actors, as well as the interplay of both.

First, we use an index developed by the World Wide Fund for Nature (WWF) (NRA 2010) capturing the extent to which nongovernmental actors are involved in forest governance in Russian regions. The index is computed based on three characteristics: (i) the informational transparency of regional forest governance; (ii) the existence of an institutionalized feedback mechanism for communication between the regional forest agency and the public and of a consultative council representing various groups; and (iii) the existence of reports on conflicts associated with forest governance compiled by NGOs, unions, and mass media.
The index takes the values A1 (the most pronounced involvement of regional nongovernmental actors in forest governance), A2, B1, B2, and C: based on these values, we generated a five-point index ranging from 1 to 5 (with 5 being the best outcome). Federal law does not require regional governments to include regional and local interest groups in the decision-making process, except for certain relatively broad conditions that are easy to circumvent. Involvement is therefore entirely determined at the regional level.

Second, to capture the incentives of the federal government, we examine the size of federal transfers paid to cover the salaries of bureaucrats in the regional forest service (in thousands of RUR). Federal transfers in the Russian system can be attributed to either the provision of resources to regional forest administrations or the change in incentives for their work. The transfers for salaries are the most likely to have a strong incentive effect (which we can therefore separate from the effect on the endowments of regional governments). If we run our regressions while controlling for the size of the forest area (and, therefore, for the demand for human resources for reforestation purposes), the effect of the use of federal transfers for salaries indicates how large the actual payments to the bureaucrats in the forest sector will be.

Third, consistent with hypothesis H3, we also include an interaction term between the WWF index and federal transfers. The WWF index and the inflow of federal transfers are not correlated (with a correlation coefficient of 0.087), and hence we do not need to be concerned that we have exacerbated multicollinearity problems by including the interaction term.6

To isolate the effect we are interested in, we run regressions including a large number of control variables, measuring the size of the regional forest sector and natural environment, as well as extent of human interventions in the forest sector. These variables should consider another major concern voiced by E. Ostrom (2005, 2010): the need to consider the variation in the ecological environment (but also the socioeconomic environment) when studying institutions. The details on the control variables and the summary statistics are reported in Supplementary Appendices A-7 and A-8. The sample consists of seventy-two regions, which is the absolute majority of all regions in Russia (sample composition is discussed in Supplementary Appendix A-9). All regressions are estimated using ordinary least squares (OLS). We estimate our regressions by adding controls individually to ensure that our results are not driven by multicollinearity.

Results

Table 1 summarizes the main findings of the article. In all regressions, we observe a significant and positive effect of the interaction term between federal transfers and the WWF index. Both baseline terms are generally significant and have a negative
Table 1 Effects of federal incentives and local actors on reforestation activity (2009)

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<td>actors’ involvement</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log forest area</td>
<td>0.898***</td>
<td>0.504***</td>
<td>0.626***</td>
<td>0.518***</td>
<td>0.349**</td>
<td>0.317*</td>
</tr>
<tr>
<td></td>
<td>(0.105)</td>
<td>(0.118)</td>
<td>(0.085)</td>
<td>(0.123)</td>
<td>(0.163)</td>
<td>(0.172)</td>
</tr>
<tr>
<td>Log GDP per capita</td>
<td>0.297</td>
<td>0.003</td>
<td>0.009</td>
<td>0.04</td>
<td>0.006</td>
<td>0.008</td>
</tr>
<tr>
<td></td>
<td>(0.305)</td>
<td>(0.231)</td>
<td>(0.194)</td>
<td>(0.247)</td>
<td>(0.223)</td>
<td>(0.211)</td>
</tr>
<tr>
<td>Population</td>
<td>0.117</td>
<td>0.022</td>
<td>0.106</td>
<td>0.075</td>
<td>0.127</td>
<td>0.109</td>
</tr>
<tr>
<td></td>
<td>(0.083)</td>
<td>(0.078)</td>
<td>(0.083)</td>
<td>(0.086)</td>
<td>(0.081)</td>
<td>(0.080)</td>
</tr>
<tr>
<td>Log distance to Moscow</td>
<td>0.237**</td>
<td>0.033</td>
<td>0.076</td>
<td>0.021</td>
<td>0.056</td>
<td>0.095</td>
</tr>
<tr>
<td></td>
<td>(0.106)</td>
<td>(0.105)</td>
<td>(0.078)</td>
<td>(0.109)</td>
<td>(0.118)</td>
<td>(0.126)</td>
</tr>
<tr>
<td>Log timber harvesting</td>
<td>0.326***</td>
<td>0.273***</td>
<td>0.284***</td>
<td>0.301***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
<td>(0.075)</td>
<td>(0.073)</td>
<td>(0.069)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log timber export to</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>other regions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of forestry products in total foreign trade exports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.946**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.362)</td>
</tr>
<tr>
<td>Deciduous forest</td>
<td>0.445</td>
<td>0.534</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.655)</td>
<td>(0.681)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coniferous forest</td>
<td>1.267**</td>
<td>1.080**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.509)</td>
<td>(0.493)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log federal transfers</td>
<td>0.072</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for reforestation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(3.517)</td>
<td>(2.871)</td>
<td>(2.320)</td>
<td>(3.028)</td>
<td>(2.957)</td>
<td>(2.801)</td>
</tr>
<tr>
<td>Observations</td>
<td>72</td>
<td>72</td>
<td>70</td>
<td>72</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>R²</td>
<td>0.807</td>
<td>0.840</td>
<td>0.908</td>
<td>0.849</td>
<td>0.852</td>
<td>0.856</td>
</tr>
</tbody>
</table>

Note: Robust Huber White standard errors in parentheses. *** significance at 1 percent level, ** 5 percent, * 10 percent. Significant results marked bold. All regressions estimated using OLS.
Figure 1 Effect of federal incentives on reforestation activity (2009).

Note: The solid line depicts the magnitude of the marginal effect of the federal transfers for salaries in the forest sector conditional on the index of regional nongovernmental actors' involvement in the forest governance. The dotted lines represent 90 percent confidence intervals.

The coefficient. Figures 1 and 2 plot the marginal effects of our main explanatory variables for regression reported in Column (6) of the table 1.

The results of the regression analysis reveal three important observations. First, if there is no strong involvement by regional nongovernmental actors in forest management, federal involvement in regional forestry management through federal transfers to cover salaries has a negative impact on the quality of regional forestry governance. Second, the WWF index of regional nongovernmental actors' involvement in forest governance also has a negative effect if the federal government's involvement is low. However, the combination of federal transfers and the involvement of regional nongovernmental actors has a significant and positive impact on the quality of regional management. We also estimated regressions excluding the interaction term: both baseline terms (transfers and the involvement of regional nongovernmental actors) then become insignificant. Thus, our results provide strong evidence in favor of the main hypothesis, H3, derived from E. Ostrom's theory. Our findings are also to some extent consistent with hypotheses H1b and H2b. We discuss the implications of our findings in the next section. In Supplementary Appendix A-5, we report the results of a number of robustness checks, which all support the main findings of the article.
Figure 2 Effect of local actors on reforestation activity (2009).

Note: The solid line depicts the magnitude of the marginal effect of the index of regional nongovernmental actors' involvement in the forest governance conditional on the federal transfers for salaries in the forest sector. The dotted lines represent 90 percent confidence intervals.

Discussion

From the perspective of the general picture of governance in the Russian forest sector provided in the third and fourth sections, our results have the following implications. If the federal government demonstrates little interest in how forest governance is organized in the region or provides little support for it, this creates more space for regional interest groups to engage in rent-seeking. The lack of accountability for regional bureaucrats (due to the absence of both regional gubernatorial elections and federal oversight) allows them to establish alliances with local forest users (as mentioned above, in many cases direct successors of the Soviet lespromkhoz with nontransparent property structures); their short-term orientation makes both parties to these alliances reluctant to invest effort in reforestation as in the case of Chuvashia. The institutions created to provide mechanisms for feedback from regional nongovernmental actors will be captured by interest groups and inevitably become a tool by which rent-seeking coalitions increase their influence (for a similar discussion, see Veron et al. 2006). This is an instance of the "local tyrannies" described by E. Ostrom. The institutions may even be designed in a manner that ensures that only particular groups actually gain access to forest governance. Although regional interest groups possess local knowledge and are better at enforcing their rules, it is likely that given the proliferation of "local
tyrannies," this local knowledge and enforcement advantages will be used for rent-seeking rather than effective forest governance. The existence of informal norms in Russian forestry implied by prior qualitative research seems insufficient to encourage leaseholders and regional governments to invest in reforestation.

If the federal government provides substantial transfers (indicating that incentives to comply with the federal agenda are strong and monitoring by the federal government is intense), but regional nongovernmental actors are passive with respect to forest governance, regional bureaucrats may have strong incentives to focus on fulfilling the federal government's formal criteria regardless of the actual consequences for the region and to ignore local characteristics. This again has negative consequences for reforestation activities: regional bureaucrats are more concerned with formal compliance than actually ensuring that leaseholders behave responsibly. Even if the federal government were to incentivize reforestation, the bureaucratic logic of the Russian political hierarchy requires bureaucrats to "overfulfill" established criteria by a small margin; otherwise the federal government may increase the criteria in the next reporting period, making it impossible for bureaucrats to comply. Moreover, in this case, one could again expect regional bureaucrats to form rent-seeking coalitions although not with regional interest groups but federal bureaucracies, if the latter have discretionary control over transfers.

Generally, it seems intuitive that bureaucrats in regions where federal transfers are substantial would have even greater incentives to ignore regional nongovernmental actors. However, if the regional government already has institutions requiring the involvement of regional nongovernmental actors (e.g., through specialized councils or simply by increasing the transparency of forest governance, which facilitates monitoring and intervention by nongovernmental actors), bureaucrats would have no alternative but to do so. This is precisely what we observe in our analysis. A question that arises in this context is why regional governments created these institutions in the first place, given the substantial federal transfers. One potential explanation is that the institutions were established in the first years after the Forest Code reform, when the inflow of federal transfers was uncertain; however, once the institutions were in place, they became difficult to abolish. Another (and more likely) explanation is that regional bureaucrats already exhibited strong, long-lasting links with regional nongovernmental actors. After the reform conferred additional power on regional bureaucrats, these ties persisted despite possible federal funding (again, the case of the Komi Republic is highly illustrative in this respect).

The outcomes we observe are linked to particular problems of decentralization encountered by weak democratic or nondemocratic states. In a large, decentralized state, a particular problem associated with regime transition is that it occurs at both the federal and regional levels. A growing literature has investigated the
emergence and consolidation of nondemocratic regimes at the subnational level (Snyder 2001; Gibson 2005; Gervasoni 2010; Sidel 2012; Giraudy 2013). These "isles of autocracy" occasionally continue to exist for a long period. National-level autocratization, however, is often associated with federal government's attempts to establish control over regions, which merely replaces subnational autocracies with a centralized nondemocratic regime (Stoner-Weiss 2006; Gel'man 2010; Obydenkova 2011). Both "isles of autocracy" and centralized autocracies create ample opportunities for rent-seeking by bureaucrats, meaning that both centralization and decentralization could be problematic for such countries.

The emergence of subnational autocracies was an important element of the development of Russia in the 1990s, when the federal center was weak. In the 2000s, Putin's government effectively destroyed some of them and incorporated others into the "vertical of power." However, some variation in political regimes across regions seems to persist despite this general autocratization process (Obydenkova and Libman 2013; Obydenkova 2012). A crucial element of this variation is the extent to which regional governors are able to establish control over or enter alliances with local businesses. These ties are one of the primary sources of rent-seeking behavior in the Russian regions (Sonin 2010). In regions over which the federal government exercises stricter control, rent-seeking opportunities are also substantial, although now linked to connections with the federal bureaucracy (Libman, Schultz, and Kozlov 2012). In particular, this rent-seeking may be associated with the allocation and appropriation of federal transfers (e.g., for public procurement). Even if the centralized hierarchy does not encourage rent-seeking, it is nonetheless associated with substantial problems due to inflexibility and an inability to react to regional specifics. These are precisely the problems we observe in forest governance.

From this perspective, the development of democratic states through increases in accountability at both the federal and regional levels could improve the governance of resources: both bureaucrats and regional nongovernmental actors should be kept at bay through political competition at the regional and the federal levels. In a non-democracy, however, the predominance of any of these linkages crowds out other linkages: larger transfers make local networks irrelevant, and dominant local networks eliminate the accountability of regional authorities, even toward the federal president, and produce rent-seeking coalitions that prevent efficient management. For a nondemocratic state such as Russia, only the simultaneous involvement of multiple actors allows for increased efficiency in forestry management.

Conclusions

Our study allows us to draw a number of conclusions and implications, extending the arguments of polycentric governance theory to a previously unexplored
empirical case, Russia. First, our results support the key argument of the polycentric governance literature: there is a strong interaction between the effects of the federal government and regional nongovernmental actors, and thus, if we wish to understand forest governance performance, we must consider both types of actors. Second, we also confirm the normative claim of the polycentric governance argument: incentives matter, but their effect is conditional on incentives established by other actors. Third, as the polycentric governance framework suggests, the effectiveness of resource governance is determined not by the formal assignment of authorities but by the interaction of the combined efforts from various levels and their provision of incentives to one another. In Russia, there is significant variation in the performance of individual regions depending on this interaction, despite the common legal framework of the Forest Code, to which they are all are subject.

Furthermore, we observe a nontrivial outcome of the decentralization of forest governance and the interplay of various actors in Russia in the second half of the 2000s. If federal transfers increase without an equivalent increase in the involvement of regional nongovernmental actors, bureaucrats appear to lose interest in interacting with these actors, and because federal monitoring capacities are imperfect, forest governance performance is adversely affected. If the involvement of regional nongovernmental actors increases in the absence of incentives provided by the federal government, regional bureaucrats are likely to be captured by strong interest groups (operating through institutions designed to involve regional nongovernmental actors in resource governance), which is also associated with the decline of forest governance. However, if both actors are involved simultaneously, on the one hand, bureaucrats have strong incentives to cooperate with regional actors, but on the other hand, they have obtained sufficient autonomy through federal support to not be captured by a small number of interest groups; therefore, regional forest governance performance is positively affected. We link this result to the nondemocratic nature of Russian politics.

Our findings have two important implications, which may be relevant beyond the field of forest governance. First, while the literature typically regards the recent evolution of Russian federalism as an unambiguous trend toward centralization, we demonstrate that while this may hold in some areas, the responsibilities of regional governments remain large in others. Moreover, we also reveal substantial differences in bureaucratic practices across Russian regions. Second, we demonstrate that the nongovernmental actors (forest users and NGOs) have a discernible impact on forest governance in Russia, at least in some regions. However, we also argue that in a nondemocratic state, where "isles of autocracy" have emerged at the regional level, decentralization and the involvement of nongovernmental regional actors do not necessarily improve the quality of governance; they may simply lead to additional rent-seeking.
Our findings are also interesting in terms of their policy implications, as they suggest a number of issues for the improvement of forest governance in Russia (and might have some implications for nondemocratic systems in general). First, providing resources to subnational bureaucrats or incentivizing them through federal transfers and monitoring is insufficient for improving the quality of governance; on the contrary, blind compliance with the formal indicators established by the federal center reduces the quality of governance. The outcome could be different if (unlike in the Russian case) performance evaluations of bureaucrats were less formalistic, but this would also provide greater opportunities for rent-seeking. Second, encouraging the involvement of subnational, nongovernmental actors, at least in instances where there are no other means of ensuring the accountability of bureaucrats, is also problematic. A better outcome can be achieved if the decision-making process involves multiple parties, which can both prevent rent-seeking and contribute their knowledge to the development of policy.

Supplementary Data

Supplementary data can be found at www.publius.oxfordjournals.org.

Notes

1. To acquire wood for noncommercial use residents of the Moscow Oblast have to submit a written application to the forestry in person and provide supporting documents (e.g., construction permits). A commission (there are eight commissions in the Oblast with the population of about 7 million people) makes the decision approving this application. Then the documents are transferred to the Forest Agency of the Moscow Oblast for approval. In case of positive decision, the applicant has to sign a written contract with the Oblast. There are fixed limits on the noncommercial use of wood for construction and for firewood (Yaroshenko 2009).


3. In some cases, funding from NGOs may also become an incentive, but it is unlikely to have an important effect; Russian bureaucrats rarely dare to participate in programs with substantial funding from international NGOs (due to possible political risks), and any financial resources of other NGOs are incomparable with extracting rents or obtaining federal funding.

4. We discuss the role of federal-level, nongovernmental actors in the Supplementary Appendix A-4; one of the robustness checks in the Supplementary Appendix A-5 is devoted to organized criminal groups, which may also influence forest governance in Russia.

5. We use reforestation as the dependent variable in lieu of other proxies for forest disturbance (e.g., forest fires or timber harvesting), as we require a dependent variable that clearly captures the activities of the regional government; other variables are
influenced by both governmental activity and region-specific characteristics, which are more difficult to control for in the estimations.

6. In the Supplementary Appendix A-6, we present maps of Russia plotting the allocation of the dependent and key independent variables. These data demonstrate the substantial heterogeneity across Russian regions, which allows us to perform our investigation.

References


interaction in forest ecosystems, eds. Emilio F. Moran and Elinor Ostrom. 81 103. Cambridge, MA: MIT Press.


