

## **Resource Curse in Hybrid Regimes: Do Economic or Political Institutions Matter?**

by

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Resource curse is often explained by the specifics of political and institutional factors. The aim of this paper is to study the interaction between the quality of institutions and the resources in a framework of a hybrid regime (i.e. allowing only for a moderate improvements of the property rights protection and democracy not sufficient to achieve the level of the industrialized nations), looking separately at economic and political institutions. Unlike almost all empirical papers in the literature, this paper applies the intra-national variation of institutional environment and access to political decision-making, using a dataset from the Russian regions. It shows that in a hybrid regime (i.e. comparing "bad" and "worse" in terms of the quality of institutions) economic institutions follow the traditional "resource curse" results: resources have a negative impact on growth if the quality of institutions is low. On the other hand, increasing level of democracy has negative consequences for regions with substantial resources. The results, however, differ for different types of natural endowments and dimensions of democracy.

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## 1. Introduction

The idea of a “resource curse”, i.e. negative impact of resource abundance on economic performance, has been subject to empirical scrutiny in a number of studies so far. An interesting aspect explaining the variation of results looks at the interaction between the resource curse and the quality of economic and political institutions. Since resources have had a significantly different influence on growth in different countries (both supporting and preventing good economic performance), the basic claim of this branch of the literature is straightforward: resources are helpful for growth only if the quality of institutions (economic – property rights, contract enforcement or corruption – and political – political stability or level of democracy) is high enough to restrict the possible rent-seeking activity, which indeed is the main reason for emergence of the “resource curse”. It is thus possible to speak about a “conditional” (on the quality of institutions) “resource curse” (see Karabegovic, 2009, for a survey of recent literature).

This result for economic institutions has been confirmed by several studies in international comparison (Boshini et al., 2007; Mehlum et al. 2006; Polterovich et al., 2008). Most of them establish that in countries with “good” institutions (though the definition of what exactly “good” means differ) resources are able to contribute to the economic growth, while in countries with “bad” institutions they indeed prevent economic growth. One possible explanation can be that resources stimulate rent-seeking, which in turn prevents good institutions from developing (cf. Tornell and Lane, 1999), while the other explanation is that different institutions (producer-friendly vs. grabber-friendly, as Mehlum et al. call them) generate different incentives to engage in productive or rent-seeking activity in presence of natural resources. Anyway, institutions seem at least to mitigate negative effect of resource-induced rent-seeking or provide foundation for growth using natural resources in the best case.

The evidence for democracy is less straightforward: Collier and Hoeffler (2005) find a large negative effect of the interaction of natural resources with electoral competition, but strong positive interaction of natural resources with checks and balances in the political system. The problem is certainly that the relation between democracy and rent-seeking is not unambiguous. On the one hand, democracy is able to increase accountability of politicians, which is, according to Robinson et al. (2006) key to avoiding the resource curse. On the other hand, democracies often increase the incentives for politicians to engage in populist redistribution (to gain support from the electorate), which can have a negative influence on

the economic growth: in this case presence of resources reduces incentives to engage in not popular reforms. The results of Boshini et al. (2009) show that even the type of democracy (presidential vs. parliamentary system or type of electoral rules) are likely to influence the presence of the “resource curse”.

The aim of this paper is twofold. First, it directly contrasts the impact of political and of economic institutions on the presence of a resource curse. Economic institutions are defined in terms of governmental regulations and protection of property rights and contracts from bureaucratic predation. Political institutions refer to the level of democracy. My focus, however, is specifically to understand what happens if the improvement of institutions and of the level of democracy is “imperfect” – hence, if the sample is skewed towards lower quality of institutions. The reason for this choice is, on the one hand, theoretical (if one assumes that there are non-linear effects of institutions on economic performance, it may be important to separately consider the “hybrid” regimes), and on the other hand, normative (usually, achieving high quality of political and / or economic institutions for developing countries is unfeasible – and therefore what they get through reform are more or less advanced hybrids, which deserve special consideration).

Second, this paper also takes a different approach from the literature while looking for the source of variation of the institutional quality and the resource endowment, which can be used in an empirical study: while almost all papers focus on international comparisons, this paper uses the intra-national variation, i.e. differences between individual regions in a federal state. The advantage of this strategy is at hand: one is able to achieve higher compatibility of data, and also restricts the potential of a selection bias. The disadvantage is of course the generalization problem: the external validity of this study is not necessary given. However, even in this case evidence from intra-regional comparison may at least contribute to our understanding of the mechanisms of the resource curse – although certainly fails to solve the problem completely.

This paper applies the sample of the regions of the Russian Federation between 2000 and 2006 in order to study the impact of institutions on the resource curse.<sup>1</sup> Russia seems to be a plausible choice for this exercise, first, because its regions experience enormous asymmetry in terms of natural resources (while a small group of regions controls the main mineral deposits, which in fact formed the key factor of the Russian economic growth during

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<sup>1</sup> Although Russia as such has certainly been subject to the discussions of the (potential) resource curse from the point of view of economic development (see e.g. Ahrend, 2005) and democracy (see Treisman, 2010), I am not aware of any studies exploring the variation between Russian regions in an empirical setting.

this period, others have virtually no natural resources), and second, because of the presence of a strong variation of political and economic institutions between the constituent units. However, this distribution – as desired for the purpose of this study – is skewed towards lower quality of both democracy and economic institutions: i.e. it is possible to find in Russia examples of outright autocracies and even near-totalitarian territories, but there are hardly any examples of true “Western-type” democracies or regions with well-protected property rights.

The paper is organized as follows. The second section presents the major variables used in this paper to measure the quality of political and of economic institutions, and also gives a brief summary of the Russian institutional specifics. The third section discusses the model and data in greater detail. The fourth reports the main results. The fifth section provides a number of extensions, and the last section concludes.

## **2. Russian regions and resource curse**

An optimal laboratory for studying the resource curse in an intra-national setting using an intra-national setting should exhibit at least three properties. First, one requires a substantial variation of political and institutional environment throughout the regions of this country. Second, natural resources should play an important role at least for a subset of regions in this country. And finally, there should be significant growth differentials between regions. The Russian Federation seems to meet all three criteria. To start with, Russia includes a variety of regions with different political systems. Basically, political differences between regions – including “more advanced” democratic regimes, as well as “isles of autocracy” – are relatively common for a variety of federations in the developing world (Latin America, India), but also for several developed countries, like the US in the early 20 century (see introduction to McMann, 2006, for a survey). In order for individual regions to develop significantly different political regimes, on the one hand, regional administrations should be strong enough to prevent *regular* federal interventions in the functioning of the regional politics (for example, restricting the development of “specific” regional institutions without “consulting” regional elites), but on the other hand, regions should be different enough to generate different outcomes of political conflicts and different preferences of the population and the elites with respect to the organization of the political systems.

During the Soviet period all regions of Russia had identical political structure embedded in the Soviet hierarchy (although even then some variations of political regimes existed). After the process of democratization started in the 1990s, since the administration of the first president Boris Yeltsin was too weak to directly intervene into the regional political

process and regions also were able to gain from conflicts between different centers of power at the federal level, political transition in each region exhibited its own specific features – depending upon the ethnic and economic legacies, specifics of regional leadership, particular effects of economic transition and external influence (both from federal center and from foreign actors like the EU). Therefore different regions evolved towards different political systems (see Gel'man, 1999; Obydenkova, 2007 for a detailed discussion). While in some jurisdictions the old Soviet leadership was able to preserve its power and transform it into a new autocracy, in other regions new leaders managed to acquire supremacy and create new autocratic systems. Yet another outcome of transition in other regions included “elite pacts” for the division of rents and compromise over the crucial aspects of policy; destructive “warlordist” competition of elites with increasing rent-seeking, but also emergence of institutional systems to protect interests of all parties and allow for limited political competition. At the same time regional elites obtained different degrees of control over regional economies and media.

As a result, Russia in the late 1990s included a multitude of regional political systems – from relatively competitive and pluralist democracies to strict autocracies and even semi-totalitarian regimes. Certainly, the distribution of political systems in Russia was “skewed” towards the stronger autocratic governments – while there have been a number of non-democracies and several “hybrid” regimes with more or less stronger progress towards democratization, Russia did not include any “true” democratic political systems of the Western style.<sup>2</sup> Towards the early 2000s these individual processes of political evolution in individual regions seem to have achieved a new political equilibrium, thus resulting into emergence of relatively stable configurations of power (cf. Libman, 2009). Although the new administration of Vladimir Putin, who became president in 2000, implemented a variety of measures to restrict the autonomy of regions, regional political machines were often able to survive this centralization movement.<sup>3</sup> To conclude, regional variation of political regimes in Russia remains high enough to justify the study of this paper.

In order to measure the variability of political regimes in Russia I apply the index calculated by the Moscow Carnegie Center and based on a survey of a panel of experts carried

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<sup>2</sup> The differences between Russian regions are thus not like those between Norway and Saudi Arabia, but rather like those between Kazakhstan and Saudi Arabia – if one looks at the resource-extracting countries.

<sup>3</sup> Even in 2009 deputy head of the federal presidential administration Vladislav Surkov (well known as a key player in the ideology-setting for the administration of Putin and Medvedev) claimed that Russia has a “multi-vector” democracy, i.e. differences in political regimes in individual regions are unavoidable (Gazeta, 2009, July 8). While the existence of variations is not in dispute, one could rather talk about “different versions of non-democracies and hybrid regimes”.

out for each year and region in the period 2000-2004. The experts evaluated each region using a 5-point-scale applied to ten characteristics. The final index is simply a sum of these 10 grades and thus varies from 0 to 50 (although there has been not a single region which achieved either the worst or the best possible outcome). It is worth noticing that as in all indices based on expert opinion, the evaluation of the level of democracy in the Carnegie index is unavoidably relative: so, the highest possible grade represents rather the “highest possible grade for Russian circumstances”, meaning a more advanced hybrid regime, which is still relatively far from Western democracies. Individual components of the index are listed in the *Appendix*. Most of them seem to fit the “standard” understanding of the concept of “democracy” relatively well, although some refer specifically to the peculiarities of *subnational* variation of political regimes (specifically, freedom of municipalities).<sup>4</sup>

If the political regimes exhibit the variations described in this paper, it is hardly surprising that *economic institutions* in individual regions exhibit significant variation as well. On the one hand, it could be a direct result of the differences in the political system. On the other hand, it is important to take the role of informal differences between the functioning of bureaucracies in individual regions (due to corruption, involvement in regional networks, connections to business groups, organized crime etc.) into account, resulting into differences in law enforcement – and therefore in the quality of property rights and contract enforcement. In this paper I used an index of the quality of economic institutions developed by Vainberg and Rybnikova (2006) and based on a survey of small and medium entrepreneurs implemented by *Opora Rossii* (one of the business associations in Russia) in 2005. The survey asked the entrepreneurs to evaluate, how often the entrepreneurs face illicit methods and illegal interventions of public officials. The index is calculated as the share of “positive” responses (no interventions) in percent minus the share of “negative” responses in percent plus 100%. Thus, it increases if the share of illegal interventions as perceived by entrepreneurs is low, and vice versa.

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<sup>4</sup> Two dimensions of the index (out of 10), however, are slightly more problematic. Index includes the variables of “corruption” and “economic liberalization”, which seem to represent rather the economic, than the political dimension. However, in this case it is important to precisely look at the definitions of the respective dimensions. The “economic liberalization” as defined in the index mostly applies to the usage of economic pressure by regional elites in order to control (potential) opposition rather than the casual property rights protection; economic instruments of control may be even more important in a world where the ability to change formal legislature are still limited. The “corruption” dimension, as well, refers to the co-existence and symbiosis of regional elites and large business groups, effectively able to control regional political landscape, rather than the usual administrative corruption. More importantly, excluding these two dimensions from the index still yields an indicator, which is highly correlated with the original one (99.01). Hence, in this paper I apply the original index.

Obviously, this approach to measuring the quality of economic institutions has a number of drawbacks. First, there are traditional disadvantages of surveys like this (for example, fairness of responses), which hardly could be avoided. Second, the indicator measures only the illegal activities of bureaucracy and does not ask for the quality of law itself. It is however less problematic in the Russian context, simply because regulations are mostly *formally* set by the federal government. Therefore the variation between regions results from *informal aspects*, i.e. their *implementation*, which is exactly measured by the question asked. However, the survey ignores the “second half” of the quality of economic institutions – protection from the non-governmental extortion (say, crime or cheating of business partners). This is a limitation one has to accept given the data availability. Finally, the focus on small and medium enterprises is also somewhat restrictive.

*Figure 1* looks at the correlation of the index of democracy and of economic institutions. One can see that, interestingly enough, there seems to be virtually no correlation between political and economic dimensions, even if one drops the outliers. This result is interesting as such, but it is more important in the context of this paper, as I will show in what follows.

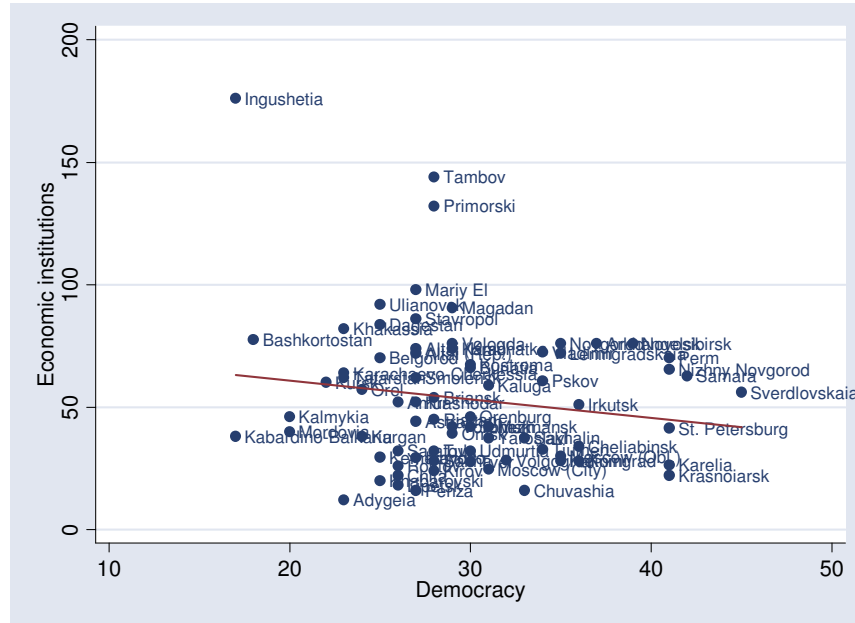


Figure 1: Correlation of economic and political institutions in Russia, 2000-2006

Finally, the last two components of a good laboratory for the studies of a resource curse are also present in the Russian case. First, it goes without saying that for Russia mineral

resources (particularly oil and gas, but also non-ferrous metals and coal) play a crucial role in terms of economic performance over the last decades. However, given the size of the country, it is also not really surprising that the deposits are allocated unequally and concentrated in a small number of regions. For example, out of 79 regions included in the sample of this study (as it will be discussed in what follows) only 34 have their own oil and gas extraction: particularly those located in Siberia, Volga basin and Northern Caucasus. The situation is similar for almost all other resources, including agriculture (which is heavily influenced by the climatic differences of Russian regions). Second, during the 2000s the average growth rates varied substantially from 0.36% p.a. to 14.11% p.a. A variety of factors contributed to this divergence among constituent units of the Russian Federation; my aim is to understand the role of resource endowment differentials and differences in economic and political institutions as determinants of economic growth.

### 3. Model and data

This paper applies the data for 79 Russian regions (i.e. almost all constituent units of the Russian Federation excluding Chechnya, for which obviously no reliable data is available, and the so-called “autonomous okrugs” – a special group of regions within the Russian state with limited autonomy and, what is particularly important for this paper, limited data availability)<sup>5</sup> for the period between 2000 and 2006. The choice of the timeframe for the study is primarily motivated by the need to focus on a period of relatively stable political regime in the federal center: otherwise it is difficult to establish the reasons for the observed changes, which may relate to regional specifics or changing patterns of center-region relations. For the Russian case it suggests the choice between the Yeltsin period in the 1990s and the Putin period in the 2000s (an advantage of the Russian data is indeed that it is possible to identify differences in political regimes by looking at individual presidents, given clear differences in their policies and their importance for the Russian development in general). However, for the Yeltsin period I do not have any reasonable proxies for economic institutions; as for political institutions, they seem to be highly unstable at the regional level, reaching, as mentioned, a certain “institutional equilibrium” only in the early 2000s (moreover, for the “early” Yeltsin period the statistical information is mostly unreliable). Hence, I look at the Putin period; my dataset covers his first and most of his second term. As it is typical in the growth regressions,

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<sup>5</sup> For the quality of economic institutions indicator for some other regions (Tyva, Chukotka, Northern Ossetia and Evreyskaya) were not available and hence these regions were dropped from this particular specification.



in order to avoid short-term fluctuations I average over seven years and estimate the following cross-sectional regression:

$$GROWTH_i = \beta_0 + \beta_1 RESOURCE_i + \beta_2 INSTITUTIONS_i + \beta_3 RESOURCE_i * INSTITUTIONS_i + \beta_4 CONTROLS_i + \varepsilon (*)$$

where index  $i$  refers to the individual region, *GROWTH* is the annual inflation-corrected growth rate of the gross regional product (GRP), *RESOURCE* is the measure of resources, *INSTITUTIONS* is a measure of institutions (political or economic), and *CONTROLS* include the set of further control variables. So, the growth rate is regressed on resources, institutions, and an interaction term, which is a product of resources and institutions. The measures of political and economic institutions have been introduced in the previous section; here it is necessary to state that at the first stage I include only political or economic institutions (with the respective interaction term) in the regression (I will, however, explore the possibility of other interactions further on). The resources in the basic specification are measured as the oil and gas production in this region (for the aim of the aggregation re-calculated in coal equivalents – it should however be noted that both oil and gas outputs are highly correlated). This choice seems to be reasonable, since it is the oil and gas extraction which forms the basis for the Russian resource-dependent growth.

For the **economic institutions** the “conditional resource curse” suggest that the following signs of the variables should be expected: resources *negative* (accounting for “traditional” resource curse discussion); institutions *positive* (accounting for the overall positive correlation between institutions and growth) and, more importantly, the interaction term *positive* (thus showing that in presence of “good” institutions resources facilitate economic growth), see Boshini et al., 2007. For the **political institutions**, as mentioned, no clear prediction can be generated: if the “accountability” effect of democracy predominates, one has to expect signs identical to those for economic institutions describe above; if, however, democracy just facilitates the populist redistribution, the interaction term and the variable of political institutions are expected to be *negative*. The “conditional resource effect” (either positive or negative) is established if the interaction term is significant.

The set of further controls includes three variables. First, I control for the initial level of the GRP per capita in the year 2000 (which could have influenced the further path of the economic growth in the region). Second, I add the variables measuring the level of education (here approximated as the share of the population with a university degree – for the Russian

case, where primarily and even high school attendance covers almost all population, this indicator seems to be reasonable) and economic openness (share of foreign trade in the GDP). All these variables are standard in growth regressions and, what is even more important, may be correlated with the oil and gas extraction and / or quality of institutions (and therefore should be included in the specification to avoid the omitted variable bias). The exact description and the summary statistics for the variables are reported in the *Appendix*.

In addition, I include four dummy variables for four individual regions. First, two of them account for the two “city-regions” City of Moscow and St. Petersburg: obviously they have zero resources, but at the same time accumulate a significant portion of the financial flows due to their “capital status”, and are therefore hardly compatible to other regions in the sample.<sup>6</sup> Second, there are two variables controlling for two “traditional” outliers, which seem to be exceptional in almost all growth regressions for Russia: Chukotka (in the Far East at the American border) and Ingushetiya (in the Northern Caucasus at the border of Chechnya). Both regions were active in establishing themselves as “financial havens” for Russian companies and thus derive a substantial part of their wealth from the economic activity outside their territory. In addition, in both cases there have been significant political factors influencing their performance and making it highly volatile and partly little trustworthy in terms of the quality of statistics<sup>7</sup>: in Ingushetiya it has been Chechnya, which slowly “exported” its conflict to the surrounding regions (parallel to the reduction of direct warfare in Chechnya itself), and for Chukotka it has been the role of Roman Abramovich, one of the wealthiest individuals in Russia, who became governor of the territory during this period, thus providing to the region the benefits of investments and also involving it in a variety of tax optimization schemes. In addition, I also look at the estimations excluding these dummies and thus assess the robustness of results to outliers.<sup>8</sup>

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<sup>6</sup> City of Moscow seems to receive substantial rents from its status of the federal capital, which is particularly important in the Russian economy with strong governmental interventions, as well as from the accumulated potential of the Soviet past. St. Petersburg gains not only from its unofficial status of the “second capital”, but also (and foremost) because of the informal support from Vladimir Putin, who was born in St. Petersburg and seemed to recruit a substantial fraction of his staff from his home city.

<sup>7</sup> For example, annual growth rate for Chukotka varied during the period of the study between minus 14 and plus 30 percent; for Ingushetiya between minus 20 and plus 25 percent.

<sup>8</sup> It is obvious that including a dummy as described above is identical to excluding the region from the sample. Nevertheless, I still used the first option to get an impression about the significance of this “region-specific” effect. For the TSLS estimations, however, these four regions are dropped from the sample and do not appear neither in the second stage nor among the instruments in the first stage.

#### 4. Main results

*Table 1* reports the main results of the paper, estimating the impact of economic and political institutions on the economic performance. Regression (1) illustrates the relation between growth and resources ignoring the institutional factors. It is hardly surprising to find that in Russia during the period of 2000-2006 (with extremely high oil prices on international markets) regions with substantial oil and gas reserves grew significantly faster than the rest of the country. So, in fact, during this period oil did not seem to be a “curse” for the Russian economy. Certainly, it is necessary to point out that the arguments for the “resource curse” are often of a long-term nature, while this paper limits its attention to a relatively short perspective of less than a decade with extremely favorable conditions. Adding the level of democracy (regression (2)) or the quality of political institutions (regression (4)) to the specification does not change anything at the first glance: resources still remain a significant positive factor for economic growth, while institutions are insignificant.

The situation changes, however, if one also includes an interaction term between the natural endowment and the quality of institutions. In regression (3) it is done for political institutions. The interaction term is significant and negative, while the oil and gas production remains positive and significant. Thus, it looks like increasing the level of democracy in the region makes the resource abundance less efficient in terms of promoting economic growth. This result can be clearly seen at the *Figure 2*, which shows the marginal effect of oil and gas production for different levels of democracy. It is also helpful because one can notice the differences in the confidence interval for different sections of the sample. Nevertheless, it looks like oil and gas have a significant and positive effect on growth for the low level of democracy, and (at least, marginally) significant and negative effect if the level of democracy is relatively high. For the economic institutions (regression (5) and *Figure 3*) the result is the opposite: in this case I find evidence for the classical “conditional resource curse” scenario as it is reported for example by Boshini et al. (2007). First, the interaction term is significant and positive: hence natural resources increase economic growth if the economic institutions are sufficiently good. Second, the sign of the natural resources variable turns: it is now negative and significant – once again, as the “conditional resource curse” argument would suggest. From *Figure 3* it follows that the natural resources reduce growth for the low quality of economic institutions (although the result does not seem to be significant, since zero is within the confidence bounds), while for the high quality of institutions the effect of resources is positive.

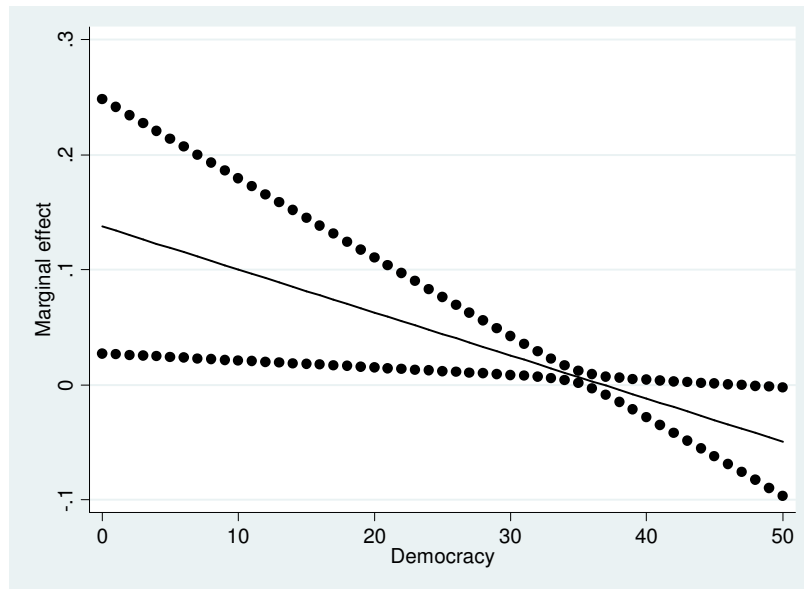


Figure 2: Marginal effect of oil and gas on growth for different levels of democracy

While interpreting these results, it is necessary first of all to keep in mind that in the sample the improvement of democracy and of economic institutions is always *imperfect*. Hence, the outcomes of the regression suggest that, first of all, small improvements of the level of democracy in the resource-rich countries make the resource abundance a negative factor for growth. It is in fact consistent with the idea of Collier and Hoeffler (2005), who claim that for resource-abundant economies only *special forms of democracy* (with strong checks and balances counteracting the negative effect of political competition) are efficient. Imperfect democratization could simply increase the redistribution pressure in the society as opposed to “pure” dictatorship, without imposing any restrictions on the redistributive appetites of interest groups (as the “more developed” democracy could do). In this case presence of a significant pool of natural resources does not support economic growth: in fact, it simply reduces the chances of regional political elites to find a consensus over a growth reforms agenda (since the more attractive option of redistribution of rents is always out there). This result, by the way, seems to contradict the intuition of Barro (1996), which suggest that exactly the hybrid regimes should experience less redistribution – because both the power of public pressure and of dictatorial interests is smaller.

The situation with improvements of the quality of economic institutions seems to be different. Even slightly restricting the ability of bureaucrats to intervene in the economic processes for their own rent-seeking purposes shifts the balance towards a positive impact of the resources on economic growth. At this stage it is however once again important to notice

that the variable of economic institutions used measures one *particular aspect* of the role of economic institutions – the protection of entrepreneurs in the region from illegal activities of the bureaucracy. Using the language of the “New Comparative Economics” (Djankov et al., 2003), it looks at the costs due to state expropriation, but ignores the losses through private expropriation, which in fact may be even more important than the public interventions. Therefore these results cannot be interpreted as an unambiguous indicator of the “rule of law” and just shows that improving the quality of public administration (or, more specifically, taming the rent-seeking appetites of bureaucracy by a legal procedure) make resources an effective instrument of growth.

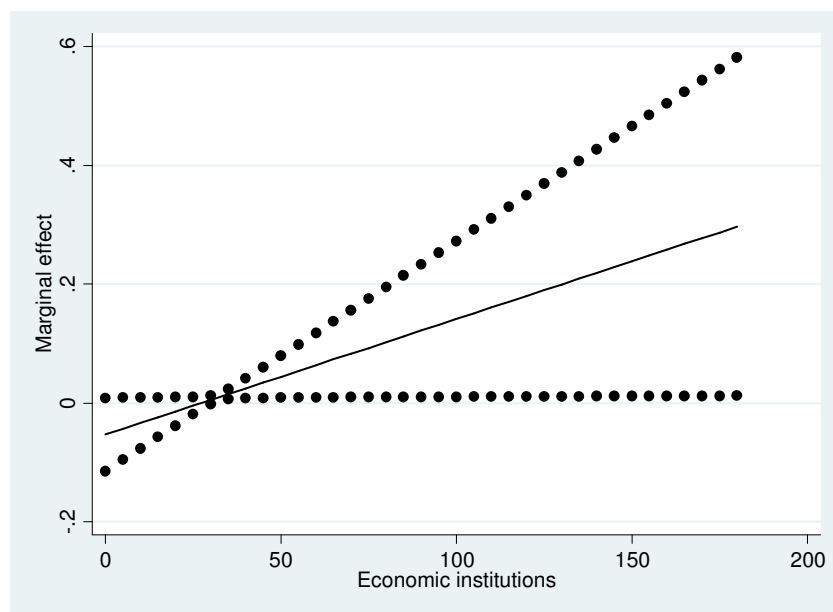


Figure 3: Marginal effect of oil and gas on growth for different levels of quality of economic institutions

The results were subject to several robustness checks at this stage already. First, since the Jarque-Bera test rejects the hypothesis of normally distributed residuals, I have excluded the outliers until the test becomes insignificant and then re-estimated the regressions. Basically, no changes were observed. Second, as already notices, the democracy variable is measured for the period of 2000-2004. Towards the end of the year 2004 the regional political systems in Russia experienced a strong and partly unexpected shock, when Putin abolished the free elections of regional governors and replaced it by de-facto appointments of through the federal administration. Although the re-appointment policies of Putin in the regions have been particularly cautious and the most influential players were able to keep their positions (Chebankova, 2006), this shift could significantly alter the behavior of regional leaders, thus

making the old assessments of the regional political systems invalid. Hence, I have re-estimated regression (3) for the period of 2000-2004 and found the same effects as for the period of 2000-2006. Third, the results could be biased if any spatial interdependence of regions exists. Therefore I re-estimated regressions (3) and (5) using the tools of spatial econometrics, and also confirmed all effects reported.<sup>9</sup> Finally, as mentioned above, I have re-estimated the regressions (3) and (5) excluding the dummies for four “specific” regions. Basically, excluding three of four dummies (Moscow City, St. Petersburg and Ingushetiya) – hence, letting the particular regions count in the estimation - does not change the results. For Chukotka no information on the quality of economic institutions is available; however, for democracy the results if dummy Chukotka is excluded become not robust – the interaction term loses its significance.

Estimating impact of institutions on economic growth is always at least suspected to suffer from reverse causality. In case of democracy there are some reasons to believe that in Russia this problem may be less pronounced (see Libman, 2009, for a more detailed discussion), however, this argument relies on country-specifics of the Russian Federation and hence is difficult for a rigorous test. In this paper I apply a set of mostly empirically motivated instruments to re-estimate the equations (3) and (5) using TSLS. The instruments are in both cases number of forest fires in the region in 2000; product of number of forest fires and oil and gas; and product of the age of the capital city of the region and oil and gas. The econometric properties of these instruments are fine: first-stage F-statistics are significant and (almost always) high, they are insignificant once included in the second stage, and Hansen J suggests no overidentification problem. Therefore it is sufficient for at least one instrument to be exogenous to support the exogeneity of the whole set of instruments. It seems plausible that at least the “forest fires” instruments are exogenous: in the Russian Federation, where the share of forestry and agriculture accounts for 6% of the value added (and hence, share of forestry seems to be much smaller); hence, the impact of even most significant destruction of forests through fires is unlikely to generate strong effects for economic growth.<sup>10</sup> Generally speaking, the results of the estimations confirm the OLS outcomes (equations (6) and (7)).<sup>11</sup>

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<sup>9</sup> I estimated both spatial lag and spatial error models using ML-estimator for the aim of completeness. The set of covariates in the spatial regressions was identical to that reported in (3) and (5) in *Table 1*. The weighting matrix used was the simplest one, assigning 1 to regions which have common border and 0 otherwise.

<sup>10</sup> Although for the age of the city this argument is more difficult to make (because older cities may have better infrastructure and human capital), the exogeneity seems to be more plausible if one looks exactly at what the variable actually measures. It seems unlikely that the first mentioning of the city in the chronicles (which is indeed what this variable measures) is somehow correlated with short-term growth in the 2000s.

<sup>11</sup> In addition, in specifications (8) and (9) I re-estimate the TSLS regressions excluding two potentially endogenous controls – education and openness – and also confirm the original results. Obviously, excluding

However, applying empirically motivated instruments should be treated with caution, as it will be once again discussed in the Conclusion.

The existence of the differentiated effects for economic and political institutions suggests that it may be also important to look at their interaction (and, possibly, interaction with the oil and gas variable), particularly because, as mentioned above, there is virtually no correlation between the institutional variables. In this paper I proceed as follows: first, all regions are divided into four groups: regions with “high” quality of economic and political institutions (i.e. where democracy variable and economic institutions variable is above the average for the sample); regions with “low” (below average) quality of economic and “high” quality of political institutions; regions with “high” quality of economic and “low” quality of political institutions; and regions where both economic and political institutions are of “low” quality. The size of the groups seems to be roughly equal and vary around 20 regions (with the only exception of “high”-“high” group, which is smaller). Then I re-estimate the growth regressions separately for each of the groups, including only the controls and the oil and gas variable.<sup>12</sup> The results are reported in *Table 2*. Interpretation of regressions for these very small groups is very difficult, simply because of the limited number of degrees of freedom and potentially strong impact of outliers. In addition, there may be a selection problem since the allocation of regions across these groups is not random (and may be linked to their resource endowment, which is known to influence both political and economic institutions, see Barro, 1999; Ross, 2001; Jensen and Wantchekon, 2004). Hence, the results of *Table 2* may simply provide some hints regarding the question at hand rather than be treated as strong evidence.<sup>13</sup>

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variables, which may have a significant impact on growth and be correlated with institutions can lead to inconsistency through a omitted variable problem. The idea is simply to hope that the bias through the inclusion of endogenous controls and through the omitted variables is unlikely to run in the same direction. Once again, however, caution is necessary in interpreting this results.

<sup>12</sup> Ingushetiya, Chukotka, Moscow City and St. Petersburg are not included in any of the samples.

<sup>13</sup> I have also estimated specifications of the whole sample including both political and economic institutions (and their interaction among each other, as well as interactions with oil and gas and the “triple interaction” variable – in different combinations) in the regression. However, none of these specifications provided any significant results.

Table 1: Institutions, resources and growth in Russian regions, 2000-2006, dep.var.: average growth rate of the gross regional product

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	(OLS)	(OLS)	(OLS)	(OLS)	(OLS)	(TSLs)	(TSLs)	(TSLs)	(TSLs)
<b>Initial GRP</b>	<b>-0.063***</b> (0.021)	<b>-0.066***</b> (0.023)	<b>-0.069***</b> (0.024)	<b>-0.063***</b> (0.022)	<b>-0.068***</b> (0.022)	<b>-0.074***</b> (0.026)	<b>-0.073***</b> (0.019)	<b>-0.060**</b> (0.027)	<b>-0.062***</b> (0.021)
<b>Education</b>	<b>17.422**</b> (8.451)	<b>17.412**</b> (8.488)	<b>17.825**</b> (8.510)	17.448 (10.594)	<b>19.287*</b> (10.224)	<b>17.868**</b> (7.916)	15.662 (12.451)		
<b>Openness</b>	<b>47.614**</b> (21.162)	<b>45.359**</b> (21.202)	<b>43.222**</b> (20.824)	<b>47.617**</b> (21.855)	<b>46.023**</b> (21.744)	<b>39.960**</b> (19.947)	34.436 -25.938		
<b>Dummy Chukotka</b>	<b>7.332***</b> (0.868)	<b>7.665***</b> (1.122)	<b>8.038***</b> (1.222)						
<b>Dummy Ingushetiya</b>	<b>-4.010***</b> (0.840)	<b>-3.767***</b> (0.927)	<b>-3.570***</b> (0.923)	<b>-3.611**</b> (1.686)	<b>-3.430**</b> (1.691)				
<b>Dummy Moscow City</b>	<b>5.109**</b> (2.329)	<b>5.365**</b> (2.486)	<b>5.630**</b> (2.531)	<b>5.055**</b> (2.495)	<b>5.177**</b> (2.478)				
<b>Dummy St. Petersburg</b>	0.320 (1.244)	0.135 (1.240)	-0.030 (1.215)	0.295 (1.519)	0.182 (1.475)				
<b>Oil and gas</b>	<b>0.010***</b> (0.003)	<b>0.010***</b> (0.003)	<b>0.138**</b> (0.056)	<b>0.010***</b> (0.003)	<b>-0.053*</b> (0.032)	<b>0.156**</b> (0.076)	<b>-0.043*</b> (0.022)	<b>0.144*</b> (0.077)	<b>-0.038*</b> (0.020)
<b>Democracy</b>		0.020 (0.042)	0.038 (0.045)			0.068 (0.098)		0.026 (0.102)	
<b>Democracy * Oil and gas</b>			<b>-0.004**</b> (0.002)			<b>-0.004**</b> (0.002)		<b>-0.004*</b> (0.002)	
<b>Economic institutions</b>				-0.003 (0.011)	-0.006 (0.011)		-0.058 (0.07)		-0.025 (0.072)
<b>Economic institutions * Oil and gas</b>						<b>0.002*</b> (0.001)	<b>0.002**</b> (0.001)		<b>0.001**</b> (0.001)
<b>Constant</b>	4.703*** (1.455)	4.228*** (1.571)	3.722** (1.569)	4.866** (1.964)	4.728** (1.890)	3.028 (2.491)	8.394* (4.941)	7.340*** (2.584)	9.474** (4.039)
<b>Observations</b>	79	79	79	75	75	75	72	75	72
<b>R<sup>2</sup></b>	0.335	0.337	0.347	0.28	0.307				
<b>J.-B. test</b>	13.52***	12.40***	14.83***	14.38***	16.33***				
<b>F-test first stage (institutional variable)</b>						19.67***	3.73**	20.33***	4.40***
<b>F-test first stage (interaction term)</b>						406.93***	209.36***	404.62***	233.57***
<b>Hansen J</b>						1.673	0.256	1.396	0.297

Notes: robust standard errors in parentheses. \*\*\* 1% significance, \*\* 5% significance, \* 10% significance. Outlier according to the J.-B. test is Dagestan in regression (1)-(5). After exclusion of outliers all significant effects in OLS remain significant and hold the original sign.



The results of *Table 2*, nevertheless, provide some interesting observations. Natural resources have a significant impact on growth only for regions with “good” economic institutions: however, the impact is positive only if at the same time the level of democratization is low. If the democracy is relatively well-developed (as opposed to the overall Russian sample), the impact of resources on growth is negative. One could cautiously interpret it as an indication that redistributive activity through a more democratic system “over-compensates” the positive impact of economic institutions. The optimal combination for resource-abundant regions in the sample seems to have low level of democracy and good quality of economic institutions.<sup>14</sup>

Table 2: Impact of resources in growth in four groups of regions, 2000-2006, dep.var.: average growth rate of the gross regional product

	(10) (OLS)	(11) (OLS)	(12) (OLS)	(13) (OLS)
<b>Democracy</b>	<b>Low</b>	<b>High</b>	<b>Low</b>	<b>High</b>
<b>Economic institutions</b>	<b>Low</b>	<b>Low</b>	<b>High</b>	<b>High</b>
<b>Initial GRP</b>	<b>-0.057***</b> (0.017)	-0.040 (0.036)	<b>-0.148***</b> (0.036)	<b>0.411**</b> (0.123)
<b>Education</b>	<b>41.644**</b> (17.263)	10.430 (13.403)	10.444 (11.271)	35.335 (24.905)
<b>Openness</b>	<b>114.429*</b> (55.864)	<b>36.774***</b> (9.457)	-7.037 (50.745)	1.677 (80.039)
<b>Oil and gas</b>	0.042 (0.027)	0.007 (0.005)	<b>0.112***</b> (0.031)	<b>-0.486**</b> (0.166)
<b>Constant</b>	-0.254 (2.816)	5.362** (2.337)	8.144*** (2.076)	-9.928** (4.141)
<b>Observations</b>	22	17	23	13
<b>R<sup>2</sup></b>	0.469	0.438	0.551	0.622

Notes: see Table 1

## 5. Extensions

### 5.1. Disaggregating the index of democracy

As already mentioned, the outcomes of the estimations reported so far are mostly consistent with the Collier and Hoeffler (2005) outcomes for the interaction between

<sup>14</sup> It is also interesting to notice that other determinants of the GRP growth (initial GRP, education and openness) have different significance for different subsamples. It is reasonable, however, not to “over-interpret” these outcomes given small size of each subgroup, as well as problems of self-selection.

democracy and resources as factors of growth. However, the main claim of Collier and Hoeffler – democracy as electoral competition and openness has a negative interaction term, while democracy as a system of “checks and balances” has a positive one – could be (with several caveats) tested explicitly in the Russian sample. In order to do it I will use four sub-indices of democracy, which, as noticed, are used by the Carnegie Center in Moscow to construct the overall index. First, I use two indices to measure the indices of openness and freedom of elections to account for the “negative interaction term” prediction by Collier and Hoeffler. Second, with respect to the “checks and balances” it is much more difficult to find the appropriate indicators, particularly because in the Russian sample the formal differences in political system are much smaller, than in any international comparison (although the informal differences – which, in fact, constitute the core of differences of individual political regimes – are strong enough to make this study reasonable). However, I apply the indices of “political organization” (which also measure the “real balance of power in the region”, as noticed in the *Appendix*) and elites (which look at the multiplicity of the elite groups) as possible proxies to obtain the positive interaction term predicted by Collier and Hoeffler.

The results of the estimations are reported in *Table 3*. To start with, both “checks and balances” variables turn out to provide insignificant interaction terms (and although political organization as such is significant, the effect is not robust to the exclusion of outliers to make Jarque-Bera insignificant). Hence, the “over-compensating” effect of checks and balances does not seem to be present in this sample. One possible interpretation of this outcome is once again the imperfection of democratic transit: it may be possible to hypothesize that it is easier in the early stages of transit to create a competitive political system than to institute a stable system of checks and balances (which are to a certain extent the *outcome* of the political competition, which can be reached only when – and if – democracy consolidates). Therefore I could be observing relatively competitive polities in my sample, but simply fail to find any regions where checks and balances were developed sufficiently enough to make resources a source for growth.

Table 3: Different aspects of democracy, resources and growth, 2000-2006, dep.var.: average growth rate of the gross regional product

	(14)	(15)	(16)	(17)
	(OLS)	(OLS)	(OLS)	(OLS)
<b>Concept of democracy</b>	<b>Openness</b>	<b>Elections</b>	<b>Political organization</b>	<b>Elites</b>
<b>Initial GRP</b>	<b>-0.063***</b>	<b>-0.065***</b>	<b>-0.072***</b>	<b>-0.067***</b>
	(0.021)	(0.023)	(0.024)	(0.024)
<b>Education</b>	<b>17.500**</b>	<b>17.177*</b>	<b>15.836*</b>	<b>17.867**</b>
	(8.561)	(8.632)	(8.437)	(8.554)
<b>Openness</b>	<b>47.727**</b>	<b>44.676*</b>	<b>42.709**</b>	<b>44.258*</b>
	(21.167)	(22.554)	(20.572)	(23.275)
<b>Dummy Chukotka</b>	<b>7.317***</b>	<b>7.949***</b>	<b>8.246***</b>	<b>7.884***</b>
	(1.115)	(1.379)	(1.145)	(1.340)
<b>Dummy Ingushetiya</b>	<b>-4.031***</b>	<b>-3.756***</b>	<b>-3.609***</b>	<b>-3.679***</b>
	(0.917)	(0.909)	(0.817)	(1.015)
<b>Dummy Moscow City</b>	<b>5.163**</b>	<b>5.137**</b>	<b>6.117**</b>	<b>5.774**</b>
	(2.330)	(2.381)	(2.608)	(2.671)
<b>Dummy St. Petersburg</b>	0.390	0.151	-0.800	-0.327
	(1.302)	(1.280)	(1.414)	(1.564)
<b>Oil and gas</b>	<b>0.066**</b>	0.061	0.107	0.070
	(0.033)	(0.071)	(0.135)	(0.098)
<b>Democracy</b>	-0.035	0.249	<b>0.668*</b>	0.335
	(0.315)	(0.360)	(0.372)	(0.499)
<b>Democracy * oil and gas</b>	<b>-0.014*</b>	-0.017	-0.032	-0.020
	(0.008)	(0.023)	(0.045)	(0.032)
<b>Constant</b>	<b>4.756***</b>	<b>4.118**</b>	<b>3.478**</b>	<b>3.778*</b>
	(1.777)	(1.579)	(1.542)	(1.927)
<b>Observations</b>	79	79	79	79
<b>R<sup>2</sup></b>	0.341	0.339	0.363	0.34
<b>J.-B. test</b>	<b>15.83***</b>	<b>12.24***</b>	<b>8.57**</b>	<b>12.69***</b>

Notes: see Table 1. Outlier according to the J.-B. test is Dagestan in all regressions. After exclusion of outliers all significant effects remain significant and hold the original sign, with the exception of Democracy in regression (16), which becomes insignificant (but is still positive).

## 5.2. Appropriability of resources

One of the key results of Boshini et al. (2007) suggests that the “resource curse” or the “conditional resource curse” are in fact functions of the *type of the natural resources* at the disposal of the government and the society. The reason is that different types of resources can be “appropriated” by rent-seeking groups to a different extent (simply because of

technological differences of their use to generate revenue), and thus differ in terms of incentives created. In this extension I explore this opportunity by re-estimating all regressions replacing the originally used measure of natural resources (oil and gas) by natural resources in a sector where the ability to capture rents is usually lower, i.e. agriculture. As proxy I take the share of agriculture and forestry in the value added of the region and then estimate regressions (1)-(5) once again with this new variable. The results are reported in *Table 4*. On the one hand, agriculture is significant and positive in almost all specifications (although the result is not robust to outliers). However, I find no evidence for statistical significance (alone or in interaction with agriculture) for economic institutions. As for political institutions, the results do not change as opposed to the oil and gas: once again, increasing the level of democracy in this society makes resource-abundance a negative factor for growth. *Figure 4* represents, however, the marginal effect, which seems to be significant (and positive) only for the low level of democracies: it is negative for the high level of democracy, but for this part of the sample zero is within confidence bounds.

The interpretation of the results is twofold. First, I find partial confirmation for the idea that “resource type” matters for the effects of resource curse. It seems to be straightforward for economic institutions, although for political institutions the results do not change. However, second, it is also important to understand that the resources mentioned differ not only in terms of the ability of interest groups to capture rents generated by them, but also in terms of the “size of the rents” simply because of the sample chosen in this paper. For the Russian Federation oil and gas are, as it is well known, the traditional export goods, which in fact are responsible for the main part of economic growth in the country in general. Agriculture, on the other hand, has been an area of permanent crises and weaknesses at least for the second half of the 20th century. Although the situation in the sector improved in the 2000s as opposed to the 1990s (probably, explaining the positive effect of agriculture observed in this sample – however, in this case it seems to be driven by growth in extremely poor “outlier” regions with large agriculture like Dagestan, an ethnic republic in the Northern Caucasus), Russia is still far from having a strong and internationally competitive agricultural sector. Hence, the very use of the share of agriculture in a “resource curse” discussion should be done with caution – because the existence of the “resource rents” is not natural.<sup>15</sup>

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<sup>15</sup> I have also experimented with other measures of resource endowment, including share of mining in value added and an index of “resources” reported by Vainberg and Rybnikova (2006) and “aggregating” over different types of natural endowments. However, the interaction terms have never been significant in these specifications.

Table 4: Agriculture, institutions and growth, 2000-2006, dep.var.: average growth rate of the gross regional product

	(18)	(19)	(20)	(21)	(22)
	(OLS)	(OLS)	(OLS)	(OLS)	(OLS)
<b>Initial GRP</b>	-0.008 (0.018)	-0.008 (0.019)	-0.017 (0.020)	-0.008 (0.018)	-0.011 (0.017)
<b>Education</b>	15.414 (9.278)	14.881 (9.467)	10.115 (9.565)	14.831 (11.588)	15.135 (11.206)
<b>Openness</b>	<b>54.570***</b> (20.449)	<b>52.536**</b> (20.215)	<b>52.534**</b> (20.353)	<b>55.090**</b> (21.149)	<b>53.211**</b> (22.289)
<b>Dummy Chukotka</b>	<b>5.644***</b> (0.670)	<b>6.140***</b> (0.911)	<b>6.691***</b> (0.953)		
<b>Dummy Ingushetiya</b>	<b>-4.282***</b> (0.939)	<b>-4.037***</b> (0.915)	<b>-5.953***</b> (1.220)	<b>-3.624**</b> (1.703)	<b>-8.187*</b> (4.757)
<b>Dummy Moscow City</b>	1.765 (2.250)	2.073 (2.334)	2.781 (2.324)	1.748 (2.516)	0.979 (2.559)
<b>Dummy St. Petersburg</b>	1.037 (1.432)	0.932 (1.447)	-0.750 (1.496)	1.100 (1.730)	0.743 (1.639)
<b>Agriculture</b>	<b>0.099*</b> (0.055)	<b>0.122*</b> (0.067)	<b>0.535***</b> (0.185)	<b>0.100*</b> (0.055)	-0.065 (0.126)
<b>Democracy</b>		0.039 (0.050)	<b>0.188**</b> (0.079)		
<b>Democracy * agriculture</b>			<b>-0.017**</b> (0.008)		
<b>Economic institutions</b>				-0.005 (0.011)	-0.043 (0.036)
<b>Economic institutions * agriculture</b>					0.003 (0.003)
<b>Constant</b>	2.292 (1.839)	1.010 (2.491)	-1.531 (2.359)	2.614 (2.354)	4.575* (2.424)
<b>Observations</b>	79	79	79	75	75
<b>R<sup>2</sup></b>	0.274	0.28	0.333	0.215	0.241
<b>J.-B. test</b>	12.52***	10.91***	14.27***	13.24***	11.00***

Notes: see Table 1. Outlier according to the J.-B. test is Dagestan in all regressions. After exclusion of outliers all significant effects remain significant and hold the original sign, with the exception of agriculture in regression (18), (19) and (21), which becomes insignificant, but still positive.

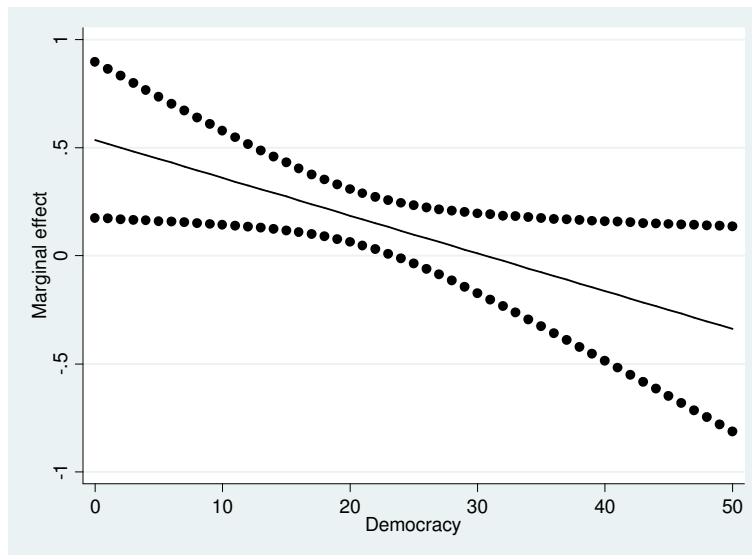


Figure 3: Marginal effect of the share of agriculture on growth for different levels of democracy

At this stage a number of further robustness checks seems to be appropriate. While introducing the share of agriculture attempted to test for *different impact of different types of resources*, it is also important to understand whether we *measure the resources* in the main model *in a correct way*. On the one hand, oil and gas is indeed the most significant of Russia's economic resources with strong export potential. On the other hand, for several Russian regions other resources (like diamonds for Sakha or non-ferrous metals for Taimyr) play the crucial role. Unfortunately, the statistical data on these resources is much more fragmented than on oil and gas; moreover, in many cases (like, once again, diamonds) we are dealing with just one or two regions, what makes econometric testing meaningless.

Nevertheless, I attempted to check for the impact of other mineral deposits.<sup>16</sup> To start with, I applied the indices suggested by Vainberg and Rybnikova (2006) to capture the resource potential of the region. The first one ranks all regions according to their coal, oil, gas and gold deposits. The second estimates the total value of the mineral deposits in the region (in the descriptive statistics and description of variables tables they are referred to as "Natural resources I" and "Natural resources II" respectively). However, neither these variables nor their interaction terms neither for democracy nor for economic institutions were significant. This result calls for different interpretations. On the one hand, it is possible that oil and gas indeed has a unique impact on the economic performance of Russian regions, even as opposed to other resources. On the other hand, it is also possible that other resources are simply mismeasured by these proxies. Finally, it could once again indicate the differences in

<sup>16</sup> The regressions are not reported in this paper, but are available on request.

appropriability even between natural resources – and hence confirm the conjecture I attempted to test in this section.

Second, I used the share of extraction industry in the GRP as proxy for resource-dependence. This variable is, on the one hand, even better than oil and gas extraction, because it also takes into account the relative size of the regional economy (for example, if the total extraction is small, but so is the economy of the region, resource dependence is large). On the demerit side, the variable has been consistently reported only for 2004, 2005 and 2006, since Russia had a major transition in its statistics in the mid-2000s, implementing a new industry classification. Share of mining can be relatively stable (as a representation of the economic structure), but could also be influenced by the development of prices. Nevertheless, I have constructed an average for 2004-2006 and applied it (with the respective interaction term) in all regressions for 2000-2006. For the economic institutions neither the interaction term nor the mining as such are significant. For the democracy variable share of mining is, once again, insignificant, but the interaction term is positive and significant. Since share of mining and oil and gas extraction are correlated (correlation coefficient of 54.69%), this result is interesting and could once again indicate differences in the appropriability of resources: for example, a difference between oil and coal with a very limited export potential of the latter and strong social obligations related to active position of the coal miners in the political processes of early 1990s. However, it would be important not to over-interpret the results given that the timeframe for the observations for the share of mining is extremely small.

## **6. Conclusion**

The aim of this paper was to look at impact of political and economic institutions on the effectiveness of natural resources for the economic growth. Specifically, it looked at a “skewed” sample without regions with well-developed democratic regimes and countries with well-protected institutions. Unlike almost all studies in the literature, my focus has been intra-national variation of resource endowment and political regimes. Using a dataset from the Russian Federation, I find that increasing the quality of economic institutions is indeed instrumental in making natural resources a growth factor: “resource curse” is observed in regions with the lower quality of institutions. On the other hand, I find that increasing democracy seems rather to make resources harmful for growth, probably because of increasing rent-seeking. In the world of non-democratic and “hybrid” regimes and generally limited quality of institutions resources seem to generate growth in jurisdictions with low level of democracy and relatively good institutions.

There are several restrictions for the interpretation of the results of this paper to be mentioned. First and foremost, institutions-and-growth nexus cannot be resolved without a proper instrumentation technique. The instruments used in this paper, although have nice statistical properties, are primarily empirically motivated. Logically, there seems to be little doubt in their exogeneity; but it is more difficult to explain why number of forest fires is correlated with democracy. Therefore a more cautious interpretation of the result of this paper were to look at them as correlations rather than causal links. Nevertheless, even in this case the outcomes seem to be interesting or at least non-trivial.

Second, as already mentioned, external validity of this study is not guaranteed – as it is always the case for empirical research looking at within-country differences. This point becomes particularly important if one looks at variation of natural resources (oil and gas vs. agriculture). Nevertheless, first, it is not an unambiguous restriction of the results, but rather a trade-off between the external validity and the compatibility of data and results. Second, the main observations obtained in this sample do not seem to contradict the claims made for the international comparisons – although the Russian sample provided some interesting additional insights – and hence it at least serves as an additional confirmation for the results of the growing “conditional resource curse” literature.

Finally, this paper looks at a very short period of time covering only 7 years. It is certainly a natural drawback dictated by the size of the sample (and by the Russian history), but it adds yet another dimension to the question of external validity. It is particularly true because during this period the Russian Federation has been experiencing extremely beneficial conditions on the markets for commodities. So, possibly, what I capture is not in fact the “resource curse” in its classical meaning (which refers to long-term observations), but rather the ability of different types of political and economic institutions to use their resources in a generally speaking positive environment to generate gains for the economy. However, even this cautious interpretation seems generally speaking to be of interest from both theoretical and policy perspective (in fact, the ability of countries to use their endowment to generate growth in the short run may be crucial for the onset of the more long-term modernization process and the establishment of the reform coalitions).



## Literature

- Ahrend, Rudiger (2005): Can Russia Break the “Resource Curse”? *Eurasian Geography and Economics* 46(8):584-609
- Barro, Robert J. (1996): Democracy and Growth. *Journal of Economic Growth* 1:1-27
- Barro, Robert J. (1999): Determinants of Democracy. *Journal of Political Economy* 107(6):158-183
- Boshini, Anne, Pettersson, Jan, and Jesper Roine (2007): Resource Curse or Not: The Question of Appropriability. *Scandinavian Journal of Economics* 109(3):593-617
- Boshini, Anne, Pettersson, Jan, and Jesper Roine (2009): The Constitutional Channels of the Resource Curse, in: *Meeting Global Challenges in Research Cooperation*. Uppsala
- Chebankova, Elena (2006): The Unintended Consequences of Gubernatorial Appointments in Russia, 2005-6. *Journal of Communist Studies and Transition Politics* 22(4):457-484
- Collier, Paul, and Anke Hoeffler (2005): Democracy and Resource Rents. Global Poverty Research Group Working Paper No. GPRG-WPS-016
- Djankov, Simeon, Glaser, Edward, La Porta, Rafael, Lopes-de-Silanes, Florencio, and Andrey Shleifer (2003): The New Comparative Economics. *Journal of Comparative Economics* 31(4):595-619
- Gel'man, Vladimir (1999): Regime Transition, Uncertainty and Prospects of Democratization: The Politics of Russia's Regions in a Comparative Perspective. *Europe-Asia Studies* 51:939-956
- Jensen, Nathan, and Leonard Wantchekon (2004): Resource Wealth and Political Regimes in Africa. *Comparative Political Studies* 37:816-841
- Karabegovic, Amela (2009): Institutions, Economic Growth and the “Curse” of Natural Resources. *Fraser Studies in Mining Policy*
- Libman, Alexander (2009): Democracy, Size of Bureaucracy, and Economic Growth: Evidence from Russian Regions. CDSE Discussion Paper No. 61
- McMann, Kelly M. (2006): *Economic Autonomy and Democracy: Hybrid Regimes in Russia and Kyrgyzstan*. Cambridge University Press
- Mehlum, Halvor, Moene, Karl, and Ragnar Torvik (2006): Institutions and the Resource Curse. *Economic Journal* 116:1-20
- Obydenkova, Anastassia (2007): The International Dimension of Democratization: Testing the Parsimonious Approach. *Cambridge Review of International Affairs* 20(3)
- Petrov, Nikolai (2009): *Nasledie Imperii I Regionalism*. In: Miller, A. (ed.): *Nasledie Imperiy I Budushee Rossii*. Moscow: NLO
- Polterovich, Viktor, Popov, Vladimir, and Alexander Tonis (2008): Mechanisms of Resource Curse, Economic Policy and Growth. NES Working Paper WP/2008/000
- Robinson, James A., Torvik, Ragnar, and Thierry Verdier (2006): Political Foundations of the Resource Curse. *Journal of Development Economics* 79:447-468
- Ross, L. Michael (2001): Does Oil Hinder Democracy? *World Politics* 53:325-361
- Tornell, Aaron, and Philip R. Lane (1999): The Voracity Effect. *American Economic Review* 89:22-46
- Treisman, Daniel (2010): Oil and Democracy in Russia. NBER Working Paper No. 15667
- Vainberg, Anna, and Tatyana Rybnikova (2006): *Institutcional'nye i Geograficheskie Faktory Razvitiya Regionov Rossii*. Mimeo

## Appendix

Table A1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Age of the city	79	435.66	297.88	12.00	1148.00
Age of the city * Oil and gas	79	7102.90	50333.30	0.00	446443.70
Agriculture	79	11.10	6.23	0.00	30.91
Average growth rate of the GRP	79	6.58	2.37	0.36	14.11
Democracy	79	29.01	6.28	17.00	45.00
Democracy (Elections)	79	2.95	0.75	1.00	5.00
Democracy (Elections) * Oil and gas	79	50.14	357.65	0.00	3181.31
Democracy (Elites)	79	3.00	0.66	2.00	5.00
Democracy (Elites) * Oil and gas	79	49.72	357.63	0.00	3181.31
Democracy (Openness)	79	3.00	0.85	1.00	5.00
Democracy (Openness) * Oil and gas	79	63.37	476.76	0.00	4241.75
Democracy (Political organization)	79	2.77	0.77	2.00	5.00
Democracy (Political organization) * Oil and gas	79	50.30	357.74	0.00	3181.31
Democracy * Agriculture	79	298.53	135.21	0.00	574.71
Democracy * Oil and gas	79	552.48	4052.89	0.00	36054.83
Democracy * Share of mining	79	215.46	358.50	0.00	1974.27
Democracy * Natural resources I	79	949.29	419.14	100.00	1722.00
Democracy * Natural resources II	79	155.50	41.40	50.00	246.00
Dummy Chukotka	79	0.01	0.11	0.00	1.00
Dummy Ingushetiya	79	0.01	0.11	0.00	1.00
Dummy Moscow City	79	0.01	0.11	0.00	1.00
Dummy St. Petersburg	79	0.01	0.11	0.00	1.00
Economic institutions	75	53.58	29.51	12.00	176.00
Economic institutions * Agriculture	75	641.14	642.68	0.00	4224.00
Economic institutions * Oil and gas	75	638.39	4010.12	0.00	34676.27
Economic institutions * Share of mining	75	362.27	554.46	0.00	2555.12
Economic institutions * Natural resources I	75	1783.32	1295.60	118.40	7392.00
Economic institutions * Natural resources II	75	291.42	179.26	59.20	1056.00
Education	79	0.17	0.04	0.11	0.36
Initial GRP	79	32.76	24.41	6.67	176.92
Natural resources I	78	33.08	12.67	3.00	42.00
Natural resources II	78	5.40	1.06	2.00	6.00
Number of forest fires	79	283.81	435.68	0.00	2577.00
Number of forest fires * Oil and gas	79	18593.15	160303.40	0.00	1425226.00
Oil and gas	79	16.63	119.24	0.00	1060.44
Openness	79	0.01	0.01	0.00	0.10
Share of mining	79	7.19	11.38	0.00	56.70

Table A2: Description of variables<sup>17</sup>

Variable	Description	Period	Source
Age of the city	Age of the regional capital, years, as if 2007, years, for Moscow and Leningradskaya regions – age of Moscow and St. Petersburg respectively	2007	Petrov (2009)
Agriculture	Share of agriculture and forestry in the total regional value added, %, average value for seven years	2000-2006	Goskomstat <sup>18</sup>
Average growth rate of the GRP	Growth rate of the GRP in %, inflation-corrected, average value for seven years	2000-2006	Goskomstat
Democracy	Index of democracy based on expert opinion, higher values represent higher level of democracy	2000-2004	Moscow Carnegie Center
Democracy (Elections)	Index of freedom of elections, based on expert opinion, higher values represent higher level of freedom	2000-2004	Moscow Carnegie Center
Democracy (Elites)	Index of multiplicity of political elites and predominance of power shift through elections, higher values represent higher level of multiplicity	2000-2004	Moscow Carnegie Center
Democracy (Openness)	Index of transparency of regional politics, higher values represent higher level of transparency	2000-2004	Moscow Carnegie Center
Democracy (Political organization)	Index of real balance of power in the political elite, higher values represent more developed balance of power	2000-2004	Moscow Carnegie Center
Dummy Chukotka	1 if region is Chukotka, 0 otherwise	NA	Own calculation
Dummy Ingushetiya	1 if region is Ingushetiya, 0 otherwise	NA	Own calculation
Dummy Moscow City	1 if region is Moscow City, 0 otherwise	NA	Own calculation
Dummy St. Petersburg	1 if region is St. Petersburg, 0 otherwise	NA	Own calculation
Economic institutions	Share of entrepreneurs claiming to never face illegal activities of bureaucrats – Share of entrepreneurs claiming to often or at least sometimes face illegal activities	2005	Opora Rossii (calculated by Vainberg and Rybnikova, 2006)
Education	Share of the population with university degree	2002	Russian Census
Initial GRP	Gross regional product per capita in 2000, '000 RUR	2000	Goskomstat
Natural resources I	Ranking of regions from 1 (highest resources) to 42 (lowest resources) based on the deposits of oil, gas, coal and gold	1998	Vainberg and Rybnikova, 2006
Natural resources II	Ranks regions from 1 (highest resources) to 6 (lowest resources) depending upon the value of their explored natural resource deposits (USD)	1996	Vainberg and Rybnikova, 2006
Number of forest fires	Number of forest fires reported in 2000	2000	Goskomstat
Oil and gas	Extraction of oil in the region, mln. ton * 1.4 + Extraction of gas in the region, bln.	2000-2006	Goskomstat

<sup>17</sup> The description includes only the “primary” variables, and not their interaction terms (since their calculation is obvious as a product of respective variables”).

<sup>18</sup> Goskomstat is the Russian Federal Statistical Authority

Openness	sq. m * 1.2, average value for seven years (Export + Import (mln. USD) / GRP (mln. RUR), average value for seven years	2000-2006	Goskomstat
Share of mining	Share of mining in regional GRP, average value for three years, %	2004-2006 (applied for all years)	Goskomstat

Table A3: Components of the index of democracy of the Moscow Carnegie Center

Component	Comments
Civil society	NGOs, referenda, freedom of public political activity
Corruption	State capture in a broader sense, i.e. interconnections between political and business elites and their interventions in the political decision-making
Economic liberalization	Specific directed interventions of regional administration, ignoring property rights of influential players (e.g. potential opposition)
Elites	Existence of a mechanism of leader changes through elections, existence of multiple political elites
Freedom of elections	Elections at all levels (national, regional, local) included
Freedom of local municipalities vis-a-vis their dependence from the regional government	
Independence of the media	
Openness of regional political life	Transparency of regional politics and its involvement in the overall national politics
Political pluralism	Existence of stable political parties, representation of parties in regional legislatures
Regional political organization	Real balance of power between the executive and the legislative, elections / appointments of crucial political actors, independence of courts and police, protection of citizen rights