DISCUSSION PAPER SERIES

No. 4024

INSTITUTIONAL SUBVERSION: EVIDENCE FROM RUSSIAN REGIONS

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TRANSITION ECONOMICS

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ABSTRACT

Institutional Subversion: Evidence from Russian Regions*

What are the effects of institutional subversion on small business development, fiscal policies, economic growth and firm performance? This Paper provides an empirical investigation of institutional subversion in Russia's regions. We develop a complete account of preferential treatments to the largest regional firms in texts of regional legislation during 1992-2000. The concentration of preferential treatments is used as a proxy for legislative subversion. Based on cross-section and panel data analysis, we find that regional institutional subversion has an adverse effect on small business growth, tax collection, social public spending, and federal tax arrears. Robustness of these results is verified by looking at a proxy for potential subversion based on size concentration in regional economies. The alternative approach produces similar results. Regional political influence generates substantial gains to firms both in the long and the short run. These firms exhibit faster growth in sales, market share, profitability, employment, and capital compared to their counterparts who are not politically connected. Yet, firms that exercise political influence have lower labour productivity.

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Submitted 23 July 2003

1. Introduction

Ever since the emergence of post-Washington consensus, striking differences in economic performance among transition countries and provinces within transition countries have been attributed to differences in institutional environment. A wide range of institutions has been named to be important for transition to go smoothly, including federalism, political regime, property rights protection, presence of an outside anchor, social norms, and trust.[1] Institutions, however, are not exogenous. Vested interests often influence the evolution of the very rules of the game in the economy. The literature labels this phenomenon *state capture* or *institutional subversion*.

The first decade of Russia's transition was notorious for intervention of *oligarchs* in determining the direction and speed of institutional reforms. A recent survey (BEEPS 1999) confirmed that state capture was deeply rooted in economic and political processes of Russia that ranked the fourth in the composite index of state capture among twenty transition countries.[2] Governments below the central level were also subject to capture: Ericson (2000) emphasized high penetration of the local and regional governments with local businesses. Russia provides a good case for studying consequences of institutional subversion not only because the problem is there, but also because of high variation in regional institutions that was a result of vast regional political autonomy in the first half of the 1990s (Shleifer and Treisman, 2000). All regional laws are in the public domain; this allows us to construct a reliable measure of institutional subversion by studying preferential treatments to particular firms in regional legislations. This paper attempts a close examination of the effect of subversion of

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[1] For an excellent survey of the literature, see Roland (2000).

[2] BEEPS 1999 and 2002 are the Business Environment and Enterprise Performance Surveys, conducted jointly by the World Bank and the European Bank for Reconstruction and Development in transition countries. See http://info.worldbank.org/governance/beeps/ for survey description, data, and research.

regional legislature on regional budgetary and regulatory policies, aggregate growth, growth of small businesses, and performance of politically influential firms.

The theoretical literature on institutional subversion was originated by Olson (1965), Stigler (1971), Pelzman (1976), and Becker (1983) and developed further by Laffont and Tirole (1991). Seminal work of Grossman and Helpman (1994, 1995) created the contemporary framework for studying interest groups politics. Persson (1998) studied interest-group-specific government spending. Glaeser, Scheinkman, and Shleifer (2003) analyzed the effects of institutional subversion on law and order, property rights protection, capital accumulation, growth, and inequality. Benedssen (2000) and Sonin (2003a) applied ideas of the literature to the context of transition. Theoretical literature identified the following determinants of state capture: cohesiveness of interest groups, level of voter awareness, electoral competition, electoral uncertainty (Bardhan and Mookherjee, 1999), political centralization (Blanchard and Shleifer, 2000), initial inequality (Glaeser, Scheinkman, and Shleifer, 2003), and industrial concentration (Sonin, 2003b).

Empirical studies of institutional subversion are scarce. The main reason is the difficulty of finding direct measure of influence because neither firms nor bureaucrats would like to be caught busy with high-level corruption. Stigler (1971) in his seminal work on regulation provided some evidence of regulatory capture in occupation licensing in the US. This originated extensive literature on regulatory capture. An example of recent work is Tanguay, Lanoie, and Moreau (2001); they analyzed data for 22 OECD countries to show that pressure groups affect environmental regulations. Most of empirical research on state capture in transition countries is based on the data from BEEPS 1999 and 2002 enterprise surveys that asked firms if they engage in activities that can be characterized as extending political influence or feel that other firms do that (see, Hellman, Jones, Kaufmann, and Schankerman, 2000; Hellman and Schankerman, 2000; Hellman, Jones, and Kaufmann, 2000; Hellman and Kaufmann, 2003). These works show that, first, there is a sizable variation in the levels of capture among transition countries and, second, the speed and success of reforms is partly explained by the

interplay of capture and democratization of transition economies. Firm-level analysis of BEEPS data shows that in high-capture countries, captor firms have superior performance in the short run compared to similar non-captor firms but do not expect to perform better in the long run. Fry (2002) presents the results of an enterprise survey in eight Russian cities in 2000 where he shows that in majority of cases successful lobbying is achieved through usage of personal ties with government officials. Hellman (1998) provides evidence based on cross-country data that a reason for why some transition countries maintained partial economic reforms was that in these countries short term gains from reform accrued to highly concentrated interest groups.

This paper analyses objective regional panel data from one country Russia. It turns out that measuring the extent of institutional subversion based on official publicly-available information is challenging but feasible exercise. Russia, as many other countries, has a system that allows legislation to be enacted only after its publication. We study regional legislation in order to discover laws that treat economic agents unequally. It is worth mentioning that in some transition countries (e.g., Uzbekistan) this kind of legislation is a state secret.

We construct a measure of institutional subversion based on direct evidence of vested interests influence in texts of regional legislation. First, we count the number of regional legislative acts that contain preferential treatments (tax breaks, investment credits, etc.) to several largest regional firms in each of 73 regions between 1992 and 2000. Typical examples of legislation that contains preferential treatment are the following: In 1998, Volgograd regional legislature adopted the law "On Special Economic Zone on the Territory of Volgograd Tractor Plant (VTP)." The law relieves all firms of paying regional and local taxes for the period of ten years if these firms operate on the territory of VTP and at least 30% of their assets are in VTP's ownership. In Adygeya Republic in 1999 a law was enacted "On preferential tax treatment of the meat-packing plant *Li-Chet-Nekul*." The law grants this plant with regional property tax break for a period of two years. The budget law of Kamchatskaya Oblast of 2001 contained a special budgetary item called "support of fishing industries." It postulated

that only one firm *Akros* receives a large sum of money. Even though there were many fishing firms in Kamchatskaya Oblast, no other firm was mentioned in the budget law.

Then, we take concentration of the resulting number of preferential treatments among firms as a measure of regional institutional subversion controlling for the total number of preferential treatments. Thus, for two regions with the same number of legislative acts that contain preferential treatments, the region where preferential treatments go to only one (or few) large firms is considered to be more subverted compared to the region where preferential treatments are uniformly dispersed across firms. We compare the concentration of preferential treatments across regions and not their total number because the total number of preferential treatments may just reflect the general level of paternalism of the regional governments, while we are interested in the effect of *unequal* treatment of similar economic agents (in our case, firms) by rules and institutions. Similarly, we take the share of preferential treatments that go to a particular firm among the five largest recipients of preferential treatments as a proxy for the likelihood that this firm is a captor because "the regional rules of the game" treat this firm most preferentially.

Although these measures account for the very essence of subversion, they have serious drawbacks: First, we cannot compare the importance of different preferential treatments, thus, we just count the number of "subverted" legislative acts.[3] Second, we can identify legislative preferential treatment given to a particular firm only when the text of the law contains direct reference to this firm.[4] Despite all the imperfections, our measure is highly correlated with other measures of institutional subversion available for selected years and regions. Preferential treatment concentration has correlation coefficient of about 0.45 (significant at 1% significance level) with the Transparency

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[3] For instance, we cannot quantify the difference between the effects of opening a special economic zone on the territory of a particular firm and giving a large piece of land for free to another firm.

[4] An example of a legislative preferential treatment that we cannot systematically account for can be drawn from Briansk regional legislature. In 1997 the regional legislature adopted the law "On the regulation of the alcohol market" that stated that the alcohol is to be sold only by accredited firms. Any firm could get accreditation from the regional administration if it satisfies a list of criteria (for instance, being present on the market for several years, having storage place of a certain size, etc.). Products sold by firms without accreditation were subject to confiscation. There were many firms on the market in the region at that time, but only one satisfied the criteria outlined in the law.

International (TI) and Information for Democracy (INDEM) state capture rating.[5] In addition, our measure of institutional subversion also negatively correlates the Institute of Free Media regional index of press freedom (correlation coefficient is -0.41, significant at 1% significance level).[6] Another piece of evidence that speaks in favor of our measure is that a robustness check that considers size concentration among the biggest regional enterprises as an alternative measure of *potential* institutional subversion produces similar results despite the relatively low correlation between the measures of *potential* and *legislative* subversion.

We deliberately talk about institutional subversion rather than state capture because we cannot differentiate between capture of regional legislation by private businesses and capture of private businesses by regional politicians (e.g., when politicians give favors to firms that are under their own control). We regard both of these cases as examples of institutional subversion since both imply unequal rules for firms set by regional institutions.[7] The main difference between these cases is in distribution of bargaining power between politicians and firms.[8]

We find that institutional subversion has an adverse effect on regional small business growth, tax collection, and public spending on some social services and federal tax arrears. Bias in legislation in favor of particular firms generates substantial performance gains to them both in the long and the short run. Politically connected firms are more profitable, but less efficient.

The paper proceeds as follows. The next section describes the measures of institutional subversion. Hypotheses are formulated in section 3. Section 4 presents data sources and summary statistics. Section 5 contains empirical methodology. Section 6 presents results. Finally, section 7 concludes.

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[5] This variable is available for 39 regions in 2001. All Transparency International and INDEM data can be found at http://www.anti-corr.ru/rating_regions/index.htm

[6] This index is available for 72 regions in 1999 and 2000. It can be found at www.freepress.ru.

[7] Numerous stories in the Russian media suggest that both cases are relevant for Russian regions but the case of state capture is more common.

[8] A bargaining game between politicians and firms is described by Shleifer and Vishny (1994).

2. Measuring institutional subversion

Since the measurement of institutional subversion plays the central role in the whole exercise, we start with its description. First, we limited ourselves to the largest firms in the regions: a list of firms was constructed that includes the five largest (in terms of sales) non-state regional firms and all state regional firms that are among the five largest in at least one year during 1992 – 2000. The resulting list contained 978 firms (up to 20 largest regional firms in each of the 73 regions). We considered these firms as potentially able to exercise political influence. Second, we searched the comprehensive data base of Russia's regional laws for any preferential treatment for each of these enterprises in the regional legislation in each year between 1992 and 2000. We deemed an enterprise to be treated preferentially in a particular year if it received any of the following benefits: tax breaks, investment credits, subsidies, subsidized loans and loans with a regional budget guarantee, official delays in tax payments, subsidized licensing, state property given away for free, or creation of a "Special Open Economic Zone" on the territory of that particular enterprise. The number of regional laws that grant distinct preferential treatments to each firm each year was produced.[9] Each of the 73 regions issued at least one preferential treatment between 1992 and 2000. To check the quality of our preferential treatments data, we correlate it with budgetary subsidies reported in firms' balance sheets and found strong significant correlation despite the fact that direct subsidies were not the most common type of preferential treatments.[10] Third, we constructed a measure of regional subversion by taking concentration of preferential treatments for the five enterprises that received the largest number of preferential treatments in each region each year.[11] Henceforth, we refer to this variable as "preferential treatment concentration (PTC)." Holding the total number of preferential treatments constant, a higher

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[9] Preferential treatments are persistent: If a firm receives preferential treatments in any particular year, there is an over 60% chance that it also receives preferential treatments in the subsequent or the previous year. If the firm does not get preferential treatments in any particular year, there is an over 80% chance that this enterprise does not get preferential treatments in both the subsequent and the previous year. Of the firms in our sample, 56% do not receive any preferential treatments throughout the whole period.

[10] The largest share of preferential treatments (39% of the total number) are the tax breaks; the second most common are the subsidized loans from the budget (20%); and the next largest group is the direct subsidies (7%).

value of PTC is an indication of a higher extent of regional legislative subversion because few firms receive disproportionate amount of preferential treatments in the regional legislature. As a proxy for firm's political influence, we take the share of regional preferential treatments that go to a particular firm in the total number of preferential treatment for their five largest recipients.

PTC is an indication of merely one aspect of institutional subversion. The institutional environment affected by vested interests is much richer than just the regional legislation. In particular, political influence of vested interests extends over law enforcement (i.e., court decisions) and regulation (i.e., licensing policies). To check robustness of our results, we take output concentration among ten largest non-state regional firms as an indirect measure of regional *potential* subversion.[12] The theoretical story behind the potential subversion measure was given by the literature on interest groups politics where bigger agents are assumed to organize their interests more easily.[13] Concentration matters for potential subversion because it makes organization cheaper. Glaeser, Scheinkman, and Shleifer (2003) argued that there is a feedback in the relationship between concentration and institutional subversion: inequality leads to subversion and weak institutions allow only the rich to protect themselves and become even richer. Sonin (2003b) argues that the extent of provincial protectionist policies in a federal state depends on the industrial concentration of sub-national constituent units.

3. Hypotheses

The literature motivates us to formulate the following hypotheses.

<u>Small business growth</u>

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[11] As a measure of concentration, we take a sum of squared shares of the numbers of preferential treatments (the Herfindahl-Hirsman measure).

[12] We include the same number of the largest regional firms into the size concentration measure in order to have comparability across regions. Not including the smaller firms into the formula does not create a problem because only the largest firms can effectively capture the state. The results are robust to changes in the number of firms included in the concentration measure.

[13] Persson and Tabellini (2000) for a review.

On the one hand, large powerful firms in transition economies may be interested in SME growth because they may have excessive employment and cannot lay off workers for political reasons unless there are small firms to hire them.[14] In this case, politically powerful firms would lobby for creating favorable regulatory environment for small business. On the other hand, SME growth may be against interests of large firms if they compete with small firms for scarce skilled labor (Friebel and Guriev, 2002) or scarce government resources (Gehlbach, 2003). In the case of such competition, vested interests are likely to put pressure on regional authorities to harden regulatory environment for small business. Regional authorities have considerable discretion over regulating small and medium-size private business: they can change entry costs through registration, certification, and licensing and costs to existing firms through inspections and municipal property leases (Zhuravskaya, 2000 and CEFIR Monitoring report, 2002). There is also a possibility outlined by Gehlbach (2003) that there is no hostility of large firms towards small business, but the fact that vested interests capture budgetary resources implies that there is fewer left for developing infrastructure for small business and bureaucrats' salaries that prevent them from preying on SMEs. Thus, the arguments set forth by Friebel and Guriev (2002) and Gehlbach (2003) suggest that regions with higher level of institutional subversion have smaller SME sector because SMEs are driven to the unofficial economy or completely out of the market.[15]

GDP growth and investment

Theoretical predictions about the effect of institutional subversion on GDP growth and investment are ambiguous. On the one hand, the subversion of institutions by vested interests should necessarily lead to lower growth and investment in discriminated firms. On the other hand, state capture improves growth prospects and return on investment in captor firms because they obtain investment credits, tax breaks, and protection from competitors. Thus, politically influential firms are

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[14] Managers of large firms may also be interested in SME growth because they want to eat in good restaurants and shop in nice stores without flying to Paris every time.

the major potential source of growth in environment with subverted institutions.[16] Moreover, in the

long run institutional subversion may lead to deterioration of growth even in politically influential

firms because these firms lack incentives to improve efficiency.[17]

Tax collection and arrears

We expect tax collections to decrease with an increase in institutional subversion for a given

level of tax base because vested interests use political influence to decrease their tax burden. Since the

large enterprises who contribute the most to regional budgets are also the ones who have political

influence, this effect should be seen in the aggregate. This also implies that tax arrears should be

higher in more subverted regions because influential firms lobby for less strict tax enforcement. We

expect federal arrears to increase to a larger extent than regional arrears since regional authorities often

protect regional firms from paying federal taxes.[18]

Social spending

Friebel and Guriev (2002) argue that large enterprises in Russia are trying to attach skilled

workers by paying them in-kind (for instance, providing them with corporate housing, healthcare,

education, and daycare). This is done in order to prevent savings sufficient for the workers to leave.

One implicit assumption of their model is that workers value privately provided social services because

of poor public service provision. Public access to high quality social services undermines the large

firms' attachment strategies. Friebel and Guriev predict that public spending on housing, healthcare,

daycare centers is lower in regions with higher institutional subversion.

There are two alternative explanations of a negative relationship between social spending and

institutional subversion, however. First, vested interests may not be concerned with social services at

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[15] See, for instance, Johnson, Kaufmann, and Shleifer (1998) and Frye and Zhuravskaya (2000) for empirical studies of the unofficial economy.

[16] This argument echoes the ideas of endogenous growth theory, see Agion and Howitt (1998) for a review.

[17] Nickell (1996) stressed the importance of competition for corporate incentives. Aghion, Bloom, Blundell, Griffith, and Howitt (2002) showed nonlinearity in relationship of competition and innovations.

[18] Mechanisms of the regional protection from paying federal taxes have been extensively studied in the literature. See, for instance, Ponomareva and Zhuravskaya (2001), Shleifer and Treisman (2000), Treisman (1999), Lambert et al. (2000), and Sonin (2003b) for theory and evidence on protection of regional firms from paying federal taxes.

all; instead, they are more interested in other budgetary items (for instance, expenditures on industry, police, and media). In this case they would lobby for substitution of expenditures on social infrastructure services by spending on these budgetary items. Second, large enterprises and regional governments may agree to private provision of social services in exchange for tax breaks in order to avoid paying federal tax obligations.[19] Both of these stories are consistent with institutional subversion. We test whether regional variation in any of the budgetary items can be partly explained by differences in the level of regional institutional subversion.

Firm performance

Hellman, Jones, and Kaufmann (2000) pointed out that in countries with an active market for capture politically influential firms enjoyed better performance in terms of growth in sales, employment, and investment in the short run. They also showed that captors did not expect to outperform other firms in the long run. We test if our data are consistent with these findings. In addition to performance indicators used in the BEEPS study we compare firm's profitability, labor productivity, and market power.

Worker-attachment story (Friebel and Guriev, 2002) predicts higher bargaining power of politically influential firms *vis-a-vis* their employees. Thus, wage arrears in these firms should be higher. Political power may also allow firms to maintain higher arrears to suppliers because of subversion of contract enforcement institutions. As discussed above, we also expect tax arrears to be higher in politically influential firms.

3.1. Possible endogeneity problem and alternative explanation "social support hypothesis"

Since our measures of the extent of institutional subversion are based on legislative preferential treatment, we face an endogeneity problem because preferential treatments may depend on regional and firm performance. Suppose that few large regional firms are in distress. Then, regional authorities (executives and legislators) may have political incentives to support these distressed firms because their

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[19] See Lavrov, Litwack, and Sutherland (2001) for a description of the mechanism of federal tax evasion.

potential closure threatens regional political stability. If authorities believe that social and political costs of having wages unpaid or workers laid off in these firms are high enough, preferential treatments would be granted to them.[20] If, however, there are no effective institutions of redistribution, giving preferential treatments to firms might be reasonable. We refer to this possibility as *social support hypothesis*. Social support motives for protection were discussed in Gray (1973, 1975), Corden (1974), and Baldwin (1989). The main difference between the social support and institutional subversion hypotheses is in the nature of political process: social support hypothesis implies standard "one man, one vote" politics while institutional subversion implies interest groups lobbying. If social support is a driving force of some preferential treatments, we have to instrument preferential treatments to eliminate reverse causation. Otherwise, error term in the firm-level regressions would be correlated with regressors because social support implies that worsening in firm performance results in a higher share of firm's preferential treatments.

Just as the institutional subversion hypothesis, social support hypothesis predicts a performance increase subsequent to the issue of favorable legislation, since preferential treatments are given to ease distress in firms. Thus, even when we eliminate reverse causation, it is possible that our results would have alternative social support explanation. In the methodology section 5 we explain an empirical strategy that eliminates social support story altogether. This strategy works only for a part of our analysis and, therefore, it is worth to compare predictions about the effects of preferential treatments on firm performance according to the two alternative explanations. The predictions about changes in employment, sales, investment, and profitability of recipients of preferential treatment are similar irrespective of the nature of preferential treatments - social support or institutional subversion. Therefore, we may overstate the effect of institutional subversion looking at these indicators if the social support story is not ruled out. There is one important difference in predictions of the alternative hypotheses at the firm-level, however: when a firm receives preferential treatments, social support

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[20] Ideally, social support should go directly to households and not to firms because, otherwise, benefits are assumed by firm

predicts reduction in arrears to workers and suppliers (since elimination of arrears is a primary purpose of the social support); in contrast, institutional subversion predicts accumulation of wage and trade arrears because preferential treatments are an indication of accumulation of bargaining power vis-a-vis suppliers and workers. Thus, at most we risk understating the effect of institutional subversion on wage and trade arrears.

Social support hypothesis has much more relevance to the firm level compared to the regional level analysis because it is related to overall paternalism and not to the concentration of preferential treatments. There is a possibility that at the regional level social support is related to preferential treatment concentration variable for a given number of preferential treatments (our measure of paternalism). If the capacity of regional government to give out preferential treatments is restricted for unobserved political reasons, regional concentration of preferential treatments should increase with a decrease in performance of few large regional firms according to the social support hypothesis because in that case, larger share of preferential treatments should go to distressed firms. This endogeneity can be eliminated using instruments. Again, since elimination of reverse causality may not be sufficient to eliminate the social support explanation of the results, we discuss the differences in predictions of the two stories. Political incentives of regional authorities are such that once large regional firms face financial distress, regional authorities would not only be interested in keeping these firms alive, but also in trying to ease social consequences of possible lay offs. Thus, regions where large enterprises face financial distress should have higher social spending as a share of total budget and more benign small business environment. These predictions are the opposite to the predictions of institutional subversion hypothesis. Thus, regressions for SMEs and social spending would produce results biased towards zero if we do not properly control for the social support story. In contrast, tax collection efforts should decrease with an increase in preferential treatment concentration according to both the

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owners instead of workers, especially when labor market is monopsonistic.

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social support and institutional subversion stories, thus, we risk overstating the magnitude of the results.

The choice of instruments is discussed in the methodology section below. In some cases we could not find valid instruments, however. Thus, it is worth discussing additional evidence that helps to differentiate between the two views on the nature of preferential treatments: institutional subversion and social support. First, at the regional level, poverty, and unemployment are not related to the past, present, or future numbers of preferential treatments or their concentration. Second, as discussed in the introduction, preferential treatment concentration variable is highly correlated with the available alternative measures of state capture (e.g., the TI and INDEM index of state capture and the freedom of media index). Third, at the firm-level, the share of favorable legislation is positively correlated with increases in profitability for a given level of employment. All these pieces of evidence are inconsistent with the view that preferential treatments on average are driven by social support.

4. Data and summary statistics

Data sources

We use panel data from the following sources:

1) Financial and other statistical data on enterprises comes from Russian Enterprise Registry Longitudinal Data set (RERLD) and ALBA data set. RERLD covers most basic financial statistics on about 45,000 large and medium size firms in Russia that produce over 85% of Russia's official industrial output. The data spans from 1992 to 2000 for 86 regions.[21] ALBA contains balance sheets of about 25,000 large and medium size firms in 78 Russia's regions between 1996 and 1999.

2) Comprehensive database of Russian regional laws "Consultant Plus" was used to construct a panel data set on legislative capture (www.consultant.ru/Software/Systems/RegLaw).

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[21] For a detailed description of the data base, see Brown and Earl, 2000.

3) Regional budgetary data for 1996 - 2000 come from the Ministry of Finance of the RF (www.minfin.ru).

4) Other regional level statistical data come from "Goskomstat," the official Russia's statistical agency. The panel spans 1996 - 2000. Some data series (e.g., turnover) start in 1992.

<u>Summary statistics</u>

Table 1 presents summary statistics for the measures of institutional subversion. The mean value of preferential treatment concentration (0.395) corresponds to the common situation where in a particular year one regional enterprise receives two preferential treatments, another two enterprises receive one preferential treatment each, and all other regional firms do not receive preferential treatments. The mean value of output concentration is 0.226. On average, the first firm's output is twice as large as the output of the second largest firm and three times as large as the output of the third largest firm. [22] As table A1 shows, measures of legislative and potential capture are positively, significantly, but not very highly correlated. Despite the low correlation between the legislative and potential capture, the results using the two alternative measures are similar.

Figure A1 presents the map of regional residual preferential treatment concentration filtered through the total number of preferential treatments. Figure A2 shows the dynamics of the measures of institutional subversion throughout the 1990s.

5. Empirical methodology

5.1. Regional–level regressions

First, we study macroeconomic effects of institutional subversion using regional panel regressions. In the short run analysis, we estimate the following fixed effects regression:

$$Y_{it} = a_1 PTC_{it-1} + a_2 NPT_{it-1} + a_3 X_{it} + a_4 YEAR_t + r_i + e_{it} \qquad (1)$$

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[22] For comparison: the mean value of employment concentration among ten largest firms is 0.160. On average, employment in the largest enterprise is 70% larger than in the second largest; the second largest is 35% larger than the third; the third – 20% larger than the fourth, etc.

Notation is as follows: Subscript i identifies region; t - year; Y - characteristics of macroeconomic conditions of the regional economies; PTC - preferential treatment concentration (our proxy for the regional institutional subversion); NPT - number of preferential treatments in five regional enterprises with maximum number of preferential treatments (our proxy for regional paternalism); $YEAR$ - year dummies; r - regional fixed effects. Greek letters denote estimation parameters. X stands for control variables which vary with dependent variables. For each of the hypotheses tested using equation 1 table 2 presents all the variables used as dependent and control variables.[23] We have no valid instruments for preferential treatment concentration in this specification, thus, we take lagged values in attempt to control for possible endogeneity.[24]

Equation 1 is the only equation for which we can use potential capture measure as a robustness check because in the rest of the analysis interpretation of results with the potential capture measure suffers from alternative explanations related to Soviet legacies that we can not rule out.[25]

In the long run we test only the hypotheses related to small business development, GRP growth, and investment (this is because budgetary spending and revenues are inherently a short run phenomena and the long run theoretical predictions are unclear). Thus, for the long run analysis, we estimate the following regional-level between effects IV regressions:

Small business per capita:

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[23] We do not test for relationship between the short run changes in institutional subversion and per capita GRP or investment because short run changes in these variables are primarily driven by business cycles.

[24] Taking lags may not adequately deal with the possible endogeneity, but this is the only available option. Thus, we draw on indirect evidence (discussed at the end of section 3.1) that social support is not empirically relevant to Russia's regional economic policies to motivate the specification used here.

[25] An example of such a story is as follows. Large firms in the Russia's mono-towns inherited social assets from their soviet predecessors. The regional median voters work in these firms. Thus, local governments do not need to provide social services because the median voter does not need them. We take care of such stories about legacies by controlling for initial conditions with fixed effects. There is, however, another alternative story to the potential capture story that cannot be ruled out by using fixed effects. This is a "dynamic" story about Soviet legacy that may explain the link between the size concentration and public goods provision. Suppose as before that social services provided by the largest firms are a Soviet legacy. If public spending on social services goes down, a part of population employed in SMB sector would shift to the large enterprises that have private social services. As a result employment of these enterprises would increase. Consequently, employment concentration would go up. If there is a spare capital capacity at these enterprises, one could argue that output concentration would also go up. We cannot directly rule this story out. But the relevance of this story is questionable because it is a well-known fact that wages in the SMB sector are much higher than in these large enterprises.

$$\overline{SMB_i} = a_1 \overline{PTC_i} + a_2 \overline{NPT_i} + a_3 SMB_{it_0} + a_4 \overline{POP_i} + a_5 \overline{AV\_WAGE_i} + a_6 EDUC_{it_0} + e_i \qquad (2)$$

Per capita GRP growth:

$$\overline{GRP_i} - GRP_{it_0} = a_1 \overline{PTC_i} + a_2 \overline{NPT_i} + a_3 \overline{POP_i} + a_4 EDUC_{it_0} + a_5 INV_{it_0} + a_6 \overline{OIL\&GAS_i} + e_i \qquad (3)$$

Per capita investment growth:

$$\overline{INV_i} - INV_{it_0} = a_1 \overline{PTC_i} + a_2 \overline{NPT_i} + a_3 \overline{POP_i} + a_4 EDUC_{it_0} + a_5 \overline{OIL\&GAS_i} + e_i \qquad (4)$$

The notation in equations 2-4 is the same as in equation 1 with the following additions: Upper bars denote average values of variables across all years (excluding the initial year). Subscript t_0 denotes the initial year.[26] As controls we use log population (*POP*), share of oil and gas industries in industrial production of the region (*OIL&GAS*), and the share of population with higher education (*EDUC*).[27] In GRP growth regression we also control for the initial investment level. In regressions for small business, the outside option in SMB sector is controlled for with the average wage in the industrial sector *(AV_WAGE);* to avoid endogeneity it is instrumented by the initial wage level.

We estimate these specifications using 2SLS. The average preferential treatment concentration (PTC) is instrumented by three variables: the average PTC for the initial three years (t_0, t_{-1}, and t_{-2}), a dummy for ethnic republic, and a dummy for regions with a common border with other CIS countries. The first instrument reflects persistence of subversion; the last two measure the extent of regional political independence from the federal center. The average number of preferential treatments (NPT) is instrumented by the average NPT for the three initial years. All instruments have positive strongly

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So, the workers would have to be compensated for the wage cut; but the increased consumption of social services is unlikely to compensate them fully.

[26] t_0 is different for different dependent variables because of data availability. The following is the definition of t_0 for each dependent variable used in estimation of equations 2-4: retail turnover per capita - 1994; share of small business employment - 1997; number of small businesses per capita - 1995; investment per capita - 1994; private investment per capita - 1995; GRP per capita - 1994. The last year for which data are available is 2000.

[27] Following the standard approach in growth literature, in growth and investment regressions, we control for the share of population with higher education and tried to control for life expectancy. (See, for instance, Barro, 1997, Barro and Sala-i-Martin, 1995, Sala-i-Martin, 1997). Life expectancy has insufficient variation across regions and was insignificant in all regressions due to multicollinearity with year dummies; therefore, we excluded this variable from the baseline specification. In contrast, the share of educated in regional population does not change over time and, therefore, we exclude it from the fixed effects specifications.

significant coefficients in the first stage regression.[28] We subtract the initial values from the dependent variables in regressions 3 and 4 instead of using a more general specification of including them as controls in order to maximize the quality of instruments.

5.2. Firm-level regressions

In order to investigate the gains from political influence to firms, we use the whole sample of firms for which we have the legislative data. For the short run analysis we run fixed effects panel IV regressions. Basic specification is as follows:

$$y_{ft} = a_1 pt\_share_{ft} + a_2 RPTC_{ft} + a_3 NPT + a_4 REG\_trend_{ft} + a_5 ind\_trend_{ft} + f_f + e_{ft} \quad (5)$$

Subscript f identifies firms. Lower case letters denote firm-level and industry-level variables. Upper case denotes regional-level variables. y stands for the following indicators of firms' performance: log values of sales, employment, fixed assets, labor productivity, profit, arrears to suppliers, wage arrears, arrears to budget.[29] f denotes firm fixed effects. pt_share is the average of firm's shares of preferential treatments (taken among their five largest recipients) in this and the previous year. pt_share is instrumented with the two year lag of this firm's employment share among total employment of five largest firms in that year from our sample.[30]

This instrument solves the endogeneity problem associated with the reversed causality between preferential treatments and performance that preferential treatments are given to poorly performing firms because of social support. It, however, does not eliminate the alternative (social support) explanation of the results. Preferential treatments associated with social support are related not only to performance but also to the employment size: the larger the enterprise, the higher the political

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[28] Here and below, F-statistics for instruments from the first stage regressions are reported in regression tables.

[29] Data on employment, regional market share, profitability, sales, labor productivity, national market share, and fixed assets are available for 1992 – 2000; data on wage, trade, and taxarrears are available for 1996 – 2000.

[30] We take the two year average in order to minimize volatility of the preferential treatment share variable. Without taking the average, the power of the instruments is very low. We use shares of preferential treatments among five their largest recipients to make the denominator comparable across regions. In addition, to estimate equation 5, we limit the sample to observations in regions and years for which the total number of regional preferential treatments is greater than zero. This is because only in this case our instrument is highly correlated with the share of preferential treatments. In the case when the

incentives to support it. Since our instrument is very highly correlated with current employment, we cannot differentiate between the two stories in this specification. A much better instrument would be the one that is correlated with the share of preferential treatments and uncorrelated with both the employment size and contemporaneous employment. We do not have such an instrument in the fixed effects specification.

Since the effect of lobbying may be different in high and low capture environments (Hellman, Jones, and Kaufmann, 2000), the scale of regional institutional subversion (*RPTC*) is an important control; it is equal to the residual preferential treatment concentration filtered through the total regional number of preferential treatments given to their five largest recipients (*NPT*). *NPT* controls for paternalism of the regional state.[31] In addition, we have tried to include cross-term of firm's share of preferential treatments and the regional preferential treatment concentration to test whether the effect of preferential treatments differs between highly subverted and not subverted regions. The results were insignificant possibly because the level of capture in all Russia's regions is sufficiently high for lobbying to be effective. The same is true for the cross-term in the between effects regressions.

Lagged national market share is used to control for market power in regressions for productivity, profitability, and investment (this an important control because preferential treatments are given to large firms). One, however, can argue that market share growth is one of the outcomes of political influence.[32] Thus, we also run regressions with regional and national (3-digit OKONH) market shares to test whether market shares are related to firm's share of preferential treatments; this is a weak test, however, due to presence of the alternative explanation that market power drives the results. In regressions for arrears, labor productivity, and profitability, lagged sales are used to control

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regional number of preferential treatments is zero, the value of the share of preferential treatments variable is constant across firms while employment shares differ greatly.

[31] In the firm-level regressions, *PTC* and *NPT* are very highly correlated, thus, we orthogonalize them before including in the regression. An alternative approach of including just plain *PTC* (without *NPT*) leads to the same results.

[32] Exclusion of national market share from the list of controls makes our results slightly stronger.

for size. In addition, in all regressions except for market shares we control for regional and industry trends of dependent variables.

For the long run analysis, we use between effects IV regression. The basic specification is as follows:

$$\overline{y_f} = a_1 \overline{pt\_share_f} + a_2 y_{ft_0} + a_3 state_f + a_4 REG\_dummy_f + a_5 ind\_dummy_f + e_f \qquad (6)$$

In contrast to our empirical strategy in the fixed effects regressions, here in most regressions we have an instrument that allows eliminating not only the reverse causality but also the correlation of preferential treatments with relative employment size that is behind the social support explanation of the results. This instrument is the initial share of firm's productive fixed assets filtered through its employment share.[33] The choice of instrument is driven by the premise that enterprises with higher employment in the region *ceteris paribus* should have more preferential treatments according to the social support hypothesis. As the first stage shows, shares of preferential treatments are significantly positively correlated with the initial residual productive fixed assets (that are orthogonal to firm's employment share). Positive correlation between these variables is consistent with the institutional subversion hypothesis (see, for instance, Grossman and Helpman, 1994; Glaezer, Scheinkman, and Shleifer, 2003) and inconsistent with social support hypothesis which implies no correlation. This instrument works relatively well in regressions for employment, arrears to suppliers, wage and tax arrears, and profitability. In the regressions for sales, market shares, and labor productivity, however, the power of this instrument is too small. This is because we use initial values of dependent variables as controls and initial fixed assets filtered though employment share are multicollinear to them in the first stage regression. Thus, in these regressions we instrument with the firm's initial log share of productive fixed assets among ten firms with largest capital. Similarly to the situation in fixed effects regressions, this instrument allows us to avoid endogeneity but not to completely eliminate social

support explanation. In the regression for fixed assets, we use initial employment share as instrument because both instruments discussed above do not work due to multicollinearity with the initial value of dependent variable.

State-owned enterprise dummy controls for the difference in performance of state and private firms. Initial national market share is used to control for market power in regressions for productivity, profitability, and investment. Regional dummies control for regional initial conditions, including initial levels of institutional subversion and paternalism. We also include industry dummies to control for industry-level performance.[34]

We interpret the fixed effects and between effects regression results as short and long run results, respectively. It is encouraging that the long and short run results turn out to be qualitatively very similar since cross section regression results may be driven by unobserved heterogeneity between regions. It is worth noting, however, that there is a methodological difference in interpretation of the results because fixed effects regressions report the effect of changes in independent variables on short run changes in dependent variables whereas our between effects regressions show the effect of the levels of independent variables on long run changes in dependent variables.

6. Results

6.1. Regional-level effects of institutional subversion

Let us turn to discussion of results about aggregate regional effects of institutional subversion.

Small business

Table 3 presents the results of the tests of the hypothesis about small business growth: panels A and B report results of the short run panel-data and long run cross-section estimations, respectively. In the short run, preferential treatments concentration has significant negative effect only on the share of

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[33] It is very important for our story that fixed assets that we use in the contraction of instrument are directly used in production (e.g., factories and plants). Otherwise, we would not be able to eliminate the social support story because unproductive assets include the social assets are be related to social support.
[34] The results of long run estimation are robust to limiting the sample to be equal to the sub-sample for which fixed effects regressions are valid.

small business employment. Coefficients of the other two measures of small business development (the number of small businesses and retail turnover per capita) are negative, but insignificant.[35] The magnitude of the short term relationship between capture and small business is as follows: A one standard deviation increase in the preferential treatment concentration leads to a decrease in the share of small business employment of 2.4% in the same year. A one standard deviation increase in preferential treatment concentration from the mean value implies that among the five largest recipients of preferential treatments in one year, the distribution of the number of preferential treatments changes from $\{2; 1; 1; 0; 0\}$ to $\{3, 1, 0; 0; 0\}$. The long run relationship between legislative capture and small business growth is stronger. Just as in the short-run regressions, in the long run estimation, coefficients of all three measures of small business development are negative. Two of the three measures are significantly related to institutional subversion. A one standard deviation increase in the average preferential treatment concentration leads to a 7% decrease in turnover and a 9% increase in the share of small business employment. A one standard deviation increase in the average regional preferential treatments concentration from the mean (holding the total number of preferential treatments constant) implies that, in five out of six years, the number of preferential treatments for each of the five largest recipients remains unchanged: the largest recipient gets two preferential treatments, another two enterprises receive one each and no other firm receives preferential treatments; but in the sixth year, only one firm receives four preferential treatments. Overall, our hypothesis that vested interests get in the way of small business growth finds support in the data. The use of size concentration as a measure of potential capture confirms robustness of this result.[36]

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[35] The total number of preferential treatments given to the five largest recipients of legislative preferential treatments has significant negative effect on the share of small business employment. There is, however, an ambiguity in interpretation of this coefficient. On the one hand, the number of preferential treatments most probably just measure the extent of paternalism of regional governments towards all firms (when many firms get preferential treatments); on the other hand, if only few firms receive any preferential treatments, then the number of preferential treatments, for a given level of concentration, measures the strength of influence. These effects have the opposite predicted signs.

[36] We find strong negative relationship between changes in regional size concentration, on the one hand, and the share of small business employment and the number of small businesses, on the other, as reported in table A2. A one standard deviation increase in the output concentration among ten largest firms decreases the number of small businesses per capita by 14% and the share of small business employment by 23%.

GDP growth and investment

Table 4 shows that there is no statistically significant relationship between institutional subversion, on the one hand, and six year long growth of GRP per capita or investment, on the other hand. This result is consistent with the view that captor's growth is offset by efficiency losses from rent seeking activities.

Tax collection and arrears

Table 5 presents evidence of a negative significant (robust) association between regional tax collection and institutional subversion. This is consistent with our hypothesis. Controlling for other factors, including GRP level, a one standard deviation increase in preferential treatment concentration leads to a 1.2% decreases in the regional total net and tax revenues and a 2.7% increase in the federal and total tax arrears.[37] Institutional subversion does not seem to affect regional arrears to the same extent it affects federal arrears. This result supports the view expressed by Sonin (2003b) and Ponomareva and Zhuravskaya (2001) that Russia's regional governments protect regional firms from paying federal taxes.

Fiscal policies

Table 6 presents the results of the test of the relationship between institutional subversion and the size of the social budgetary spending. The evidence is consistent with the Friebel and Guriev's story as well as the story of federal tax evasion (Lavrov, Litwack, and Sutherland, 2001): holding other things constant, legislative subversion is negatively significantly correlated with expenditures on construction of some social service facilities. A one standard deviation increase in preferential treatment concentration leads to a decrease in expenditure on construction of new housing of 5% and on cultural facilities of 14%.[38] Expenditures on construction schools and hospitals also have negative,

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[37] Table A2 shows the results of the robustness check: a one standard deviation increase in the output concentration leads to a decrease in tax collection of 6.1%.

[38] The robustness check generally confirms the baseline results. Although it shows no association between expenditure on construction of new social facilities and size concentration, a one standard deviation increase in output concentration decreases (net of wage bill) total expenditures on education by 5.2%, healthcare by 3.5%, and housing by 4.4% (see Table

but insignificant coefficients. There is, however, no evidence of relationship between our measure of institutional subversion and total (net of wage bill) expenditures on culture, education, healthcare, or housing. There is also no evidence of a relationship of institutional subversion with any other budgetary items.

6.2. Firm-level effects of institutional subversion

The evidence of microeconomic effects of institutional subversion is consistent with our hypotheses. Results of firm-level fixed-effects regressions presented in table 7 show that, holding other things constant, in the short run captors experience significantly higher employment and sales growth, investment, growth in wage and tax arrears as well as regional and national market shares compared to firms that do not receive preferential treatments. Labor productivity growth of politically influential firms is smaller, however. The magnitude of the short run effect is as follows: A ten percent increase in the average preferential treatment share (from the mean value equal to 0.11) increases the enterprise employment and sales by approximately 10%, fixed assets by 7%, wage arrears by 12%, and tax arrears by 6%. In addition, regional market share increases by one percentage point and national market share by one tenth of a percentage point. Finally, productivity falls by approximately 5%. The long run results are similar (table 8). We find that, holding other things constant, captors continue to outperform non-captor firms in terms of sales growth, investment in fixed assets, and national market share. In addition, captors have higher profitability and higher bargaining power *vis-a-vis* employees, suppliers, and the government that allows them to maintain higher wage, trade, and tax arrears. Captor's labor productivity growth remains significantly smaller compared to similar firms that do not have political influence. The economic significance of the results in the long run is as follows: A ten percent increase in the average share of preferential treatments in eight years (from the mean equal to 0.15) leads to increases in average sales of approximately 18%, average fixed assets of 43%, profitability of 38%, employment of 17%, arrears to suppliers of 12%, wage arrears of 10%, and tax arrears of 12%. It also

A2). In addition, the results are robust to the choice of specification between having shares and levels of expenditures as

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leads to a one tenth of a percentage point increase in national market share and 8.4% drop in labor productivity growth. The salient finding is that firms that engage in institutional subversion have significantly lower labor productivity growth compared to their counterparts despite their higher profitability; it shows that gains to captor firms are a result of rent-seeking and not efficiency improvements.[39]

As we discussed above, it is not always possible to differentiate between the social support and institutional subversion hypotheses. But in the cases where we can, it is clear that institutional subversion matters. At the regional level these cases include the results about smaller SME growth and thinner social public spending. At the firm-level, the results about long run higher wage, tax, and trade arrears, employment, and profitability of captor firms are also not subject to the alternative interpretation. We, however, cannot rule out the social support explanation in the results about labor productivity or sales at the firm-level and tax collections at the regional level. Although these (latter) results are subject to dual interpretation, all reality checks for our measure of legislative bias point to the institutional subversion nature of legislative preferential treatments.

6.3. Comparison of the results with available survey evidence

Our findings by and large are consistent with BEEPS evidence (Hellman, Jones, and Kaufmann, 2000 and Hellman and Schankerman, 2000). Cross-country comparisons based on BEEPS show that in countries with higher levels of capture have slower reforms and firms in these countries have on average lower investment, output, and employment growth. We found a robust negative association between the level of regional institutional subversion and small business development but no relationship between GRP growth and capture in Russian regions. There is a slight dichotomy between BEEPS and our findings at the micro-level: there is universal evidence that sales and capital stock grow

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dependent variables.

[39] Results in instrumented regressions qualitatively are very similar to the results in non-instrumented regressions: most of the reported results (from instrumented regressions) remain significant if we do not use instruments. The instrumented results generally have higher magnitude of the coefficients and stronger significance. This could be attributed to the

faster in captor firms compared to non-captors in the short run. Hellman, Jones, and Kaufmann (2000) found that captor firms do not expect these gains to be sustained in the long run. We find, however, that captors are too modest in their expectations: actual long run growth in sales, investment, and market share is higher in captor firms but their productivity growth is lower.

7. Conclusions

This paper investigates the effects of institutional subversion on small business, economic growth, fiscal policies, and firm performance in the Russian regions. The key findings can be summarized as follows:

The most important effect of institutional subversion that we have documented is that environments with higher levels of state capture have greater obstacles to small business growth. This effect has particularly significant consequences in a transition economy because institutional subversion becomes an impediment to asset re-allocation from the old to the new sector. The tax capacity of the state deteriorates with capture: tax revenues fall and arrears grow for a given level of GRP. In addition, a part of fiscal expenditures is affected by the level of institutional subversion: construction of new social facilities is smaller in high-capture regions.

On the micro level, capturing the state brings great advantages to firms. Captors exhibit faster growth in sales, employment, fixed assets, market share, and tax arrears both in the short and the long run. In addition, higher bargaining power gives captors the ability to maintain higher arrears to suppliers and employees since local officials protect captors from legal enforcement of these payments. The source of captors' growth is rent-seeking as they have higher profitability but are less efficient compared to their counterparts who are not politically connected.

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measurement error in variables based on preferential treatments and/or to the bias due to reverse causality that we have discussed. Hausman tests, however, do not find significant differences in specifications with and without instruments.

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Table 1: Summary statistics of state capture measures

1992-2000:	Obs	Mean	SD	Min	Median	Max
Regions						
Preferential treatment concentration	667	0.40	0.29	0.20	0.20	1
Total number of preferential treatments in the region	667	1.41	1.99	0	0	11
Output concentration among ten largest private firms	644	0.23	0.15	0.10	0.18	1
Employment concentration among ten largest private firms	653	0.16	0.08	0.10	0.13	0.76
Average across years preferential treatment concentration	73	0.42	0.12	0.23	0.84	0.4
Enterprises						
Average share of preferential treatments for two consecutive years[∇]	3,526	0.11	0.16	0	0.1	1
Share of preferential treatments	7,167	0.15	0.16	0	0.2	1
Average across years share of preferential of treatments	962	0.15	0.09	0	0.13	0.79
Total number of preferential treatments	7,284	0.14	0.41	0	0	4

[∇] *On the subsample of firms in regions and years with at least one preferential treatment given to any firm.*

Table 2: Specification for regional–level fixed effects regressions

Hypotheses:	Measures, used as dependent variables, Y:	Control variables, *CONTROLS*:
Small business growth	- Log number of small businesses per capita - Log share of small business employment - Log retail turnover per capita	- Lagged log population size - Log average wage level (instrumented by lagged values)
Tax collections and arrears	- Log tax revenues per capita - Log total revenues net of transfers per capita - Log regional tax arrears per capita - Log federal tax arrears per capita - Log total tax arrears per capita	- Log GRP per capita (instrumented by lagged values) - Lagged log population size - Dummy for regional election year

Social spending	Log of per capita regional budget expenditures on:
	  - Culture (net of wages)
	  - Education (net of wages)
	  - Healthcare (net of wages)
	  - Housing (net of wages)
	Log of per capita expenditures on construction of:
	  - New housing
	  - Cultural facilities
	  - Education facilities
	  - Healthcare facilities
		- Lagged log population size
		- Log total budgetary expenditures
		- Dummy for regional election year

Note: We use retail turnover as an indirect proxy for small business development because reporting on retail turnover is often much better than on small business employment: many small firms underreport employment for tax evasion purposes. Instruments are one-year lags. Dummy for regional election year is added to control for possible political cycle (Akhmedov et al., 2003 show large cycles at the regional level in Russia).

Table 3: Small business growth

	Number of small businesses per capita	Share of small business employment	Retail turnover per capita	Number of small businesses per capita	Share of small business employment	Retail turnover per capita
Preferential treatment concentration	-0.003 [0.03]	-0.08 [0.04]*	-0.01 [0.02]	-0.06 [0.35]	-0.73 [0.44]*	-0.59 [0.29]**
Number of preferential treatments	-0.01 [0.005]	-0.03 [0.01]***	0.002 [0.004]	0.01 [0.04]	-0.01 [0.03]	0.04 [0.03]
Initial share of population with higher education				0.89 [0.19]***	0.22 [0.26]	0.11 [0.13]
Log population	-1.42 [0.68]**	3.14 [1.57]**	1.33 [0.34]***	-0.06 [0.04]	0.02 [0.05]	0.1 [0.03]***
Log wage	0.28 [0.30]	1.35 [0.70]*	0.78 [0.10]***	0.12 [0.08]	-0.09 [0.09]	0.67 [0.08]***
Initial level of dependent variable				0.4 [0.07]***	0.6 [0.09]***	0.01 [0.08]
Constant	3.31 [4.92]	-27.96 [12.98]**	-6.55 [2.63]**	-5.68 [0.75]***	1.68 [0.82]**	2.97 [0.61]***
Year dummies	Yes	Yes	Yes			
Regional fixed effects	Yes	Yes	Yes			
Observations	428	278	558	353	212	416
Number of regions	72	71	72	71	72	70
R-squared	0.02	0.01	0.21	0.64	0.3	0.52
F-statistics for the instruments of PTC in the first stage				7.2	4.0	6.2
F-statistics for the instruments of NPT in the first stage				22.8	42.5	24.5

*Note: Standard errors are in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%. In the between effects regressions, PTC is instrumented by the average PTC for the three initial years, dummy for ethnic republic, and dummy for common boarder with other CIS countries; NPT is instrumented by the average NPT for the three initial years. Preferential treatment concentration and the number of preferential treatments are lagged in fixed effects regressions. Log wage is instrumented by lagged values in fixed effects regressions and by initial values in between effects regressions.*

Table 4: GRP growth and investment

	Long run (between effects)		
	Change in investment per capita	Change in private investment per capita	Change in GRP per capita
Preferential treatment concentration	0.89	0.05	0.3
	[0.60]	[0.52]	[0.28]
Preferential treatments	0.03	-0.003	-0.04
	[0.05]	[0.03]	[0.02]*
Log investment per capita			0.26
			[0.06]***
Log population	0.16	-0.01	-0.03
	[0.06]***	[0.05]	[0.03]
Initial share of population with higher education	0.04	0.03	0.01
	[0.01]***	[0.01]***	[0.01]*
Share of oil &gas industry	-0.25	0.34	0.21
	[0.26]	[0.21]*	[0.14]
Constant	-2.7	-0.58	-0.19
	[0.41]***	[0.31]*	[0.23]
Observations	421	350	416
Number of regions	72	72	70
R-squared	0.09	0.07	0.35
F-statistics for the instruments for PTC in the first stage	6.13	5.23	5.83
F-statistics for the instruments for NPT in the first stage	14.70	15.66	13.09

*Note: All dependent variables are in logs. Standard errors are in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. PTC is instrumented by the average PTC for the three initial years, dummy for ethnic republic, and dummy for common boarder with other CIS countries. NPT is instrumented by the average NPT for the three initial years.*

Table 5: Regional tax collections and arrears to regional and federal budgets

	Revenues (fixed effects)		Arrears (fixed effects)		
	Tax revenues per capita	Total net revenues per capita	Regional tax arrears per capita	Federal tax arrears per capita	Total tax arrears per capita
Lagged preferential treatment concentration	-0.04 [0.02]*	-0.04 [0.03]*	0.06 [0.04]	0.09 [0.05]*	0.09 [0.04]**
Lagged number of preferential treatments	0.005 [0.004]	0.01 [0.004]**	0.01 [0.01]	0.01 [0.01]	0.01 [0.01]
Log GRP per capita	1.35 [0.22]***	1.29 [0.22]***	0.56 [0.26]**	0.91 [0.28]***	0.56 [0.25]**
Lag log population	1.59 [0.72]**	2.58 [0.75]***	1.68 [0.87]*	4.41 [1.03]***	3.44 [0.84]***
Regional election year	0.01 [0.02]	0.02 [0.02]	0.03 [0.03]	0.04 [0.03]	0.03 [0.03]
Constant	-7.72 [5.48]	-14.66 [5.73]**	-8.65 [6.66]	-29.35 [7.83]***	-20.81 [6.45]***
Year dummies	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	355	351	420	421	424
Number of regions	71	71	71	71	71
R-squared	0.35	0.20	0.10	0.04	0.05

Note: All dependent variables are in logs. Standard errors in brackets. significant at 10%; ** significant at 5%; *** significant at 1%. We instrument Log GRP per capita with lagged values.*

Table 6: Budget expenditures (fixed effects)

	Variable part of expenditure items per capita				Expenditures on construction per capita			
	culture	education	healthcare	housing	new housing	cultural facilities	education facilities	healthcare facilities
Lagged preferential treatment concentration	-0.02	-0.01	0.03	-0.01	-0.18	-0.47	-0.25	-0.21
	[0.04]	[0.02]	[0.02]	[0.03]	[0.10]*	[0.25]*	[0.16]	[0.14]
Lagged number of preferential treatments	0.001	0.01	0.01	0.00099	0.02	0.01	0.04	0.02
	[0.01]	[0.003]***	[0.004]**	[0.005]	[0.02]	[0.04]	[0.03]	[0.02]
Lag log population	0.4	0.44	1.63	0.61	4.88	8.96	-8.32	6.9
	[0.99]	[0.52]	[0.71]**	[0.82]	[2.69]*	[9.92]	[4.60]*	[3.90]*
Log of total expenditures	0.93	0.72	0.73	0.95	0.85	0.97	0.84	1.09
	[0.08]***	[0.04]***	[0.06]***	[0.07]***	[0.22]***	[0.58]*	[0.38]**	[0.32]***
Year of regional elections	-0.03	-0.01	0.01	-0.002	-0.03	-0.06	-0.1	0.1
	[0.02]	[0.01]	[0.02]	[0.02]	[0.06]	[0.17]	[0.11]	[0.09]
Constant	-6.48	-3.12	-12.11	-5.62	-38.6	-73.49	56.91	-56.4
	[7.21]	[3.81]	[5.17]**	[6.00]	[19.75]*	[73.94]	[33.89]*	[28.66]*
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	360	360	359	360	353	319	350	355
Number of regions	72	72	72	72	72	69	72	72
R-squared	0.65	0.88	0.74	0.81	0.33	0.07	0.1	0.12

*Note: All dependent variables are in logs. Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.*

Table 7: Microeconomic effects of capture in the short run

	Employ-ment	Wage arrears	Arrears to suppliers	Arrears to budget	Profita-bility	Sales	Labor produc-tivity	Regional market share	National market share	Fixed assets
Average firm's share of preferential treatments	8.83 [2.99]***	10.48 [4.53]**	0.57 [1.74]	5.28 [2.87]*	0.32 [3.06]	8.86 [3.47]**	-4.14 [2.00]**	1.06 [0.44]**	0.07 [0.03]**	6.1 [2.03]***
Institutional subversion (Residual preferential treatments concentration)	0.49 [0.18]***	0.56 [0.25]**	0.13 [0.09]	0.38 [0.17]**	0.05 [0.18]	0.56 [0.21]***	-0.19 [0.12]	0.05 [0.03]**	0.004 [0.002]**	0.35 [0.12]***
Regional paternalism (Total number of preferential treatments)	0.07 [0.03]**	0.06 [0.03]*	0.01 [0.01]	0.01 [0.03]	0.02 [0.03]	0.06 [0.03]**	-0.04 [0.02]**	0.01 [0.004]*	0.0011 [0.0003]**	0.05 [0.02]**
Log sales		0.15 [0.09]*	0.17 [0.04]***	0.07 [0.07]	0.33 [0.04]***		0.24 [0.03]***			
Lag of national market share					-1.32 [1.51]		1.68 [0.75]**			-1.3 [1.00]
Regional trend	0.11 [0.19]	-0.01 [0.10]	0.03 [0.05]	0.09 [0.10]	0.07 [0.02]***	0.02 [0.06]	-0.02 [0.04]			0.05 [0.09]
Industry trend	0.4 [0.21]*	0.04 [0.22]	0.07 [0.09]	0.33 [0.20]	0.09 [0.04]**	-0.01 [0.09]	0.8 [0.13]***			0.53 [0.27]*
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects for firms	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2697	1408	1392	1390	2545	2791	2623	2848	2774	2590
Number of firms	765	619	616	618	735	783	761	799	779	753
R-squared	0.06	0.06	0.33	0.09	0.43	0.01	0.32	0.01	0.01	0.15
F-statistics for instruments	*9.35*	*7.33*	*8.14*	*10.88*	*14.06*	*8.97*	*7.35*	*10.48*	*10.10*	*13.25*

*Note: All dependent variables are in logs. In all regressions share of preferential treatments is instrumented by the lagged twice employment share. In order for the instrument to be correlated with the average firm's share of preferential treatments, observations were excluded from the sample when annual number of regional preferential treatments is zero. Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.*

Table 8: Microeconomic effects of capture in the long run

	Employ-ment	Wage arrears	Arrears to suppliers	Arrears to budget	Regional market share	Profitabi-lity	Sales	Labor produc-tivity	National market share	Fixed assets
Firm's share of preferential treatments (Instrum-d)	11.2 [5.69]**	6.52 [2.69]**	8.01 [2.85]***	7.67 [2.83]***	1.33 [1.13]	25.19 [12.12]**	11.67 [4.72]**	-5.65 [1.91]***	0.06 [0.03]*	28.69 [15.01]*
Initial level of depend variable	0.58 [0.07]***	0.46 [0.05]***	0.55 [0.06]***	0.42 [0.03]***	0.63 [0.06]***	0.18 [0.07]***	0.20 [0.07]***	0.34 [0.03]***	0.41 [0.02]***	0.31 [0.16]**
Initial national market share						-0.72 [3.12]		0.46 [0.91]		1.06 [2.91]
State enterprise dummy	-0.13 [0.16]	-0.88 [0.26]***	-0.58 [0.28]**	-0.83 [0.29]***	-0.05 [0.05]	-0.72 [0.38]*	-0.40 [0.19]**	-0.10 [0.11]	-0.004 [0.00]**	-0.34 [0.46]
Constant	1.13 [0.54]**	3.00 [0.56]***	3.75 [0.71]***	3.56 [0.64]***	0.01 [0.12]	4.16 [1.37]***	7.60 [0.61]***	3.82 [0.38]***	-0.01 [0.01]*	3.95 [1.17]***
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5480	1483	1478	1478	5511	5097	0.26	5390	5632	5316
Number of firms	901	672	672	672	890	882	910	896	908	896
R-squared	0.25	0.43	0.45	0.46	0.34	0.08	0.05	0.19	0.32	0.06
Instrument used for the share of preferential treatments	Residual fixed assets share	Residual fixed assets share	Residual fixed assets share	Residual fixed assets share	Residual fixed assets share	Residual fixed assets share	Fixed assets share	Fixed assets share	Fixed assets share	Employ-ment share
F-statistics for instrument in the first stage	4.9	12.9	12.7	13.8	4.4	5.0	9.0	23.4	22.1	4.3

Note: All dependent variables are in logs. Standard errors in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

APPENDIX

Table A1: Correlations among the measures of institutional subversion

	Preferential treatment concentration		
	Pooled (633 obs.)	Regional between effects (72 obs.)	Regional fixed effects (633 obs.)
Output concentration among ten largest private firms	0.120 [0.002]	0.219 [0.065]	0.066 [0.096]

Note: p-values are in brackets.

Figure A1: Map – legislative subversion measure

Average Residual Preferential Treatment Concentration Filtred Through Total Number of Preferential Treatments (1995-2000)
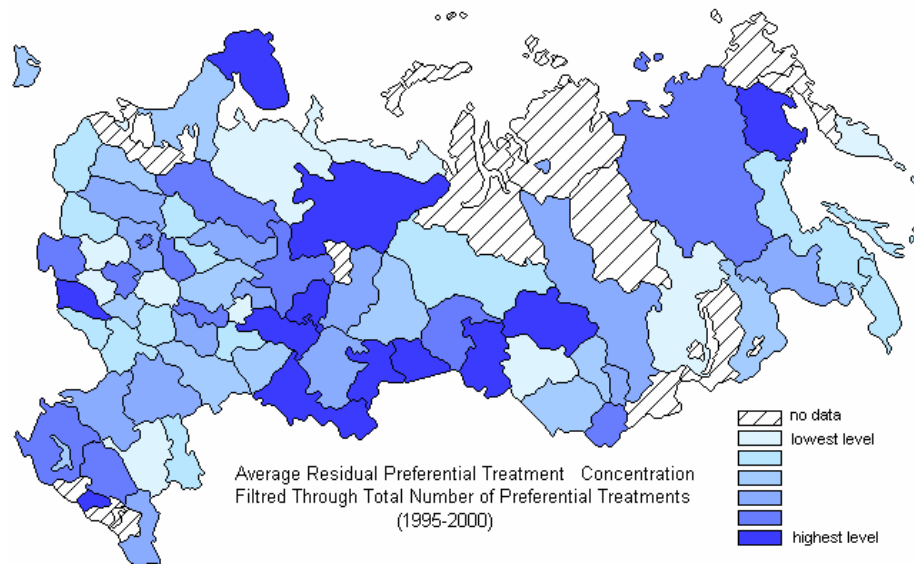
no data
lowest level

highest level

Figure A2: Means of institutional subversion measures through time
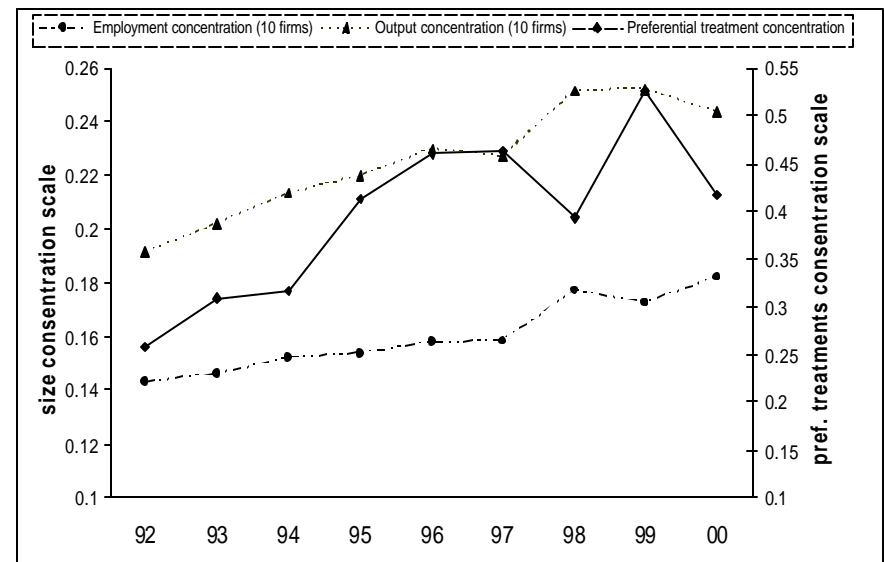
Table A2: Potential capture

	Output concentration 10	Control variables used in regressions
Small business development		
Number of small businesses per capita	-0.98***	Log wage (instrum-d), Log population, Year dummies, Regional fixed effects
Share of small business employment	-1.58***	Log wage (instrum-d), Log population, Year dummies, Regional fixed effects
Retail turnover per capita	-0.01	Log wage (instrum-d), Log population, Year dummies, Regional fixed effects
Tax collections and arrears		
Tax revenues per capita	-0.42**	Log population, Log GRP per capita (instrum-d), Year of regional elections, Year dummies, Regional fixed effects
Total revenues per capita	-0.21	Log population, Log GRP per capita (instrum-d), Year of regional elections, Year dummies, Regional fixed effects
Regional tax arrears per capita	0.04	Log GRP per capita (instrum-d), Log population, Regional election year, Year dummies, Regional fixed effects
Federal tax arrears per capita	-0.003	Log GRP per capita (instrum-d), Log population, Regional election year, Year dummies, Regional fixed effects
Total tax arrears per capita	0.03	Log GRP per capita (instrum-d), Log population, Regional election year, Year dummies, Regional fixed effects
Budget expenditures (variable part of expenditure items per capita)		
Culture	-0.2	Log population, Log of total expenditures, Year of regional elections, Year dummies, Regional fixed effects
Education	-0.35***	Log population, Log of total expenditures, Year of regional elections, Year dummies, Regional fixed effects
Healthcare	-0.24*	Log population, Log of total expenditures, Year of regional elections, Year dummies, Regional fixed effects
Housing	-0.230**	Log population, Log of total expenditures, Year of regional elections, Year dummies, Regional fixed effects

*Note: All dependent variables are in logs. * significant at 10%; ** significant at 5%; *** significant at 1%.*