Deregulation of Business

Evgeny Yakovlev and Ekaterina Zhuravskaya*

April 17, 2007

Abstract

What determines the enforcement of deregulation reform of business activities? What are the outcomes of deregulation? We address these questions using an episode of a drastic reform in Russia between 2001 and 2004 which liberalized registration, licensing, and inspections. Based on the analysis of micro-level panel data on regulatory burden, we find that: 1) The reform reduced administrative costs of firms, on average; but, the progress of reform had substantial geographical variation. 2) The enforcement of deregulation reform was better in regions with a transparent government, low corruption, strong fiscal incentives (i.e., reliance of local budgets on local taxes rather than fiscal transfers) and a powerful industrial lobby. 3) Using the exogenous variation in regulation generated by the interaction of reform and its institutional determinants, we find a substantial positive effect of deregulation on entry and small business employment and no effect on pollution and morbidity. The results support the "tollbooth" theory of the nature of regulation and are inconsistent with either the public interest theory or the regulatory capture theory.

*We are grateful to Sergei Guriev, Erik Berglof, and the participants of EBRD research conference in Tokyo in 2006 and of the Global Institute conference in Moscow in 2006 for helpful comments. We thank CEFIR MABS team and, particularly, Oleg Schetinin and Oleg Zamulin for help in data collection. The financial support of USAID and EBRD is gratefully acknowledged. Yakovlev: UC Berkeley, yakovlev@econ.berkeley.edu. Zhuravskaya: New Economic School, CEFIR, and CEPR, ezhuravskaya@cefir.ru.

What is the nature of regulation? What are the consequences of deregulation of business activity? Recently, these questions have come to the center of attention of much of development literature, which was motivated by varying experiences throughout the world.[1] Deregulation has also become popular among policymakers: in 2005 and 2006, fifty five countries undertook reforms that lowered administrative costs of starting a business and obtaining a license (World Bank, 2006). Little, however, is known about how deregulation reforms are enforced. What are the obstacles and driving forces behind the implementation of deregulation reforms? Which conditions are necessary for a deregulation reform started by the central government to yield desired results at the local level, where much of the regulation takes place? Despite the relevance of these questions both for policy and for the theory of regulation, so far there has been a dearth of empirical research on them. In this paper we address these questions using a unique combination of a deregulation policy experiment undertaken in Russia in the early 2000s and a detailed panel data on the actual regulatory burden on firms that spans a selection of 20 regions. This combination allows us to study the institutional determinants of regional reform progress controlling for all time-invariant characteristics of firms (and regions) as well as for the changes in macro-economic environment.

Between 2001 and 2004, Russia passed laws that drastically simplified procedures and reduced red tape associated with entry regulation – registration and licensing – and with regulation of existing business – inspections. The laws introduced clear measurable limits to regulatory burden in several specific areas of regulation. For example, the laws established that registering a business requires a trip to just one government agency ("one-stop shop") and takes no more than a week; each inspecting agency (e.g., fire, sanitary, labor, or certification inspection) comes to inspect a business no more frequently than once in two years; licenses are valid for no less than five years. In addition, there was a substantial delicensing,

[1]See, for instance, Djankov et al. (2002); Bertrand and Kramarz (2002); Djankov, Glaeser, La Porta, Lopez-de Silanes and Shleifer (2003); Djankov, La Porta, Lopez-de Silanes and Shleifer (2003); Botero et al. (2004); Klapper, Laeven and Rajan (2004); Shleifer (2005); Mulligan and Shleifer (2004, 2005); Djankov, McLiesh and Ramalho (2006); Aghion et al. (2005, 2006).

i.e., a number of business activities which previously had required licenses were exempt from licensing. Prior to the reform, many scholars pointed to the excessive regulatory burden on Russian firms and argued that over-regulation was among the most important reasons for its poor economic performance during the first eight years of transition.[2] The proclaimed goal of the reform was to induce entry and growth of small business.

This paper addresses three distinct questions about this reform: First, we examine whether the reform succeed in bringing down administrative costs of firms. Second, we study which institutional factors affected the level of enforcement of deregulation laws in different regions. And third, we estimate a causal effect of deregulation on outcomes, i.e., entry, SME employment, morbidity, and pollution using the exogenous variation in regulation generated by the interaction of reform and its institutional determinants.

Jointly with a team of expects from an independent Moscow think tank, CEFIR, we collected a unique data set entitled "Monitoring of Administrative Barriers to Small business" (MABS). The data come from regularly-repeated surveys of 2,000 firms in 20 regions of Russia about their actual levels of regulatory burden in each area of regulation affected by the reform. Firm-level panel data are collected to measure the dynamics of regulatory burden on existing firms and a repeated cross-section of newly-registered firms is collected to measure changes in the regulation of entry. The data allow observing directly the level of enforcement of each measurable target in the deregulation laws.

First, we investigate whether the *de jure* reform had an effect on *de facto* regulations. To estimate the effect of the enactment of deregulation laws on regulatory burden, we use the difference in timing of enactment of different deregulation laws (i.e., laws on registration, licensing, and inspections). We estimate the average impact of the enactment of a deregulation law on regulatory burden in the specific area of regulation affected by this law with difference-in-differences methodology under the assumption that in the absence of reform, trends in regulatory burden in different areas of regulations would have been the same.

[2]See, for instance, Frye and Shleifer (1997); Shleifer (1997); Johnson, Kaufmann and Shleifer (1998); Shleifer and Vishny (1998); Frye and Zhuravskaya (2000).

We control for all time-invariant regional characteristics, macro-economic shocks, and even region-specific trends. We find that, on average, the enactment of a deregulation law leads to a significant reduction in regulatory burden.[3]

Next, we address the question of the driving forces behind the implementation of reform. We estimate the differential impact of the federal deregulation laws on regulatory burden depending on the pre-reform regional institutional environment using difference-in-differences methodology. We explore the fact that the dynamics of regulatory burden in each area of regulation exhibits vast geographical variation. Figure 2 illustrates this by presenting regional dynamics of regulatory burden in five specific areas of regulation covered by the reform. This identification strategy is valid under the assumption that, in the absence of institutional variation, the average change in regulatory burden induced by a specific deregulation law would have been the same across regions. Our choice of potential determinants of deregulation progress was motivated by the predictions of alternative theories of the nature of regulation: public interest theory (Pigou, 1938) and the two alternative public choice theories – capture theory (Stigler, 1971) and "tollbooth" theory (de Soto, 1990; Shleifer and Vishny, 1993). We consider government transparency, corruption, media freedom, fiscal incentives (i.e., the extent to which regional budgets are comprised of local taxes rather than transfers from the federal center), presence of a strong lobby by business interests (i.e., the extent to which regional authorities are under influence of powerful industrial groups), and resource abundance. Four factors significantly boost enforcement of deregulation laws (holding everything else constant): 1) government transparency; 2) low corruption; 3) presence of strong industrial lobby; and 4) strong fiscal incentives. We find that the deregulation of entry and the liberalization of regulations on established firms are affected by these institutional characteristics in the same way.

[3]Figure 1 illustrates the dynamics of the level of regulatory burden (right) and of the share of firms that experienced regulatory burden in excess of the targets set by deregulation laws (left) before and after the reform. The DD estimator of the reform impact (if considered without any additional controls), essentially, compares the change in regulatory burden – difference in the hight of bars in Figure 1 – for the types of regulations that had been and had not been affected by the reform at each particular point in time.

Finally, we use the timing of reform together with institutional determinants of its enforcement as an exogenous source of variation in the level of regulation to test for a causal link from deregulation to such outcomes as entry, SME employment, pollution, and public health. We find a significant negative effect of various regulations on the the number of small businesses (a proxy for net entry) and employment in small businesses and no effect of regulation on either pollution (measured by emission of contaminants from stationary sources into atmosphere) or public health (measured by morbidity from injuries and poisoning per 1,000 population). It is important to note that instrumenting regulation is crucial for this exercise because all theories of the nature of regulation presume presence of reverse causality going from outcomes to regulation as we discuss in Section 4.

All pieces of evidence taken together allow us to evaluate the competing theories of the nature of regulation. The evidence is inconsistent with the public interest theory because, first, regions with transparent and accountable governments are the ones that achieve progress in deregulation, and second, deregulation does not have an adverse effect on pollution or morbidity. In addition, the evidence is hard to reconcile with regulatory capture theory because we do not find differences between the effect of the presence of strong politically-powerful lobby of industrial incumbents on entry regulation vs. regulation of existing business. Industrial lobbies accelerate deregulation in all areas of regulation and do not use entry regulation to protect themselves from potential competitors. The evidence is consistent with tollbooth theory as the least corrupt and most fiscally-motivated governments promote deregulation the most.

Our findings also shed light on the theory of institutional change in transition economies by finding support to the "demand for reform" (Boycko, Shleifer and Vishny, 1995) and "fiscal federalism" (Qian and Weingast, 1996; Zhuravskaya, 2000; Jin, Qian and Weingast, 2005) theories of determinants of the reform progress.

The paper is closely related to Djankov et al. (2002) both in the theoretical approach and in empirical findings. There are several contributions of our paper that go beyond Djankov

et al. (2002). First, we consider the actual regulatory burden and compare it to the the official level established by the legislation, we show that official regulations are poorly enforced and grossly understate regulatory burden as much of the actual regulation is in excess of the official levels. Second, we show that there is a vast variation in regulatory burden within a country and looking only at the largest city may give a misleading picture about the state of regulation in the country as a whole. Third, panel data allow us to control for unobserved regional and firm-level variation as well as time trends and, therefore, substantially improve on cross-sectional analysis of many previous studies (e.g., Djankov et al., 2002; Klapper, Laeven and Rajan, 2004; Djankov, McLiesh and Ramalho, 2006). Fourth, we extend the analysis beyond regulation of entry and compare the regulation of established business to entry regulation.

Our analysis is also closely related to Aghion et al. (2006); the two papers study complementary channels through which local institutions affect outcomes of a nationwide deregulation reform.

The paper is organized as follows. In Section 1, we describe the reform and the regulations data. Section 2 presents hypotheses about the institutional determinants of regional deregulation progress and describes institutional measures. Section 3 focuses on the effect of reform on the actual regulatory burden and the institutional determinants of reform progress. Section 4 presents the estimation of the effect regulations on outcomes. Section 5 discusses robustness of our results. Section 6 concludes the paper.

1 Background and the measures of regulation

1.1 The reform

The goal of Russia's deregulation reform was to speed up and simplify administrative procedures, reduce red tape, and, thus, significantly cut costs of firms associated with bureaucratic regulation in such areas as inspections, licensing, registration, and certification. The reform

consisted of a package of laws enacted during 2001-2004. Five different laws have come into force at different points in time: the law on inspections – on August 8, 2001; the law on licensing – on February 11, 2002; the first redaction of the law on registration – on July 1, 2002; the law on certification ("technical regulation") – on July 1, 2003; and the second redaction of the law on registration – on January 1, 2004.

All of these laws (with the exception of the law on certification) introduced clear measurable targets for the level of regulatory burden associated with these particular areas of regulation (e.g., Buev, Makarova and Shehovtzov, 2005; Shehovtzov et al., 2005). The law on inspections postulated that each inspecting agency is allowed to conduct a maximum of one inspection in each particular firm in two years. Previous legislation did not put a limit to the number of visits by inspectors. The law on licensing reduced the list of business activities which require licenses from 250 different activities to 103 and increased the minimum allowed length of validity for a license from three to five years. The first redaction of the law on registration introduced the maximum of five working days during which any firm with all necessary documents should receive registration from the authorities (previously, the length of registration procedure was not restricted by law). The second redaction of the law introduced the "one-stop shop" rule for registration and formalized the list of required documents for registration. Previously, any start-up had to register with several different agencies, i.e., tax ministry, pension fund, social security, statistical and fire department, local administration, etc. and the rules for registration differed across localities. According to the new (2004) redaction of the law, all of the registration is done at a local branch of tax ministry.[4] In addition, licensing reform reduced the official monetary fee for obtaining licenses, but not substantially. In this paper, we focus on these measurable targets of deregulation reform in the areas of registration, licensing, and inspections.[5]

[4]Prior to these changes, the first redaction of the deregulation law on registration decreased the number of agencies needed for registration by one. Before that law came into force, firms needed to register both with the registration chamber and with tax ministry among other agencies; the law of 2002 disbanded registration chamber and moved all of its operations into the tax ministry.

[5]It is important to note that in addition to the laws described above on January 1, 2003 the law on simplified tax system for small businesses was passed. This law introduced two changes into Russian taxation

1.2 MABS survey

The Center for Economic and Financial Research (CEFIR, www.cefir.org) in Moscow has conducted a long-term project of the Monitoring of Administrative Barriers to Small business. Within this project a unique data set on regulatory burden on Russian firms has been collected. It allows us evaluating the progress of deregulation reforms in a selection of Russia's regions. The MABS is based on regularly repeated surveys of top managers in 2,000 small firms in 20 regions of the Russian Federation with questions asked about firms' actual quantifiable costs associated with inspections, licensing, registration, certification, and tax administration, as well as their subjective perceptions of the business climate.[6] Two primary survey instruments are used: one inquires about the regulatory burden on firms established more than a year ago and the other is designed specially for the newly registered start-ups in order to monitor the administrative costs of entry. Thus, panel data are collected to monitor administrative burden on existing firms from inspections, licensing, etc. and a repeated cross-section is collected to monitor costs of registration. New start-ups constitute about 20% of the total sample in each MABS round.

The data set used in this paper includes the results of the first five rounds of the MABS survey conducted in the spring of 2002, the fall of 2002, and the spring of 2003, 2004 and 2005.[7] Each round collected information about regulatory burden on firms for the immediately preceding half a year and, in addition, about inspections for the half a year period before that (i.e., the fifth round took place in the spring of 2005 and collected all variables

system: 1) it significantly increased the scope of application of the existing system of simplified tax administration which allows small firms to pay a single "unified" tax with a flat rate on either profit or revenue instead of many taxes, i.e., VAT, profit, sales, and property taxes; and 2) the new law reduced the tax rate for the "unified" tax. For the vast majority of small firms – and, thus, for firms in our dataset – the law on simplified tax system changed the tax rate but did not affect tax administration because they already were eligible to use the "unified" tax. We abstract from laws on certification and simplified tax system because the law on certification did not introduce clear measurable benchmarks, and therefore, one cannot directly observe whether it is enforced; and the law on simplified tax system did not affect tax administration for the vast majority of our sample.

[6] In this paper we focus exclusively on *objective* data on regulatory burden because, apart from being affected by reform, subjective perceptions are influenced by many unobserved factors.

[7] See CEFIR reports on MABS results at www.cefir.org/index.php?l=eng&id=25.

for the second half of 2004 and a few variables on inspections for the first half of 2004).

Figure 3 shows the timing of different stages of deregulation reform and the periods covered by the MABS data. All of the MABS data are in half a year increments. For the purposes of the analysis in this paper, we assume that the law on inspections took force after the round 1 and before round 2 of MABS, even though in reality the law took force in the *middle* of round 1 (i.e., the second half of 2001). Similarly, we assume that the law on licenses took force between rounds 2 and 3 (rather than in the middle of round 2). There are two reasons for making this assumption: first, one should expect at least a few months lag between the enactment of the law and its implementation; and second, during the half a year period when each of these laws were enacted, bureaucrats (i.e., inspectors) may have deliberately shifted their activities earlier in the respective half-year periods in order to avoid the need to comply with the new laws.[8] The timing of the enactment of the laws on registration fell exactly between the MABS rounds: the first redaction was enacted between rounds 2 and 3; and the second redaction between rounds 4 and 5.

Thus, the first round of the MABS survey collected the baseline information from the time before any of the deregulation laws came into force. The data from the second round onwards allow evaluation of the reform progress after the enactment of the law on inspections; the data from the third round onwards enable an assessment of the effect of the licensing law and the first redaction of the law on registration. The last fifth round allows evaluation of the impact of the second redaction of the registration law.[9]

1.2.1 The measures of regulation

Table 1 lists all the regulatory measures used in this paper. For each specific type of regulation affected by deregulation reform, we look at the level of regulatory burden on each

[8] In the Section 5, we show that the results are similar if we make an alternative assumption that the reform on inspections and licenses started at the beginning of the second half of 2001 and the first half of 2002, respectively.

[9] Importantly, the timing of the laws on certification and on simplified tax system is such that they are not a confounding factor to the deregulation laws that we consider. Both of them were enacted between rounds 3 and 4 of the MABS survey.

firm in the sample and at whether it meets the target set by the reform. In particular, for inspections, we look at the log number of inspections of any agency over the half a year period and two indicators of the violations of the deregulation target of the maximum number of inspections: a dummy indicating whether there was more than one inspection by any inspecting agency over the half a year period and a dummy indicating if there was more than one inspection by one of the most frequent inspectors – sanitary agency.[10]

To describe the measures of regulatory burden in the area of licensing, let us first define terms. We call a license "legitimate" if it is issued for a business activity that is supposed to be licensed according to the 2002 deregulation law on licenses. In turn, we call a license "illegitimate" if it is for an activity that is not supposed to be licensed according to the 2002 law. We consider the following measures of licensing regulations for each firm: the log number of illegitimate licenses; the log term of validity for the legitimate licenses; a dummy for the presence of an illegitimate license; and a dummy for less than 5-year-term of license validity. The last two variables measure the failure to meet licensing deregulation targets.

For registration, we look at the log number of agencies a startup visited in order to register, the log number of days registration took, a dummy for more than one "window" for registration (i.e., visits to several agencies as opposed to a one-stop-shop registration), a dummy for more than a week for registration. The two dummies measure the failure to meet the respective deregulation targets.

Summary statistics for measures of regulation are reported in the Panel A of Table A.1 in the appendix. The means of variables measuring regulation level (without taking logarithms) are presented in Figure 2 for each region.[11]

[10]These dummies pick out only the extreme violations of the deregulation target, because the law limits the number of inspections to one in two years, whereas we look at the situations with two or more inspections in a firm during half a year period. Yet, these extreme violations are not rare: in 2001, a quarter of all firms had more than one inspection by at least one inspecting agency and 12 percent – by sanitary agency; the situation improved somewhat by 2004 (three years after the law took force), but the rate of violations of this deregulation target remained significant: 14.4% and 6.4% of firms for all inspecting agencies and for the sanitary inspection, respectively.

[11]Not all the data points are available for all regions and rounds. In particular, there are no data on newly-registered firms in the round 4 for 11 out of 20 regions. The reason was the resignation of the Russia's cabinet which lead to the situation in which nobody in the government knew where the data on the registration of

2 Hypotheses about the enforcement of deregulation

In this section, we formulate hypotheses about the institutional determinants of progress in deregulation. We are interested in testing the alternative theories of the nature of regulations: public interest, regulatory capture, and tollbooth theories. The deregulation reform gives us a good opportunity to do so because it allows observing the effect of pre-determined, i.e., pre-reform, institutional characteristics on the local enforcement of exogeneously-given *change* in federal regulations. This is an important advantage over many previous studies because the variation in the *levels* of regulation and in institutional characteristics can be simultaneously driven by variation in the unobserved factors.

2.1 Local accountability

It is hard to reconcile the mere presence of deregulation reform with the public interest theory of regulation (Pigou, 1938); the reason being that the public interest theory of regulation presumes a benevolent government. If regulations are beneficial, the federal government could impose a deregulation reform only if it does not serve public interest. In this case, the prediction of the "refined" public interest theory would be that the more transparent and uncorrupt – and, therefore, more accountable – local governments do not deregulate as much as the less accountable to the public local governments. In contrast, the public choice theories of regulation predict that more accountable governments would exhibit better progress in deregulation.[12] To test the alternative hypotheses about effect of local accountability deregulation progress, we use measures of regional government transparency, media freedom, and corruption.

firms were located; these data were needed for sampling of new firms in the round 4 of MABS. In addition, there are no data for Altaisky Krai in the round 3 due to reorganization of the regional survey agency.

[12]If, however, in the public interest theory, the more accountable local governments also happen to be the most obedient ones, then one could argue that they should enforce federal laws better, possibly, even if they go against public interest. Thus, it is important to control for obedience of the local governments. In the Section 5, we report that controlling for obedience with a dummy for regional governors-members of the governing (presidential) party "United Russia" does not affect the results.

2.2 Fiscal incentives

The public interest theory predicts that regulation should not depend on the sources of government finding. In contrast, the public choice theory predicts that opportunistic politicians and bureaucrats respond to fiscal incentives (e.g., Brennan and Buchanan, 1980; Buchanan, 1960). In particular, if budgets of local politicians primarily rely on own revenues (i.e., local taxes) rather than on discretionary transfers from the federal budget, self-motivated politicians would have stronger incentives to enforce deregulation laws in order to maximize budget revenues by fostering business growth (Zhuravskaya, 2000; Jin, Qian and Weingast, 2005). The same logic also gives another prediction of the public choice theory: resource abundant regions should have worse progress in deregulation compared to regions poorly-endowed in natural resources because governments of these regions have sufficient slack not to reform (Egorov, Guriev and Sonin, 2006; Robinson, Torvik and Verdier, 2006). To test these hypotheses, we use the share of own budgetary revenues in the total regional budget and an index of regional resource abundance.

2.3 Industrial lobby

We also want to differentiate between the two alterative theories of public choice – the capture theory (Stigler, 1971; Posner, 1974; Peltzman, 1976) and the tollbooth theory (McChesney, 1987; de Soto, 1990; Shleifer and Vishny, 1993). The theory of regulatory capture postulates that industry incumbents lobby for regulation that protects them from entry of (potential) competitors and allows them to enjoy high market power. Thus, capture theory predicts that the presence of politically powerful industrial incumbents should adversely affect reform progress in deregulation of entry, i.e., registration and licensing, but should facilitate deregulation of existing businesses, i.e., inspections. In contrast, in the tollbooth theory, the rents created by regulation accrue to politicians and bureaucrats, and therefore, there should be no difference prediction about the regulation of entry, on the one hand, and inspections of existing business, on the other. We proxy presence of politically powerful industrial lobby

by an index of industrial concentration and an index of regional state capture.

All institutional measures are described in the data Appendix and summarized in the Panel B of Table A.1.

3 The enforcement of reform and its determinants

First, we focus on the overall reform progress across all areas of regulation and estimate how it is affected by the institutional characteristics. Second, as institutions may differently affect enforcement of reforms in different regulatory areas (as regulatory capture theory predicts), we study the effect of institutional measures on deregulation progress separately in each specific area of regulation.

3.1 The implementation of deregulation overall

3.1.1 Methodology, overall level of regulation

We use difference-in-differences (DD) and difference-in-differences-in-differences (DDD) estimators in order to analyze the overall impact of deregulation reform on the actual level of regulatory burden and – what is our main focus – the institutional determinants of reform progress. The idea behind our estimation strategy is as follows. We estimate the effect of deregulation reform on regulatory burden using the difference in the timing of enactment of different deregulation laws assuming that in the absence of the reform the trends in regulatory burden should be similar across different types of regulations. For the estimation of the institutional determinants of the progress in deregulation, we explore the differential impact of the federal deregulation laws on regional regulatory burden depending on the regional institutional environment.

For the purposes of the estimation of the effect of reform on the overall level of regulatory burden, we construct measures of regulatory burden comparable across types of regulations as well as across regions and over time. We employ two alternative measures: a proxy for

the overall level of regulation and a proxy for the overall level of violation of targets set in deregulation laws in the respective regulatory areas. The construction of both variables required several steps: First, we selected variables from the MABS survey that measure regulatory burden along the dimensions targeted by deregulation laws. The measures of *the level* of regulatory burden on firms at each point in time are: 1) the number of illegitimate licenses; 2) the term of license validity; 3) the number of inspections; 4) the number of days needed for registration, and 5) the number of agencies needed for registration. As measures of violations of deregulation targets in the respective areas of regulation we take dummies indicating whether 1) a firm has an illegitimate license; 2) a legitimate license with too short term of validity; 3) more than one inspection of any agency in half a year; 4) more than one week for registration; and 5) more than one window for registration. Second, from each of these variables, we partial out the effect of the basic characteristics of firms, i.e., age, size allowing for a quadratic term, and (state vs. private) ownership structure by taking residuals from an OLS regression of our variables on these firm characteristics. This is done because there is a large variation in regulatory environment faced by firms within each locality; and this variation is largely explained by the variation in size, age, and ownership of firms.[13] Third, we aggregate each of these variables to the level of regions by taking the mean of each variable across firms in each region at each point in time. Finally, we construct Z-scores for each of these aggregated variables by subtracting the sample mean and dividing by standard deviation in order to have comparability across series. The last operation yields two variables: 1) z-scores measuring the level of regulation for different types of regulations and 2) z-scores measuring the rate of violations of targets set in deregulation laws. Each of the two variables varies across five dimensions of regulations, twenty regions, and five points in time.

The two measures are theoretically distinct because the level of regulation can differ even

[13]This has been shown using a wide variety of sources in many different countries including the Russian MAPS data. See, for instance, Carlin, Schaffer and Seabright (2001, 2006); Frye and Zhuravskaya (2000); CEFIR (2002).

in situations when all targets of deregulation laws are met or when all of them are violated. In the latter case, the level of regulation would measure the distance to targets set in the deregulation laws.

Let us denote either of these two measures by V_{irt}, where i indexes the five regulatory measures in each group, and r and t index regions and rounds of the MABS survey (i.e., our measure of time), respectively. For each of the two measures of the overall regulatory burden (V_{irt}), we run panel regressions with fixed effects for each dimension of regulation in each region:

$$V_{irt} = \alpha(I_r - \bar{I}) * AFTER_{it} + \beta(V_{irt_0} - \overline{V_{t_0}}) * AFTER_{it} + \gamma AFTER_{it} + \delta' \mathbf{X}_{rt} + \phi_{ir} + \rho_t + \varepsilon_{irt}. \quad (1)$$

The variable $AFTER_{it}$ denotes a dummy indicating whether the respective deregulation law responsible for the regulatory measure i is in force at time t or not yet. As the timing of reform differed across different types of regulations (i.e., licensing, inspections, and registration), "after reform" dummy ($AFTER_{it}$) varies not only over time but also across regulations i. The coefficient γ on the "after reform" dummy is a difference-in-differences (DD) estimate of the average effect of deregulation reform on the overall regulatory burden. I_r denotes a particular institutional characteristic of a region r which can potentially affect deregulation progress. It is important to note that our institutional determinants do not vary over time and are measured in 2000 before the reform had started.[14] Our main coefficient of interest, α, is a DDD estimate of the impact of institutional characteristics (I_r) on the progress of deregulation reform; more precisely, it estimates the differential effect of deregulation reform (i.e., the enactment of deregulation laws) on the level of actual regional regulatory burden in an average region depending on the level of regional institutional characteristic (I_r).

We include the following covariates into the regression equation. τ_t and ϕ_{ir} are the fixed effects for time and for each regulation measure in each region, respectively. Regula-

[14] In order to interpret the coefficient γ as the full effect of reform at the mean level of institutional environment, we subtract the sample means ($\bar{I}$ and $\overline{V_{t_0}}$) from I_r and V_{irt_0} before taking their cross-terms with $AFTER_{it}$.

tion*region fixed effects control for all time invariant characteristics of regions and of types of regulations in each region, including the initial level of regulatory burden. Time fixed effects control for all global trends and macro-economic events that uniformly affects regional regulations during the sample period. An important control variable is the interaction of the initial level of regulatory burden (V_{irt_0}) and the "after reform" dummy ($AFTER_{it}$). The coefficient on this interaction measures the extent to which the progress in deregulation reform depends on the initial level of regulation. If the reform worked perfectly to harmonize (and lower) the level of regulation across firms, the deregulation progress would have been a linear transformation of the initial level of regulation. Since the institutional environment (i.e., I_r) often is correlated with the initial level of regulation, without this covariate one could have found spurious correlation between the progress of reforms and institutions. The initial time period (t_0) refers to the first round of the MABS survey that measures the benchmark level of regulatory burden before any of the deregulation laws took effect, i.e., the second half of 2001.[15] $\mathbf{X}_{rt}$ is a vector of additional regional covariates; it includes the logarithm of regional population (to control for the size of the region) and the mean individual income (to control for prosperity of the region). It is important to note that we correct standard errors to allow for clustering of error terms (ε_{irt}) for all observations within each region that are related to each of the three types of regulations: registration, licensing, and inspections. (Thus, we have 60 clusters: 3 types of regulations*20 regions). Clusters take care of two potential concerns (e.g., Bertrand, Duflo and Mullainathan, 2004): 1) autocorrelation in residuals and 2) cross-sectional correlation among observations from within areas of regulations in each region.

For the validity of this estimation strategy, we two assumptions subject to holding all covariates constant: 1) in the absence of deregulation reform, the different regulatory measures would have had the same overtime trend; and 2) in the absence of institutional variation among regions, the impact of reform on each of the regulatory measures would have been

[15] In the robustness section, we show that our results are robust to using retrospective data for inspections (in all rounds of MABS). In that case, the benchmark for inspections refers to the first half of 2001.

the same across regions.

3.1.2 Results: the overall level of regulation

Columns 1 and 6 of Table 2 show that the reforms caused a substantial statistically significant improvement in the regulatory burden. The coefficient on $AFTER$ is negative and statistically significant. The enactment of a new deregulation law on average lead to a decrease in the level of regulatory burden in the specific regulatory area covered by this law of 0.4 its standard deviation and to a decrease in the rate of violation of the target set by this deregulation law of 0.7 of its standard deviation. The latter result translates into a 23 percentage point decrease in the rate of violation of a specific deregulation target on average following the enactment of the respective deregulation law.

Now let us come to the discussion of the results on determinants of the reform progress in different regions. Table 2 presents the full regression output for the five institutional variables – transparency of authorities, industrial concentration, the share of own revenues, and corruption. We suppress regression results for resource abundance because they are unrobust – as will become clear below – and for media freedom because it has robust zero effect on deregulation in all specifications that we ran. Column (1) of Table A.2 presents abbreviated results, i.e., the point estimates for the coefficients on the interaction between the institutional measures and "after reform" dummy (α from Equation 1) with their respective t-statistics for all institutional variables.

Consistent with the public choice theory of regulations, we find significant positive effect of government transparency, low corruption, strong fiscal incentives, poor endowment in natural resources, and presence of strong industrial lobbying on the overall progress in implementation of deregulation reform.

All of these measures have statistically significant estimates of α coefficients in regressions for the rate of violation of deregulation targets. The effect institutional characteristics is statistically weaker for the overall *level* of regulatory burden to the extent that the effects of

transparency, corruption, and resource abundance on the level of regulation are statistically insignificant, but the sign of the effect is always consistent with that for the level of violation of deregulation targets. (Alternative measures of government transparency and of presence of strong industrial lobbying produce very similar results.) We find no effect of media freedom.

How big are these effects? To analyze the magnitude of the effect of institutional characteristics on the progress of reform, we compare the changes in regulatory burden induced by the reform for regions, where these institutional characteristics differ by one standard deviation (SD) holding everything else constant. Suppose, in region A the level of government transparency is one half of its SD above the sample mean and in region B it is one half of the SD below the mean; then, deregulation reform would lead to a 0.2 SD (or 8 percentage point) larger compliance with deregulation targets in the region A compared to region B as a result of reform. Consider now two regions that differ only in the level of corruption; then, there would be a 0.16 SD difference in the magnitude of a decrease in the level of violation of deregulation targets as a result of reform in these regions. In the region with higher corruption, the rate of violation of deregulation targets would decrease by 6 percentage points lower than in region with low corruption.

Fiscal incentives significantly improve implementation of reforms: there is a 0.2 SD difference in the magnitude of a decrease both the level of regulation and the level of violation of deregulation targets as a result of deregulation reform. The latter translates into a difference of 7 percentage points. As far as the magnitude of the effect of resource abundance is concerned, a one standard deviation increase in the index of resource richness leads to a 0.13 SD (i.e., 5 percentage point) lower increase in compliance with deregulation targets after the reform.

Industrial concentration has a significant beneficial impact on both the level of regulation and on the compliance with targets set by deregulation laws: If one compares two regions in which industrial concentration of employment differs by one SD, in a region with higher industrial concentration, the reform should lead to a 0.1 SD larger decrease in the overall

level of regulation and 0.2 SD (or 6.5 percentage point) larger decrease in the level of violation of deregulation targets as a result of reform.

The effect of institutional characteristics is estimated holding all other variables including the initial level of regulation constant. It is worth noting that the initial severely of regulatory burden itself is a very important determinant of the magnitude of the change following the reforms. The coefficients on the interaction of the initial level of regulatory burden and "after reform" dummy are statistically significant and equal to about 0.5 for the level of regulation and 0.8 for the rate of violation of deregulation targets. Thus, the reform partially equalized the level of regulatory burden across regions, i.e., a one SD higher initial level of regulation and a 10 percentage point higher rate of violation of a particular deregulation target leads to a 0.5 SD higher decrease in the level of regulation and a 8 percentage point higher decrease in the rate of violation of deregulation laws following the reform.

3.2 The determinants of progress in specific regulatory areas

Section 3.1 established the average effect of institutions on the overall level of regulation. However, a priori it is not clear whether institutions affect progress in different regulatory areas in a similar manner or, alternatively, the direction and the magnitude of the effect of a particular institution differ with regulatory areas. In this section we address the following questions: What is behind our aggregate results from Section 3.1? Are these results driven by the effect of institutions on reform progress in a particular regulatory area rather than all of them? Are there institutions that help reforms in one are of regulation and hamper reforms in another? In particular, as we discussed in Section 2, the regulatory capture theory predicts that presence of politically powerful industrial groups may result in low level of regulation for the incumbent firms (i.e., benign inspections) but high costs of entry (i.e., high administrative barriers to registration or obtaining licenses), whereas tollbooth theory predicts no difference between the effects of institutional characteristics on regulation on entry and regulation of incumbents.

The methodology that we use is, again, difference-in-differences. We regress each specific measure of the actual regulatory burden (and of the enforcement of each deregulation target) on the interaction between the "after reform" dummy and a measure of a potential institutional determinant of deregulation (I_r) controlling for time and regional or firm fixed effect (depending on whether the unit of observation is a firm or a region). For licensing and inspections, we have firm-level panel data, whereas for registration the data are a repeated cross-section at the level of firms and a panel at the level of regions; thus, we run firm-level regressions for licensing and inspections and regional level regressions for all three areas of regulations.

3.2.1 Methodology, specific regulatory areas

At the level of firms, the estimated regression equation is as follows:

$$R_{ft} = \alpha I_r * AFTER_t + \beta R_{ft_0} * AFTER_t + \delta' \mathbf{X}_{rt} + \mu' \mathbf{Z}_{ft} + \phi_f + \rho_t + \varepsilon_{ft}. \qquad (2)$$

Subscript f indexes firms; r and t index regions and rounds of the MABS survey, as above. R_{ft} stands for one of the specific measures of regulatory burden in the areas of licensing and inspections for which we have firm-level panel data. The measures are listed in Panels A and B of Table 1. As above, I_r denotes a particular institutional characteristic of a region r which can potentially affect deregulation progress; and $AFTER_t$ denotes a dummy indicating whether the respective deregulation law is in force or not yet. In contrast to Equation 1, in Equation 2 "after reform" dummy varies only over time because in each regression we consider only one specific measure of regulation which was affected by reform only at one point in time. "After reform" dummy is, therefore, collinear with time dummies and omitted from the list of regressors. Our primary parameter of interest (α) estimates the differential effect of the enactment of a specific deregulation law on the level of actual regulatory burden in an average firm depending on the level of institutional characteristic

I_r. ρ_t and ϕ_f stand for time and firm fixed effects, respectively. As in Equation 1, we control for the interaction of the "after reform" dummy with the initial (before reform) level of regulatory burden (R_{ft_0}). The list of regional covariates ($\mathbf{X}_{rt}$) remains the same. As severity of regulations varies with size, age, and ownership type of firms, we include the following vector of firm-level controls ($\mathbf{Z}_{ft}$): the log of firm's employment with a quadratic term, the number of years since the firm's foundation, a dummy for state (vs. private) ownership, and a dummy for newly created startups.[16] In Specification 2, we correct standard errors to allow for clustering of error terms (ε_{ft}) within each firm to account for residual autocorrelation.

Similarly, we run regional-level regressions, in which we aggregate measures of regulatory burden in firms by taking means of each specific measure of regulatory burden at each point in time for all firms in each region. Prior to aggregation, we partial out the effect of firm characteristics as for Equation 1. Let us refer to the resulting regional-level measures of regulations as R_{rt}. In the regional level panel, data allow us to measure regulatory burden associated with all three areas of regulation: licensing, inspections, and registration. The regression equation is analogous to the firm-level regression Equation 2, with only difference being that the unit of analysis at each point in time is a region rather than a firm:

$$R_{rt} = \alpha I_r * AFTER_t + \beta R_{rt_0} * AFTER_t + \delta' \mathbf{X}_{rt} + \phi_r + \rho_t + \varepsilon_{rt}. \tag{3}$$

The notation is the same as in Equation 2. Again, the coefficient α is of our primary interest; it is a difference-in-differences estimator of the average effect of institutions on the regional reform progress in each specific area of regulation.

The main assumption necessary for the validity of this DD methodology is that in the absence of institutional variation the average change in regulatory burden as a result of reform would have been the same across regions for a given level of $\mathbf{X}$ and $\mathbf{Z}$.

[16]The information on licensing is available for startups and old firms; whereas information on inspections is available only for old firms.

3.2.2 Results: determinants of reform progress, specific regulations

Columns 2 and 3 of Table A.2 present the point estimates for the coefficients on the interaction between "after reform" dummy and the institutional characteristics from Equations 2 and 3, respectively, for all regressions, i.e., all available measures of regulatory burden. Tables 3 and 4 report full regression output after estimation of Equations 2 and 3, respectively, for regressions with the four selected institutional measures (that were also featured in Table 2): transparency of authorities, industrial concentration, the share of own revenues, and corruption.

We find that industrial concentration, government transparency, and the share of own revenues have statistically significant beneficial impact on reform progress in registration, licensing, and inspections. In particular, there is no difference in the direction of the effect for entry regulations and regulations of existing businesses of our proxies for the presence of politically-powerful industrial lobbies: industrial concentration significantly reduces the probability that following the deregulation reform a firm has more than one sanitary inspection in half a year period, an illegitimate licence, and visits more than one agency for registration. The same is true for the share of own revenues and government transparency.

As far as corruption is concerned, it has a significant adverse effect on reform progress in licensing and registration, and adverse, but statistically insignificant effect on deregulation in the area of inspections. At the same time, we also find no effect of any of these institutions on reform progress in reducing the number of days for registration and only transparency has some (and rather weak) effect on lengthening the term of license validity which shows up significant only in regional-level regressions. It is plausible, however, that length of license validity changes only with a lag; in particular, this would be the case if the starting and ending times of licenses are correlated across firms. Overall, the results are broadly consistent for regional and firm-level regressions.

The economic significance of these results is as follows. A one SD increase in the HH index of industrial employment leads to a 2.5% lower number of illegitimate licenses per firm,

a 1.5 percentage point larger decrease in the probability for an average established firm to be inspected by the sanitary agency, and a 9 percentage point larger decrease in the number of agencies visited for registration by an average startup as a result of deregulation. A one SD increase in transparency of authorities leads the following improvement in the progress of deregulation reform for an average firm: a 3% larger decrease in the number of illegitimate licenses, a 4% larger increase in the length of license validity, a 22% larger decrease in the number of agencies visited for registration, and a one percentage point larger drop in the probability to have more than one inspection of any regulatory agency in half a year period. A one SD increase in the share of own revenues leads to a 1% larger decrease in the number of illegitimate licenses per firm, a 1 percentage point larger decrease in the probability to be inspected by the sanitary agency, and a 6% larger decrease in the number of agencies visited for registration.[17]

In the previous section of the paper, we showed that resource abundance slowed down the reform on average. The estimation of the effect of resource abundance on the specific areas of regulation produces no statistically significant results (see Table A.2): none of the α coefficients is even close to being significant. Thus, we deem the result on resource abundance unrobust. Again, we find absolutely no correlation of the media freedom variable with progress in *any* dimension of reform. Thus, media has been insufficiently strong to help the public to establish control over bureaucracy.[18]

To summarize, our main finding in this section is that industrial concentration, government transparency, and fiscal incentives consistently significantly affected implementation of reform in all areas of regulation. Particularly interesting is the result on industrial concentration which suggests that this is not the case that the industry incumbents lobby for an increase in entry regulations while keeping regulations on their own activities (such as

[17]For licensing and inspections, the computation of economic significance is based on the results of firm-level regressions.

[18]Another explanation of this fact is, of course, attenuation bias due to measurement errors in media freedom variable. Yet, this variable had been used by a number of other papers that show it to be a reasonably good proxy for the actual state of press freedom in the Russian regions as of 2000 (e.g., Akhmedov and Zhuravskaya, 2004; Gehlbach, Sonin and Zhuravskaya, 2006).

inspections) low. This result contrasts with the prediction of regulatory capture theory and is consistent with the tollbooth theory of the nature of regulations.

4 The consequences of deregulation

An important question for testing between public choice and public interest theories of regulation is whether regulation of different areas of economy is beneficial or detrimental to social welfare, growth, and development. Political and development economists have addressed this question in many different contexts (e.g., de Soto, 1990, 2000; Djankov et al., 2002; Bertrand and Kramarz, 2002; Botero et al., 2004; Djankov, La Porta, Lopez-de Silanes and Shleifer, 2003; Aghion et al., 2006). A common problem with figuring out the effect of regulation on any of the outcomes is endogeneity of regulation. On the one hand, under the public interest theory, benevolent regulators should regulate more in places where there are higher market failures. This could lead to a reverse causality from poor outcomes (e.g., poor quality of goods or pollution) to higher levels of regulation. On the other hand, under the public choice theory, predatory regulators may be disproportionately attracted to places where there is thriving business growth because they can generate more rents by preying on successful and profitable firms. This, in contrast, could lead to a reverse causality from business growth to higher levels of regulation. Without finding an exogenous source of variation in regulation, causal claims based on correlation between regulatory burden and economic outcomes are problematic.

Russia's deregulation reform is a policy experiment that allows us finding instruments to solve the problem of endogeneity of regulation. Our main goal in this section is to establish a causal relationship going from the level of regulation to such outcomes as (net) entry, small business employment, pollution, and morbidity. Our analysis presented in the Section 3 of the paper helps to identify the sources of exogenous variation in regulatory burden. We use the interactions of $AFTER$ with institutional measures (I) and with the initial level of

regulatory environment as instruments to predict regulation. Thus, we estimate 2SLS where the first stage is Equation 3 and the second stage is as follows:

$$S_{rt} = \alpha R_{rt} + \beta' \mathbf{X}_{rt} + \phi_r + \rho_t + \varepsilon_{rt}. \tag{4}$$

The dependent variable (S_{rt}) stands for one of the following outcomes: (net) entry measured by the log number of small businesses in the region, small business employment measured by the number of people employed by small businesses per 1,000 of total regional population, pollution measured by the emissions of contaminants into the atmosphere, and public health measured by morbidity from injuries and poisoning per 1,000 population. The rest of the notation is as in Equation 3. In particular, R_{rt} stands for the specific regional-level measures of regulation.

4.1 Results: the effect of deregulation on outcomes

First, let us consider the estimation of the effect of regulation on the log number of small businesses per capita and on the small business employment; the results are presented in Tables 5 and 6. 2SLS regressions show a statistically significant negative effect of the following regulations on net entry: high frequency of sanitary inspections, high number of illegitimate licenses, and short length of license validity for legitimate licenses (as reported in columns 2, 4, and 6 of Table 5). The effect of the share of firms with more than one agency for registration in the region has a negative but statistically insignificant effect on entry. In addition, frequency of sanitary inspections and the share of firms that had to visit more than one agency in order to register have a significant negative effect on the employment by small businesses (see columns 2 and 8 in Table 6). Licensing regulations (i.e., length of license validity and the number illegitimate licenses) do not have a significant effect on small business employment.

The magnitude of the estimated causal effects of regulatory environment on entry and

employment is as follows. A one standard deviation increase in the share of firms with more than one sanitary inspection in a region leads to a 7.9% lower share of small business employment and a 9.4% lower number of small businesses per capita. A one standard deviation increase in the share of firms with more than just one agency needed for registration leads to a 9.3% lower regional employment by small businesses. A one standard deviation increase in the log number of licenses per firm and a one standard deviation decrease in the log length of license validity per firm in a region lead to 5.6 and 8.9 percent increases in the number of small businesses per capita in this region.

We do not consider how the time needed for registration influences entry or small business because – as we found in section 3.2 – considered institutional determinants of deregulation progress did not significantly affect reform progress in this particular area and, therefore, we do not have sufficiently good instruments for it.[19]

In order to illustrate the direction and size of the bias in uninstrumented regressions, in addition to the results of the second stage of the 2SLS specification (Equation 4), for each regulatory measure we present results of the simple OLS regressions. The bias in uninstrumented OLS estimates (for both the number and employment of small businesses) is positive and rather large. This is consistent with the the view that predatory regulators are attracted to environments with more vibrant and growing business.[20]

The instruments used for each of the regulatory measures in estimation of the effect of regulation on entry and business growth differ only by the timing of "after reform" dummy (which multiplies the same institutional determinants of the deregulation success) and, therefore, are correlated. Therefore, the interpretation of the results requires a word of caution: the instruments do not allow us to distinguish between the effects of changes in different di-

[19]The tables report Hansen J-statistic for each 2SLS regression along with the respective p-value for the test of overidentification restrictions; the test yields that the model is correctly specified in each case. In addition, we report F-statistics for excluded instruments; they indicate that explanatory power of the instruments in reported regressions is sufficiently high not to run into a problem of weak instruments.

[20]Such endogeneity of regulation can explain why Klapper, Laeven and Rajan (2004) find that more benign entry regulations are not associated with higher entry in corrupt countries whereas there is a strong relationship in uncorrupt countries.

mensions of regulation; instead, we estimate the causal effect of the whole cluster regulations associated with inspections, licensing, and registration on the outcomes. Thus, the results should be interpreted as the finding that deregulation in general is beneficial for entry and small business growth.

Now let us turn to the estimation of the causal effect of regulation on pollution and morbidity. Table 7 presents the results: we find no significant effect of regulation on emissions or morbidity. This is contrary to the predictions of the public interest theory that regulations correct such market failures as pollution externalities or provision of toxic goods by neglectful fly-by-night businesses. It is worth mentioning that there is no systematic bias in uninstrumented regressions (thus, we report only the results of 2SLS regressions and omit OLS regression output). The absence of a bias in uninstrumented regressions for pollution and morbidity is itself a piece of evidence against the public interest theory as it predicts an upward bias.

5 Robustness

In this section, we describe various robustness checks for our baseline results.

First, the results are robust to controlling for region-specific linear trends in estimation of Equations 1 and 2 and to controlling for a linear trend interacted with $AFTER$ in estimation of Equations 3 and 4. The direction and magnitude of the effects does not change after inclusion of these controls; some of the results lose significance, but many remain statistically significant.

Second, our results do not depend on the inclusion of the regional control variables, i.e., population and income.

Third, the results are robust to using the alternative assumption about the timing of the laws on inspections and licensing vis-à-vis the monitoring rounds. In reality, deregulation laws on inspections and licenses took place in the middle of the MABS rounds. In the

case of inspections, to check robustness, we use the retrospective data about the number of inspections a year before each of the MABS rounds. This needs to be done for all the rounds because of a significant recall bias: firm managers tend to forget about inspections that took place a year ago and systematically understate their number. In the case of licensing, we assume that the reform started from the second round onwards. The results that we get under the alternative assumption about the timing are consistent, but somewhat weaker. In most cases, however, they remain significant.

Fourth, we re-run Equations 1, 2, and 3 with an additional covariate: an interaction of $AFTER$ with the dummy indicating whether the regional governor belongs to the governing "United Russia" party. This is done in order to control for obedient local governments. All results using our proxies for local accountability (transparency and absence of corruption) become slightly stronger with inclusion of this additional control variable. None of the other results are affected. The progress of reform itself is also unaffected by whether the governor belongs to the governing party.

Finally, we repeat the analysis for an additional measure of regulatory burden – the average cost of obtaining one license. The results that we get qualitatively are very similar to those for other measures of regulation. In particular, government transparency, fiscal incentives, and industrial concentration are associated with a significantly higher decrease in the average cost of licenses after the licensing reform as estimated by Equation 2. (Estimation of Equation 3 yields effects of similar magnitude but lower statistical significance: only the effect of government transparency remains significant. For other measures, the values of t-statistic never fall below unity.) This measure, however, is very noisy because it averages the costs of obtaining legitimate and illegitimate licenses. Since the reform affected only the cost of legitimate licenses, we do not use this measure in our baseline analysis.

6 Conclusions

We analyze firm-level panel data on the regulatory burden of firms in Russia during a period of a drastic deregulation reform. Our findings are as follows. Deregulation reform significantly lowered the actual regulatory burden on Russian firms on average; reform progress, however, exhibited a vast regional variation. Four institutional factors had robust, statistically significant, and economically strong effect on the implementation of deregulation reform in the Russian regions: government transparency, low corruption, fiscal incentives (i.e., the extent to which regional budgets are comprised of own revenues rather than transfers from the federal center), and the presence of strong industrial lobby. These factors are associated with better reform progress both in the area of entry regulations and of the regulations of businesses already in operation. Using the timing of reform and the determinants of its success as exogenous sources of variation in regulatory burden, we show that deregulation had significant positive causal effect on SME entry and employment and had no (adverse) effect on pollution and public health.

This evidence is inconsistent with public interest theory of the nature regulations: first, regions with transparent and accountable governments are the ones that achieve progress in deregulation, and second, deregulation does not have an adverse effect on pollution or morbidity. The evidence is also difficult to reconcile with regulatory capture theory: there is no evidence that strong politically-powerful lobby of industrial incumbents slows down deregulation of entry. In contrast, the evidence is fully consistent with tollbooth theory of regulation (de Soto, 1990; Shleifer and Vishny, 1993; Djankov et al., 2002): the least corrupt and most fiscally-motivated locally-accountable governments promote deregulation the most.

References

Aghion, Philipee, Robin Burgess, Stephen Redding and Fabrizio Zilibotti. 2006. The Unequal Effects of Liberalization: Evidence from Dismantling the License Raj in India. NBER Working Papers 12031 National Bureau of Economic Research, Inc.

Aghion, Philippe, Robin Burgess, Stephen Redding and Fabrizio Zilibotti. 2005. "Entry Liberalization and Inequality in Industrial Performance." *Journal of the European Economic Association* 3(2-3):291–302.

Akhmedov, Akhmed and Ekaterina Zhuravskaya. 2004. "Opportunistic Political Cycles: Test in a Young Democracy Setting." *Quarterly Journal of Economics* 119(4):1301–1338.

Bertrand, Marianne, Esther Duflo and Sendhil Mullainathan. 2004. "How Much Should We Trust Differences-in-Differences Estimates?" *The Quarterly Journal of Economics* 119(1):249–275.

Bertrand, Marianne and Francis Kramarz. 2002. "Does Entry Regulation Hinder Job Creation? Evidence From The French Retail Industry." *The Quarterly Journal of Economics* 117(4):1369–1413.

Botero, Juan, Simeon Djankov, Rafael La Porta, Florencio Lopez-de Silanes and Andrei Shleifer. 2004. "The Regulation of Labor." *The Quarterly Journal of Economics* 119(4):1339–1382.

Boycko, Maxim, Andrei Shleifer and Robert Vishny. 1995. *Privatizing Russia*. Cambridge, MA: MIT Press.

Brennan, Geoffrey and James M. Buchanan. 1980. *The Power to Tax: Analytical Foundations of a Fiscal Constitution*. Cambridge: Cambridge University Press.

Buchanan, James M. 1960. *Fiscal Theory and Political Economy*. Chapel Hill: University of North Carolina Press.

Buev, Vladimir V., Olga A. Makarova and Alexey O. Shehovtzov. 2005. Recommendations for Deregulation Reform in the Area of Licensing Entrepreneurial Activity: EU-Russia Cooperation Program "Deregulation of Economy and Removal of Administrative Barriers". Technical report. In Russian. EUROPEAID/114008/C/SV/RU.

Carlin, Wendy, Mark Schaffer and Paul Seabright. 2001. "Competition and Enterprise Performance in Transition Economies: Evidence from a Cross-country Survey." CEPR Discussion Paper No. 2840.

Carlin, Wendy, Mark Schaffer and Paul Seabright. 2006. "What are the Real Bottlenecks? A Lagrangian Approach to Identifying Constraints on Growth from Survey Data." CEPR Discussion Paper No. 5719.

CEFIR. 2002. Monitoring of Administrative Barriers to Small Business Development: Results of Round 1, CEFIR Policy Report No.5. Technical report. http://www.cefir.org/download.php?id=87; http://www.cefir.org/download.php?id=208.

de Soto, Hernando. 1990. *The Other Path*. New York: Harper and Row.

de Soto, Hernando. 2000. *The Mystery Of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Random House.

Djankov, Simeon, Caralee McLiesh and Rita Ramalho. 2006. "Regulation and Growth." *Economics Letters* 92(3):395–401.

Djankov, Simeon, Edward Glaeser, Rafael La Porta, Florencio Lopez-de Silanes and Andrei Shleifer. 2003. "The New Comparative Economics." *Journal of Comparative Economics* 31(4):595–619.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de Silanes and Andrei Shleifer. 2002. "The Regulation of Entry." *The Quarterly Journal of Economics* 117(1):1–37.

Djankov, Simeon, Rafael La Porta, Florencio Lopez-de Silanes and Andrei Shleifer. 2003. "Courts." *The Quarterly Journal of Economics* 118(2):453–517.

Egorov, Georgy, Sergei Guriev and Konstantin Sonin. 2006. "Media Freedom, Bureaucratic Incentives, and the Resource Curse." Unpublished manuscript.

Frye, Timothy and Andrei Shleifer. 1997. "The Invisible Hand and the Grabbing Hand." *American Economic Review* 87(2):354–358.

Frye, Timothy and Ekatherina Zhuravskaya. 2000. "Rackets, Regulation and the Rule of Law." *The Journal of Law, Economics, and Organization* 16(2):478–502.

Gehlbach, Scott, Konstantin Sonin and Ekaterina Zhuravskaya. 2006. "Businessman Candidates." Unpublished manuscript.

Grossman, Gene M. and Elhanan Helpman. 1994. "Protection for Sale." *American Economic Review* 84(4):833–850.

Jin, Hehui, Yingyi Qian and Barry R. Weingast. 2005. "Regional decentralization and fiscal incentives: Federalism, Chinese style." *Journal of Public Economics* 89(9-10):1719–1742.

Johnson, Simon, Daniel Kaufmann and Andrei Shleifer. 1998. "The Unofficial Economy in Transition." *Brookings Papers on Economic Activity* (2):159–239.

Klapper, Leora, Luc Laeven and Raghuram G Rajan. 2004. "Business Environment and Firm Entry: Evidence from International Data." CEPR Discussion Paper No. 4366.

McChesney, Fred S. 1987. "Rent Extraction and Rent Creation in the Economic Theory of Regulation." *Journal of Legal Studies* 16:101–118.

Mulligan, Casey B. and Andrei Shleifer. 2004. "Conscription as Regulation." NBER Working Paper No. 10558.

Mulligan, Casey B. and Andrei Shleifer. 2005. "The Extent of the Market and the Supply of Regulation." *The Quarterly Journal of Economics* 120(4):1445–1473.

Peltzman, Sam. 1976. "Toward a More General Theory of Regulation." *Journal of Law and Economics* 19(2):211–240.

Pigou, Arthur. 1938. *The Economics of Welfare*. London: Macmillan.

Posner, Richard A. 1974. "Theories of Economic Regulation." *Bell Journal of Economics* 5(2):335–358.

Qian, Yingyi and Barry Weingast. 1996. "China's Transition to Markets: Market-Preserving Federalism, Chinese Style." *Journal of Policy Reform* 1(2):149–185.

Robinson, James A., Ragnar Torvik and Thierry Verdier. 2006. "Political Foundations of the Resource Curse." *Journal of Development Economics* 79(2):447–468.

Shehovtzov, Alexey O., Sergey V. Migin, Alexander V. Demin and Alexey S. Belov. 2005. Evolution of State Policy in the Area of Deregulation and Debureaucratization, and of Removal of Administrative Barriers to Entrepreneurship: EU-Russia Cooperation Program "Deregulation of Economy and Removal of Administrative Barriers". Technical report. In Russian. EUROPEAID/114008/C/SV/RU.

Shleifer, Andrei. 1997. "Government in Transition." *European Economic Review* 41(3-5):385–410.

Shleifer, Andrei. 2005. "Understanding Regulation." *European Financial Management* 11(4):439–451.

Shleifer, Andrei and Robert W. Vishny. 1993. "Corruption." *Quarterly Journal of Economics* 108(3):599–617.

Shleifer, Andrei and Robert W. Vishny. 1998. *The Grabbing Hand: Government Pathologies and Their Cures*. Cambridge, MA: Harvard University Press.

Slinko, Irina, Evgeny Yakovlev and Ekaterina Zhuravskaya. 2005. "Laws for Sale: Evidence from Russian Regions." *American Law and Economics Review* 7(1):284–318.

Stigler, George J. 1971. "The Theory of Economic Regulation." *Bell Journal of Economics* 2(1):3–21.

World Bank, The. 2006. *Doing Business 2007: How to Reform*. Washington, D.C.: The World Bank and The International Finance Corporation.

Zhuravskaya, Ekaterina V. 2000. "Incentives to Provide Local Public Goods: Fiscal Federalism, Russian Style." *Journal of Public Economics* 76(3):337–368.

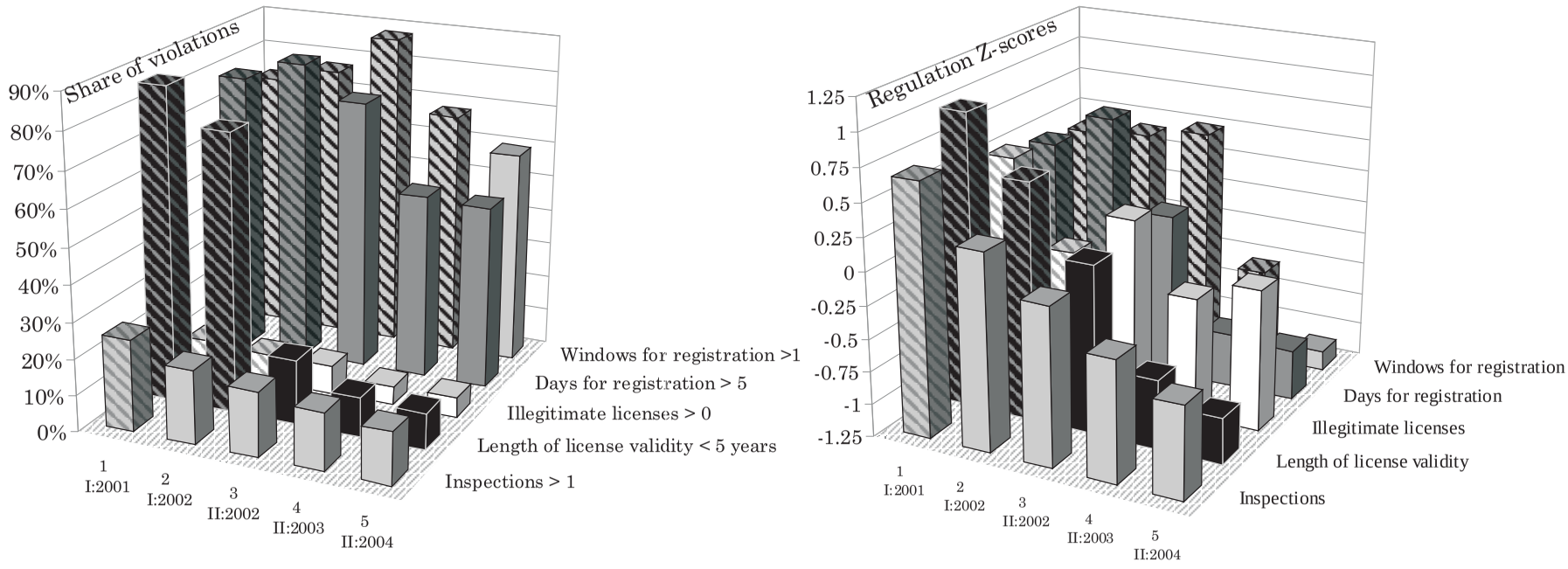

Figure 1: The Level of Violation of Deregulation Targets (left) and the Level of Regulation (right)
Striped Columns Indicate Time Before Reform (specific for each area of regulation)

Figure 2: Regional Variation in Deregulation

Regions: 1-Komi Republic, 2-Altaisky Krai, 3-Krasnoyarsky Krai, 4-Primorsky Krai, 5-Khabarovsky Krai, 6-Amurskaya Oblast, 7-Kaluzhskaya Oblast, 8- Kurganskaya Oblast, 9-Moskovskaya Oblast, 10-Nizhegorodskaya Oblast, 11-Novosibirskaya Oblast, 12-Permskaya Oblast, 13-Rostovskaya Oblast, 14-Samarskaya Oblast, 15- Saratovskaya Oblast, 16-Sakhalinskaya Oblast, 17-Smolenskskaya Oblast, 18-Chelyabinskaya Oblast, 19-Moscow City, 20- St.Petersburg City. "X" denotes missing data.

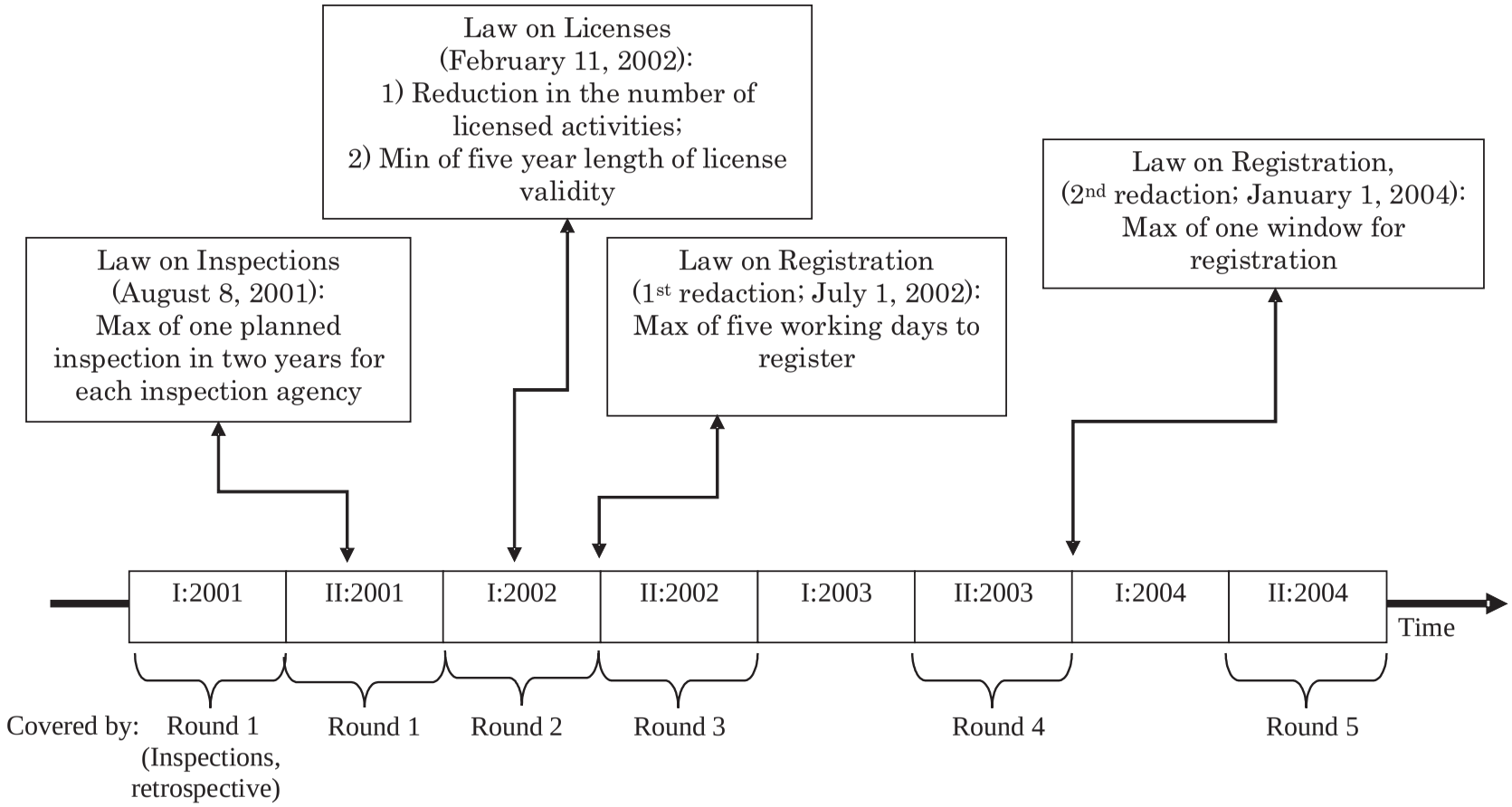

Figure 3: The Timing and Content of Deregulation Reform and Rounds of MABS Survey

Table 1: The List of Variables Measuring Regulatory Burden

	Variable:	Abbreviated name:	
Panel A: Inspections	Log (number of inspections of any agency in half a year)	log number of inspections	
	Dummy for more than one inspection of any agency in half a year	more than one inspection of any agency	V
	Dummy for more than one sanitary inspection in half a year	more than one sanitary inspection	V
Panel B: Licensing	Log (number of illegitimate licenses the firm has)	log number of illegitimate licenses	
	Negative of Log (term of license validity for the legitimate licenses)	minus log term of license validity	
	Dummy for presence of an illegitimate license	presence of illegitimate licenses	V
	Dummy for less than 5-year-term of license validity for a legitimate license	too short term of license validity	V
Panel C: Registration	Log (number of agencies needed for registration)	log number of windows for registration	
	Log (days for registration)	log days for registration	
	Dummy for more than one agency for registration	more than one window for registration	V
	Dummy for more than a week for registration	more than one week to register	V
Panel D: Overall regulatory burden	Overall level of regulation: Panel of Z-scores for the number of illegitimate licenses, minus term of license validity, the number of inspections, the number of days for registration, and the number of windows for registration	regulation level	
	Overall level of violation of deregulation targets: Panel of Z-scores for the shares of firms with too short license validity, an illegitimate license, more than one inspection of any agency, more than one week to register, and more than one window for registration	violation of deregulation targets	V

Note: "V" labels dummy variables indicating whether there is a violation of a specific target in one of the deregulation laws. We take the negative of the length of license validity variable in order to have all the effects going in the same direction, i.e., higher values of all regulatory measures mean higher regulatory burden.

Table 2: The Overall Regulation Level, Reform, and Institutions

	1	2	3	4	5	6	7	8	9	10
	Regulation level						Violation of deregulation targets			
AFTER	-0.434	-0.443	-0.438	-0.444	-0.471	-0.662	-0.672	-0.666	-0.672	-0.642
	[0.148]***	[0.152]***	[0.156]***	[0.156]***	[0.172]***	[0.137]***	[0.151]***	[0.151]***	[0.156]***	[0.164]***
Transparency * AFTER		-0.048					-0.058			
		[0.033]					[0.019]***			
Ind. concentr * AFTER			-1.519					-2.019		
			[0.899]*					[0.627]***		
Own rev. share * AFTER				-1.798					-1.691	
				[0.740]**					[0.518]***	
Corruption * AFTER					0.161					0.218
					[0.132]					[0.111]*
Initial regulation * AFTER		-0.543	-0.552	-0.579	-0.571		-0.790	-0.787	-0.800	-0.762
		[0.080]***	[0.083]***	[0.076]***	[0.125]***		[0.077]***	[0.081]***	[0.070]***	[0.103]***
Log (population)	2.852	3.460	2.366	3.364	2.419	-0.979	0.859	-0.490	0.545	-0.884
	[1.362]**	[1.697]**	[1.154]**	[1.206]***	[1.129]**	[1.358]	[1.396]	[1.163]	[1.271]	[1.205]
Log (mean pc income)	-0.587	-0.319	-0.286	-0.695	-0.687	-0.364	-0.182	-0.138	-0.561	-0.379
	[0.375]	[0.324]	[0.348]	[0.346]**	[0.379]*	[0.448]	[0.396]	[0.416]	[0.412]	[0.473]
Round FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region*Regulation FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	465	464	464	464	408	465	464	464	464	408
R-squared, overall	0.38	0.46	0.45	0.46	0.42	0.33	0.48	0.48	0.48	0.46
Regions*Regulations	100	99	99	99	99	100	99	99	99	99

Note: Robust standard errors adjusted for clusters at the region and each of the three regulation types level in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%. The whole regression output is available from the authors upon request. Each regression has 60 clusters.

Table 3: Specific Regulations and Institutions, Firm-level Panel

	1	2	3	4	5	6	7	8
	More than one sanitary inspection				Log (number of illegitimate licenses)			
Transparency * AFTER	-0.003				-0.007			
	[0.002]*				[0.002]***			
Ind. concentr * AFTER		-0.193				-0.338		
		[0.068]***				[0.108]***		
Own rev. share * AFTER			-0.126				-0.318	
			[0.058]**				[0.075]***	
Corruption * AFTER				-0.003				0.027
				[0.009]				[0.014]*
Ini. regulation * AFTER	-0.769	-0.770	-0.771	-0.777	-0.52	-0.517	-0.523	-0.52
	[0.029]***	[0.029]***	[0.029]***	[0.031]***	[0.034]***	[0.033]***	[0.034]***	[0.037]***
Log (population)	0.228	0.158	0.226	0.206	0.445	0.215	0.355	0.26
	[0.159]	[0.157]	[0.157]	[0.189]	[0.204]**	[0.188]	[0.198]*	[0.215]
Log (mean pc income)	0.032	0.038	-0.006	0.043	-0.047	-0.041	-0.087	-0.055
	[0.034]	[0.035]	[0.040]	[0.041]	[0.066]	[0.066]	[0.069]	[0.072]
New firm dummy					-0.129	-0.130	-0.129	-0.142
					[0.020]***	[0.020]***	[0.020]***	[0.022]***
Firm's age	-0.002	-0.002	-0.002	0	0.002	0.002	0.002	-0.001
	[0.010]	[0.010]	[0.010]	[0.011]	[0.015]	[0.015]	[0.015]	[0.017]
Firm's size	0.03	0.031	0.031	0.034	0.084	0.083	0.084	0.093
	[0.026]	[0.026]	[0.026]	[0.032]	[0.035]**	[0.035]**	[0.035]**	[0.039]**
Firm's size squared	-0.001	-0.001	-0.001	-0.003	-0.011	-0.011	-0.011	-0.014
	[0.005]	[0.005]	[0.005]	[0.007]	[0.007]*	[0.007]*	[0.007]	[0.008]*
State firm dummy	-0.064	-0.063	-0.061	-0.048	-0.064	-0.062	-0.059	-0.053
	[0.026]**	[0.025]**	[0.026]**	[0.024]**	[0.053]	[0.053]	[0.053]	[0.062]
Round fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm's fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4803	4803	4803	4164	7131	7131	7131	6498
Overall R-squared	0.29	0.29	0.29	0.3	0.11	0.11	0.11	0.11
Number of clusters	1,527	1,527	1,527	1,523	2,539	2,539	2,539	2,535

Note: Robust standard errors adjusted for clusters at the firm level in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. There are no statistically significant results for the effect of institutions on reform progress in increasing the length of license validity.

Table 4: Specific Regulations and Institutions, Regional-level Panel

Panel A:	1	2	3	4	5	6	7	8
	Minus Log (length of license validity)				Log (number of illegitimate licenses)			
Transparency * AFTER	-0.01				-0.011			
	[0.005]**				[0.005]**			
Ind. concentr * AFTER		-0.265				-0.530		
		[0.234]				[0.242]**		
Own rev. share * AFTER			-0.019				-0.341	
			[0.171]				[0.138]**	
Corruption * AFTER				-0.024				0.057
				[0.035]				[0.025]**
Ini. regulation * AFTER	-0.599	-0.666	-0.593	-0.512	-0.389	-0.370	-0.563	-0.255
	[0.191]***	[0.200]***	[0.195]***	[0.266]*	[0.232]*	[0.232]	[0.231]**	[0.207]
Regional covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99	99	99	87	99	99	99	87
Overall R-squared	0.75	0.74	0.73	0.73	0.33	0.35	0.33	0.23

Panel B:	9	10	11	12	13	14	15	16
	More than one window for registration				More than one sanitary inspection			
Transparency * AFTER	-0.05				-0.003			
	[0.017]***				[0.001]**			
Ind. concentr * AFTER		-1.268				-0.121		
		[0.482]**				[0.044]***		
Own rev. share * AFTER			-1.317				-0.093	
			[0.347]***				[0.058]	
Corruption * AFTER				0.139				0.003
				[0.077]*				[0.008]
Ini. regulation * AFTER	-0.956	-0.657	-0.711	-0.19	-0.471	-0.468	-0.516	-0.245
	[0.449]**	[0.500]	[0.517]	[0.621]	[0.169]***	[0.165]***	[0.173]***	[0.318]
Regional covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	84	84	84	80	99	99	99	83
Overall R-squared	0.42	0.39	0.44	0.38	0.39	0.39	0.39	0.46

Note: Robust standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%. There are no statistically significant results for the effect of institutions on reform progress in shortening the length of registration procedures.

Table 5: Regulation and (Net) Entry

Dependent Variable - Log of Total Number of Small Businesses

	1	2	3	4	5	6	7	8
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
More than one sanitary inspection	-0.683	-2.154						
	[0.413]	[0.915]**						
Log (number of illegitimate licenses)			0.051	-0.776				
			[0.213]	[0.454]*				
Minus Log (length of license validity)					-0.254	-0.541		
					[0.133]*	[0.300]*		
More than one window for registration							0.018	-0.203
							[0.080]	[0.175]
Log (population)	0.197	0.291	0.146	0.264	0.369	0.615	0.811	0.558
	[0.372]	[0.272]	[0.379]	[0.316]	[0.386]	[0.354]*	[0.871]	[1.018]
Log (mean pc income)	-0.081	-0.045	-0.091	-0.194	-0.056	-0.009	-0.027	-0.061
	[0.142]	[0.136]	[0.146]	[0.143]	[0.142]	[0.149]	[0.161]	[0.141]
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99	99	99	99	99	99	84	84
R-squared, overall	0.11		0.07		0.12		0.13	
F-stat		6.51		7.06		10.04		7.66
J-test		1.55		0.08		1.34		0.06
p-value for J-test		0.21		0.77		0.25		0.8

Note: Robust standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%. In each of the 2SLS, one of the instruments is the cross-term of $AFTER$ with the initial level of the respective regulation. The additional instruments are the cross-terms of $AFTER$ with the following institutional measures: in regressions (2), (4), and (6) with transparency; and in regression (8) with the share of own revenues. The instruments are chosen to maximize F-statistic for the excluded instruments in the first stage.

Table 6: Regulation and Small Business Employment

Dependent Variable - Total Employment in Small Business per 1000 People

	1	2	3	4	5	6	7	8
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
More than one sanitary inspection	-0.037	-0.093						
	[0.021]*	[0.044]**						
Log (number of illegitimate licenses)			0.019	-0.03				
			[0.011]*	[0.033]				
Minus Log (length of license validity)					0.007	0.007		
					[0.007]	[0.009]		
More than one window for registration							-0.008	-0.018
							[0.003]**	[0.007]**
Log (population)	-0.091	-0.088	-0.097	-0.089	-0.099	-0.1	-0.04	-0.052
	[0.019]***	[0.026]***	[0.019]***	[0.030]***	[0.020]***	[0.027]***	[0.033]	[0.037]
Log (mean pc income)	0.005	0.006	0.006	0.0003	0.003	0.003	0.003	0.001
	[0.007]	[0.007]	[0.007]	[0.009]	[0.007]	[0.007]	[0.006]	[0.007]
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99	99	99	99	99	99	84	84
R-squared, overall	0.4		0.41		0.39		0.44	
F-stat		6.51		7.06		10.04		7.66
J-test		0.77		1.72		0		0.11
p-value for J-test		0.38		0.19		0.96		0.74

Note: Robust standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%. In each of the 2SLS, one of the instruments is the cross-term of $AFTER$ with the initial level of the respective regulation. The additional instruments are the cross-terms of $AFTER$ with the following institutional measures: in regressions (2), (4), and (6) with transparency; and in regression (8) with the share of own revenues. The instruments are chosen to maximize F-statistic for the excluded instruments in the first stage.

Table 7: Regulation, Pollution, and Morbidity

	1	2	3	4	5	6	7	8
	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
	Emissions				Morbidity			
More than one sanitary inspection	-0.739				-22.122			
	[1.186]				[39.726]			
Log (number of illegitimate licenses)		-0.192				-5.363		
		[0.457]				[12.811]		
Minus Log (length of license validity)			-0.863				11.555	
			[0.557]				[7.966]	
More than one window for registration				0.029				0.912
				[0.175]				[4.060]
Log (population)	0.47	0.45	1.158	1.559	-87.678	-88.33	-98.957	-66.517
	[0.266]*	[0.267]*	[0.607]*	[1.195]	[8.084]***	[7.101]***	[12.507]***	[24.024]***
Log (mean pc income)	-0.131	-0.172	-0.008	-0.206	-2.448	-3.654	-4.874	-4.422
	[0.183]	[0.210]	[0.157]	[0.200]	[3.495]	[2.973]	[3.507]	[3.280]
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99	99	99	84	99	99	99	84
F-stat	6.18	5.35	10.02	7.72	5.48	5.35	10.02	7.01
J-test	1.28	1.79	0.73	4.21	2.12	1.55	1.78	3.51
p-value for J-test	0.26	0.18	0.39	0.12	0.15	0.21	0.18	0.17

Note: Robust standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%. In each of the 2SLS, one of the instruments is the cross-term of $AFTER$ with the initial level of the respective regulation. The additional instruments are the cross-terms of $AFTER$ with the following institutional measures: in regressions (1), (3) and (7) – transparency; in (2), (5) and (6) – the share of own revenues; in (4) and (8) – transparency and the share of own revenues. The instruments are chosen to maximize F-statistic for the excluded instruments in the first stage.

A Appendix

Institutional measures

The measures of local accountability

The regional indices on the overall transparency of authorities, transparency of legislative and of executive branches of regional governments, and the transparency of regional judiciary come from an independent informational agency "Strana.ru" and an independent association of journalists "Media Soyuz." In the paper, we report results for the overall transparency of authorities; the results using the other measures of government transparency are very similar. These indices were constructed on the basis of a survey of more than a thousand prominent regional journalists who were asked to evaluate performance of the regions along the following dimensions: accessibility and accuracy of information about decisions of a particular regional authority, impartiality and easiness of journalist accreditation rules, quickness of response on journalist inquiries, presence and quality of internet site, etc. The transparency ratings are available at www.strana.ru/print/128316.html. An index of regional media freedom was collected and published by the nongovernmental organization "Public Expertise," which measures restrictions in regional legislation on information dissemination through the media. This rating can be found at www.freepress.ru/arh_e.shtml. An index of regional corruption was constructed by Transparency International jointly with the Information for Democracy foundation (INDEM) on the basis of a an opinion survey among regionally-representative samples of managers of small and medium-size firms and of population about their perceptions of corruption. As our measure of corruption we take the log of the "corruption volume" variable available at www.anti-corr.ru/rating_regions/index.htm.

The measures of fiscal incentives

The share of own budgetary revenues in the total regional budget is used as a simple (and rather crude) proxy for the regional fiscal incentives. The data come from the Treasury of the Russian Federation (www.roskazna.ru/reports/mb.html). A regional index of resource abundance was constructed by the "Expert RA" Rating Agency; it is available at: www.raexpert.ru/ratings/regions/.

The measures of the industrial lobbying

We use three alternative variables to proxy for the political power of industry incumbents. Each of these proxies is imperfect. Yet, even though they are constructed in different ways and from different data sources, they are correlated and produce similar results. Thus, we are reasonably confident that these measures pick up the effect of lobbying by politically-powerful firms. The first two measures are the concentration (Herfindahl-Hirschman) indices of sales and of employment among industrial firms in each region. The logic behind the choice of industrial concentration as proxy for the strength of industrial lobbying is as in Grossman and Helpman (1994). The source of these data is the Russia's Industrial Registry. The third proxy is a measure of regional regulatory capture constructed by and described in Slinko, Yakovlev and Zhuravskaya (2005). This is the concentration of preferential treatments (i.e., subsidies, tax breaks, etc.) given to large firms in each region by the regional laws and regulations. This variable reflects the extent to which political power is concentrated in the hands of a few large firms. In the paper, we report results using the HHI of employment, but the results using other proxies are similar.

Table A.1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Panel A: Regulation measures					
Minus log (term of license validity)	3946	-3.564	0.612	-5.784	-0.693
Log number of illegitimate licenses	7652	0.298	0.605	0	5.889
Too short term of license validity	3951	0.393	0.489	0	1
Presence of illegitimate licenses	7652	0.266	0.442	0	1
More than one sanitary inspection	7557	0.084	0.277	0	1
Log number of inspections	7640	0.722	0.750	0	3.951
More than one inspection of any agency	7652	0.189	0.391	0	1
Log days for registration	681	2.762	0.852	0.262	5.903
More than one week to register	845	0.729	0.445	0	1
Log number of windows for registration	684	1.446	0.554	0	3.045
More than one window for registration	848	0.722	0.448	0	1
Overall regulation level (z-scores)	465	-0.002	0.997	-2.478	4.066
Overall violations of the law (z-scores)	465	0.000	0.997	-2.766	3.371
Overall violations of the law (without z-scores)	467	0.450	0.350	0	1
Panel B: Institutional determinants					
Overall transparency of regional authorities	20	7.478	4.014	0.060	15.860
Transparency of executive power	20	4.224	2.248	0.030	8.750
Transparency of legislative power	20	3.254	1.872	0.030	7.110
Transparency of courts	20	2.221	1.615	0.090	6.940
Log corruption score	16	3.796	0.789	2.442	4.605
Concentration of industrial output	20	0.219	0.099	0.122	0.528
Concentration of industrial employment	20	0.178	0.077	0.110	0.385
Concentration of preferential treatments	20	0.535	0.238	0.209	0.907
Share of own revenues	20	0.829	0.117	0.592	0.959
Media freedom index	20	42.040	12.650	18	75
Resource richness index	20	39.150	26.704	2	89
Governor from the governing party	20	0.721	0.413	0	1
Panel C: Outcomes					
SME employment	99	0.053	0.038	0.019	0.200
Log number of small businesses	99	2.559	1.133	0.875	5.282
Log emissions of contaminants	99	5.152	1.172	2.425	7.859
Morbidity from injuries and poisoning	99	92.085	18.352	54.100	129.000

Table A.2: Account of All Results for the Effect of Institutions

Institution:	Type:	Variable:	1 Overall regulation Panel of regions		2 Specific regulations Panel of firms		3 Specific regulations Panel of regions	
			Coef	abs(T-stat)	Coef	abs(T-stat)	Coef	abs(T-stat)
Transparency	ALL	regulation level	-0.048	[1.45]				
	ALL	violation of deregulation targets	-0.058	[3.00]***				
	INSP	log number of inspections			0.003	[0.82]	-0.007	[0.90]
	INSP	more than one inspection of any agency			-0.003	[1.09]	-0.004	[1.35]
	INSP	more than one sanitary inspection			-0.003	[1.84]*	-0.003	[2.38]**
	LIC	log number of illegitimate licenses			-0.007	[2.88]***	-0.011	[2.19]**
	LIC	presence of illegitimate licenses			-0.008	[3.37]***	-0.005	[3.06]***
	LIC	minus log term of license validity			0.000	[0.09]	-0.010	[2.09]**
	LIC	too short length of license validity			-0.001	[0.32]	0.001	[0.15]
	REGIST	log number of windows for registration					-0.051	[2.48]**
	REGIST	more than one window for registration					-0.050	[2.87]***
	REGIST	log number of days for registration					0.003	[0.15]
	REGIST	more than 5 days for registration					0.014	[1.21]
Corruption	ALL	regulation level	0.161	[1.23]				
	ALL	violation of deregulation targets	0.218	[1.95]*				
	INSP	log number of inspections			0.020	[0.94]	0.032	[0.96]
	INSP	more than one inspection of any agency			0.008	[0.65]	0.014	[0.86]
	INSP	more than one sanitary inspection			-0.003	[0.31]	0.003	[0.37]
	LIC	log number of illegitimate licenses			0.027	[1.96]*	0.057	[2.30]**
	LIC	presence of illegitimate licenses			0.017	[1.32]	0.016	[1.16]
	LIC	minus log term of license validity			0.012	[0.55]	-0.024	[0.70]
	LIC	too short length of license validity			-0.001	[0.04]	0.020	[0.89]
	REGIST	log number of windows for registration					0.057	[0.64]
	REGIST	more than one window for registration					0.139	[1.80]*
	REGIST	log number of days for registration					0.026	[0.22]
	REGIST	more than 5 days for registration					0.033	[0.50]
Fiscal incentives	ALL	regulation level	-1.798	[2.43]**				
	ALL	violation of deregulation targets	-1.691	[3.27]***				
	INSP	log number of inspections			0.019	[0.14]	-0.141	[0.61]
	INSP	more than one inspection of any agency			-0.099	[1.27]	-0.098	[0.90]
	INSP	more than one sanitary inspection			-0.126	[2.17]**	-0.093	[1.60]
	LIC	log number of illegitimate licenses			-0.160	[1.84]*	-0.341	[2.48]**
	LIC	presence of illegitimate licenses			-0.165	[2.10]**	-0.012	[0.22]
	LIC	minus log term of license validity			0.043	[0.34]	-0.019	[0.11]
	LIC	too short length of license validity			-0.016	[0.20]	0.041	[0.35]
	REGIST	log number of windows for registration					-0.853	[1.94]*
	REGIST	more than one window for registration					-1.317	[3.79]***
	REGIST	log number of days for registration					-0.442	[0.72]
	REGIST	more than 5 days for registration					-0.366	[0.99]
Resource abundance	ALL	regulation level	0.002	[0.54]				
	ALL	violation of deregulation targets	0.005	[2.04]**				
	INSP	log number of inspections			0.0007	[1.24]	0.0007	[0.89]
	INSP	more than one inspection of any agency			0.0003	[0.80]	0.0004	[1.33]
	INSP	more than one sanitary inspection			0.0001	[0.20]	0.0001	[0.57]
	LIC	log number of illegitimate licenses			0.0002	[0.53]	0.0003	[0.46]
	LIC	presence of illegitimate licenses			0.0004	[1.20]	-0.0001	[0.39]
	LIC	minus log term of license validity			-0.0006	[0.99]	-0.0010	[1.23]
	LIC	too short length of license validity			0.0000	[0.08]	0.0003	[0.60]
	REGIST	log number of windows for registration					0.0005	[0.12]
	REGIST	more than one window for registration					0.0015	[0.57]
	REGIST	log number of days for registration					-0.0004	[0.12]
	REGIST	more than 5 days for registration					0.0004	[0.24]
Large business lobby	ALL	regulation level	-1.431	[2.37]**				
	ALL	violation of deregulation targets	-1.869	[3.75]***				
	INSP	log number of inspections			0.060	[0.48]	-0.110	[0.59]
	INSP	more than one inspection of any agency			-0.066	[0.97]	-0.049	[0.46]
	INSP	more than one sanitary inspection			-0.104	[2.05]**	-0.074	[1.81]*
	LIC	log number of illegitimate licenses			-0.318	[4.24]***	-0.497	[3.79]***
	LIC	presence of illegitimate licenses			-0.343	[4.96]***	-0.148	[3.00]***
	LIC	minus log term of license validity			0.026	[0.22]	-0.025	[0.12]
	LIC	too short length of license validity			-0.070	[0.98]	-0.171	[1.38]
	REGIST	log number of windows for registration					-0.201	[0.36]
	REGIST	more than one window for registration					-0.517	[1.03]
	REGIST	log number of days for registration					-0.273	[0.43]
	REGIST	more than 5 days for registration					-0.054	[0.15]
Media freedom	Overall	regulation level	0.005	[0.74]				
	Overall	violation of deregulation targets	0.005	[0.88]				
	INSP	log number of inspections			0.001	[1.10]	-0.001	[0.42]
	INSP	more than one inspection of any agency			0.000	[0.14]	-0.001	[0.91]
	INSP	more than one sanitary inspection			0.000	[0.21]	-0.001	[1.40]
	LIC	log number of illegitimate licenses			0.000	[0.41]	0.000	[0.22]
	LIC	presence of illegitimate licenses			0.000	[0.54]	0.000	[0.17]
	LIC	minus log term of license validity			0.000	[0.13]	-0.001	[0.34]
	LIC	too short length of license validity			0.000	[0.38]	0.001	[0.81]
	REGIST	log number of windows for registration					0.001	[0.21]
	REGIST	more than one window for registration					-0.002	[0.30]
	REGIST	log number of days for registration					0.000	[0.03]
	REGIST	more than 5 days for registration					0.003	[1.27]

Note: "LIC," "INSP," "REGIST," and "ALL" denote different types of regulation: licensing, inspections, and registration, and measures of the overall regulatory burden, respectively.