Deregulation of Business

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July 8, 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) On average, the reform reduced the administrative costs of firms; but, the progress of reform had a substantial geographical variation. 2) The enforcement of deregulation reform was better in regions with a transparent government, low corruption, better access of the public to independent media sources, 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 net entry and small business employment and no effect on pollution and public health. 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.

What is the nature of regulation? What are the consequences of deregulation of business activity? Theoretical debate around these questions have been active for almost a century (Pigou, 1938; Buchanan and Tullock, 1962; Coase, 1960; Stigler, 1971; de Soto, 1990). Recently, the debate has come to the attention of empirical development literature, motivated by new data sources and different 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 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 the red tape associated with the entry regulation (registration and licensing) and with the regulation of existing business (inspections). The laws introduced clear measurable limits to the regulatory burden in several specific regulatory areas, for example, registering a business requires a visit 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 than once in two years; licenses are valid for five years.

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[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); Bruhn (2007); Kaplan, Piedra and Seira (2007).

In addition, there was a substantial delicensing, i.e., a number of business activities which previously had required licenses were exempt from it. 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 Russia's poor economic performance during the first eight years of transition.[2] The proclaimed goal of the reform was to increase entry and growth of small business.

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

Jointly with a team of experts from an independent Moscow think tank, CEFIR, we collected a unique data set entitled "Monitoring of Administrative Barriers on Small Business" (MABS). The data come from regularly-repeated surveys of 2,000 firms in 20 Russian regions 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; 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 laws on registration, licensing, and inspections. We estimate the average impact of the enactment of a deregulation law on the 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

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

in different areas of regulations would have been the same. 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 reform implementation. We estimate the differential impact of the federal deregulation laws on regulatory burden depending on the pre-reform regional institutional environment (i.e., local accountability and the strength of local industrial lobbies) using difference-in-differences methodology. We explore the fact that the dynamics of regulatory burden in each area of regulation exhibits a vast geographical variation. Figure 2 illustrates this by presenting regional dynamics of the regulatory burden in five specific regulatory areas 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 – the capture theory (Stigler, 1971) and the "tollbooth" theory (de Soto, 1990; Shleifer and Vishny, 1993). Four regional institutional factors significantly boost enforcement of deregulation laws (holding everything else constant): 1) government transparency; 2) control over corruption; 3) internet penetration and other measures of the access of the public to independent media sources; and 4) the presence of strong industrial lobby. 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.

Finally, we use the reform timing together with the institutional determinants of its en-

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[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 height 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.

forcement 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. In contrast, there is no significant effect of regulation on either pollution (measured by contaminants' emission from stationary sources into the atmosphere) or public health (measured by morbidity from injuries and poisoning per 1,000 people). It is important to note that instrumenting regulation is crucial for this exercise because all theories of the nature of regulation presume the presence of reverse causality going from outcomes to regulation as we discuss in Section 4.

Collected evidence allows us to evaluate the competing theories of the nature of regulation. It is inconsistent with the public interest theory and consistent with the public choice theory because regions with transparent and accountable authorities and with the independent sources of information for the public, such as internet and independent newspapers, are the ones that achieve progress in deregulation. In addition, deregulation does not have an adverse effect on pollution or morbidity despite the increase in the number of SMEs and their employment. The evidence is hard to reconcile with the regulatory capture theory and is fully consistent with the tollbooth theory of the nature of regulation 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.

Our findings also shed light on the theory of institutional change in transition economies by finding support for the "demand for reform" (Boycko, Shleifer and Vishny, 1995) theory of determinants of the reform progress. Consistent with this theory, we show that strong regional industrial lobbies facilitated progress in the Russian deregulation reform.

The paper is most closely related to Djankov et al. (2002) both in the theoretical approach and empirical findings. The main contribution of our paper, however, goes beyond the

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analysis in 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 the actual regulatory burden. 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.[4] Third, panel data allow us to control for unobserved regional and firm-level variation as well as time trends and, therefore, substantially improve on the 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); our paper and theirs study complementary channels through which local institutions affect the 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 estimates of the effect of regulations on outcomes. Section 5 discusses robustness. Section 6 concludes.

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, to significantly cut costs of firms associated with the bureaucratic regulation in such areas as inspections, licensing, registration, and certification.

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[4]Bertrand and Kramarz (2002); Aghion et al. (2005, 2006); Bruhn (2007); Kaplan, Piedra and Seira (2007) also focus on within country variation.

The reform consisted of a package of laws passed 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 revision of the law on registration – on July 1, 2002; the law on certification ("technical regulation") – on July 1, 2003; and the second revision of the law on registration – on January 1, 2004.

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. The 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 license validity from three to five years. The first revision 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 revision of the law introduced a "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, e.g., the tax ministry, the pension fund, the social security, the statistical and fire department, local administration, 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.[5] 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.[6]

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[5]Prior to these changes, the first revision 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 the tax ministry among other agencies; the law of 2002 disbanded the registration chamber and moved all of its operations into the tax ministry.

[6]It is important to note that in addition to the laws described above, the law on simplified tax system for small businesses was passed on January 1, 2003. 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.[7] 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 and continuation licenses and a repeated cross-section is collected to monitor costs of registration and start-up licenses. 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 six rounds of the MABS survey conducted in the spring and the fall of 2002, the spring of 2003, 2004 and 2005, and the fall of 2006.[8] Each round collected information about regulatory burden on firms for the immediately preceding six months and, in addition, about the inspections for the six-month period before that (e.g., the fifth round took place in the spring of 2005 and collected all

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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 data set – 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 (1) the law on certification did not introduce clear measurable benchmarks, and therefore, one cannot directly observe whether it is enforced; and (2) the law on simplified tax system did not affect tax administration for the vast majority of our sample.

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

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

variables 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, inspectors and license authorities 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.[9] 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 two rounds allow evaluation of the impact of the second redaction of the registration law.[10]

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[9]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.

[10]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.

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 the deregulation reform, we look at the level of regulatory burden on each 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 sanitary inspections over six months and the respective violation of the deregulation target: a dummy indicating whether there was more than one sanitary inspection in six-month period. We focus on sanitary inspection because it is the most frequent inspector of firms in our sample.[11]

To describe the measures of regulatory burden in the area of licensing, let us first define the 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.[12] 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 the licensing deregulation targets.

For registration, we look at the log number of agencies a startup firm visited in order to register, the log number of days the 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), and a dummy for more than a week for registration. Again, the two dummies measure the

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[11]This dummy picks 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 six months. Yet, these extreme violations are not rare: in 2001, 12% of all firms had more than one sanitary inspection in six months; the situation improved by 2006 (five years after the law took force), but the rate of violations of this deregulation target remained non-trivial: 6.4% of firms.

[12]The following are examples of business activities which were exempt from licensing in 2002: realters, pawn shops, publishing houses, audio studios, private certification firms, antique shops, construction firms, bread making, wholesale and retail of bread, drilling and drill manufacturing, service work in sea ports. Our data show that many firms applied for and were granted licenses for these activities (and other activities that do not require licenses) after the 2002 law took force.

failure to meet the respective deregulation targets.

Summary statistics for the 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.[13]

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 the pre-determined (i.e., pre-reform) institutional characteristics on the local enforcement of exogenously-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 or be a result of reverse causality.

We consider two institutional factors: accountability of local governments to the public (measured by government transparency, control over corruption, and access to independent media sources) and the strength of local special interests (measured by industrial concentration and state capture indices). All institutional measures are described in the Data Appendix and are summarized in the Panel B of Table A.1.

2.1 Predictions of the public choice theory

The public choice theory argues that opportunistic bureaucrats create wellfare-reducing regulations (e.g., Buchanan and Tullock, 1962). Within the public choice theory, there are two

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[13]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 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 3rd round due to a reorganization of the regional survey agency, which was supposed to conduct the survey.

alternative views of the bureaucrats' motivation: (i) the "tollbooth view" states that regulations allow bureaucrats to collect rents for themselves (McChesney, 1987; de Soto, 1990; Shleifer and Vishny, 1993); and (ii) the regulatory capture view implies that bureaucrats act at the request of industry incumbents who use regulation as protection from competition of potential entrants (Stigler, 1971; Posner, 1974; Peltzman, 1976).

Both public choice theories of regulation predict that more accountable (and, therefore, less corrupt and less dependent on special interests) governments should exhibit better progress in deregulation. The regulatory capture and tollbooth theories, however, have different predictions for the effect of the strength of industrial lobbies on the progress of deregulation.

The capture theory predicts that the presence of politically powerful industrial incumbents should adversely affect the implementation of deregulation of entry, i.e., registration and licensing of start-up businesses, but should facilitate deregulation of existing businesses, i.e., inspections.

In contrast, under the tollbooth theory, the conflict of interest is not within the class of businessmen, but between all businessmen, on the one hand, and politicians, on the other hand. Regulations are used to collect bribes from all businesses for the benefit of politicians and bureaucrats. When businessmen are better organized and, therefore, their lobby is stronger, we expect better progress in deregulation in all areas of regulation. Thus, the tollbooth theory predicts no difference in the effect of lobbies on the regulation of entry and the regulation of existing business.

Since the MABS is a survey of SMEs, we have a measure of regulatory costs of entry only for small and medium size firms. Therefore, in order to differentiate between the two theories using our data, we need to assume that large industry incumbents compete with small entrants in product and labor markets. This is a reasonable assumption, particularly, with regard to the competition in the labor market because skilled labor in Russia is scares and immobile.

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2.2 Predictions of the public interest theory

The public interest theory's basic premise is benevolent government which sets regulation to correct market failures. The mere presence of deregulation reform is hard to reconcile with the public interest theory. The reason is that the deregulation reform puts constraints on bureaucrats so that they cannot increase regulatory burden (e.g., to inspect a firm more than twice in two years). If bureaucrats are publicly-motivated, there is no need to place constraints on them. If market failures go down, benevolent local bureaucrats lower the level of regulation accordingly without a need for a federal law. Thus, the federal deregulation reform may arise either if local governments are benevolent while the federal government serves some special interest, or when the changes in the federal legislation are only a reflection of the reduction in market failure that would have lead to a reduction in local regulatory burden irrespective of the legal change. In either case, the public interest theory predicts that the progress of reform should not depend on government transparency or the access of the public to independent sources of information. Since publicly-motivated bureaucrats do not care for special interests, presence of strong industrial lobby also should not have an effect on deregulation as long as it is not correlated with market failure. One could argue, however, that concentrated industries with strong lobbies may be subject to market failures (e.g., monopolization); then, one would expect higher regulation levels to cure market failures in regions with higher industrial concentration (which is the opposite to the prediction of the tollbooth theory).

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 the 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 overall implementation of deregulation

3.1.1 The Methodology for the overall level of regulation

We use the difference-in-differences (DD) and the 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 the deregulation reform on the 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 estimating 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 the deregulation laws. The construction of both variables required several steps. First, we selected variables from the MABS survey that measure the regulatory burden along the dimensions targeted by the 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 sanitary inspections; 4) the number of days needed for registration, and 5) the number of agencies needed for registration. For measuring violations of the 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 sanitary inspection 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 the ownership of firms.[14] Third, we aggregate each of these variables to the regional level 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 the 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 the deregulation laws. Each of the two variables varies across five dimensions of regulations, twenty regions, and five points in time.[15]

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. As reform timing

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

[15]The two measures are theoretically distinct because the level of regulation can differ even 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.

differed across different regulation types (i.e., licensing, inspections, and registration), "after reform" dummy ($AFTER_{it}$) varies not only over time but also across the regulations i. The coefficient γ on the "after reform" dummy is a DD estimate of the average effect of the deregulation reform on the overall regulatory burden. I_r denotes a particular institutional characteristic of a region r which can potentially affect the deregulation progress (i.e., measures of government transparency, control over corruption, availability of independent media sources, and the strength of local industrial lobbies).[16] It is important to note that our institutional determinants do not vary over time and were measured in 2000 before the reform had started.[17] Our main coefficient of interest, α, is a DDD estimate of the impact of institutional characteristics (I_r) on the progress of the deregulation reform. To be precise, it estimates the differential effect of the deregulation reform (i.e., the enactment of the 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. Regulation*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.[18] 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

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[16]See Data Appendix for details on these measures.

[17]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 $AFTER_{it}$.

[18]Indeed, our measures of the strength of local industrial lobbies (industrial concentration and the state capture index) are positively and significantly correlated with the initial level of regulation, whereas government transparency has a negative and significant correlation with the initial regulation level.

transformation of the initial level of regulation. Since the institutional environment (i.e., I_r) is often 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.[19] $\mathbf{X}_{rt}$ is a vector of additional regional covariates; it includes the logarithm of regional population (to control for the regional size) 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 the observations within areas of regulations in each region.

For the validity of this estimation strategy, we make two assumptions subject to holding all covariates constant: 1) in the absence of the deregulation reform, the different regulatory measures would have had the same overtime trend; and 2) in the absence of the institutional variation among regions, the reform impact on each of the regulatory measures would have been 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. On average, the enactment of a new deregulation law lead to a decrease in the level of regulatory burden in the specific regulatory area covered by this law and to a decrease in the rate of violation of the target set by this deregulation law of about 0.6 of standard deviations (SD) of these variables. This result translates into a 20 percentage

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[19]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.

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 four institutional variables – transparency of authorities, internet penetration, control over corruption, and industrial concentration of employment.[20]

Consistent with the public choice theory of regulations, we find significant positive effect of government transparency, the presence of independent sources of news (i.e., internet and independent radio and newspapers), control over corruption, and the 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 of institutional characteristics is statistically weaker for the overall *level* of regulatory burden to the extent that the effects of control over corruption and internet penetration 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 access to independent sources of information and of presence of strong industrial lobbying produce very similar results.) We find no effect of media freedom index.

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.

We start with describing the magnitude of the effects of measures of local accountability.

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[20]The results for the industrial concentration of output and for the state capture index are very similar to those for the industrial concentration of employment. The results for the alternative measures of availability of independent sources of media, i.e., non-zero subscription to Vedomosti and Kommersant newspapers, and the presence of a signal of the Radio Echo Moscow in the area, are very similar to the results for internet penetration. For the purposes of conciseness, we do not report these results. We also do not report results for media freedom, but for a different reason: it has no significant effect on deregulation in all specifications that we ran.

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 and 0.2 SD lower level of regulation in the region A compared to region B as a result of reform. Consider now two regions that differ only in the level of control over corruption; then, there would be a 0.15 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 5 percentage points lower than in region with low corruption. Similarly, internet penetration significantly improves implementation of reforms: there is a 0.2 SD difference in the magnitude of a decrease in the level of violation of deregulation targets as a result of deregulation reform. The latter translates into a difference of 4 percentage points.

The magnitude of the effect of the strength of local industrial lobbies is also large. 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 0.16 SD larger decrease in the overall level of regulation and 0.15 SD (or 4.8 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 0.6 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 0.6 SD higher decrease in the level of regulation and an 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 regulation level. A priori it is not clear, however, whether the 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 the regulatory areas. In this section we address the following questions: What is behind our aggregate results? 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 regulatory area and hamper reforms in another? In particular, as we discussed in Section 2, the regulatory capture theory predicts that the 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 and obtaining licenses); whereas the tollbooth theory predicts no difference between the effects of institutional characteristics on regulation of entry and regulation of incumbents.

The methodology that we use is, again, the difference-in-differences. We regress each specific measure of the actual regulatory burden (and 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 the firm-level regressions for licensing and inspections and the 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.[21] 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

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

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 DD estimator of the average effect of institutions on the regional reform progress in each specific regulatory area.

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 $\mathbf{Z}$.

3.2.2   Results: determinants of reform progress, specific regulations

Results from the firm-level panel are presented in the Table 3, which reports full regression output from estimating Equation 2 for two selected regulatory measures ("at least one illegitimate license" and "more than one sanitary inspection"), and Column 1 of Table A.2, which provides abbreviated results (i.e., the point estimates of α) for all regulatory measures in licensing and inspections. We find that all considered institutional measures (i.e., government transparency, internet penetration, control over corruption, and industrial concentration) significantly speed up the local enforcement of delicensing reform; and all the institutional measures, with the exception of the control over corruption, significantly improve the enforcement of reform in limiting the number of sanitary inspections. The progress of reforms in increasing the length of licence validity is not significantly affected by our institutional

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measures.

The firm-level panel is available only for the existing firms, whereas we are interested in comparing the effect of institutions on the reform progress for incumbent firms and for new entrants. For that purpose, we estimate Equation 3 on the regional-level panel. Table 4 reports full regression output for selected regulatory measures and Column 2 of Table A.2 reports estimates of α for all regulatory measures. Panel A of Table 4 replicates the results for the existing firms on the aggregated data (as expected, the results are qualitatively the same as in the Table 3). Panel B of Table 4 presents results for newly-registered startups. We find that industrial concentration, government transparency, and internet penetration significantly reduce the share of startup firms that had to use more than one agency for registration and the share of startup firms that had to apply for an illegitimate license as a result of the reform.

Importantly, there is no difference in the direction of the effect of industrial concentration of employment for the entry regulations and the regulations of existing businesses. Other proxies of the presence of politically-powerful industrial lobbies—the industrial concentration of output and the state capture index—deliver similar results (unreported). The same is true for the internet penetration and government transparency. Corruption significantly slows down the delicensing reform, but does not have a significant impact on the progress of deregulation in the areas of inspections or registration. We find no effect of any of these institutions on the reform progress in reducing the number of days for registration and on lengthening the term of license validity. It is plausible, however, that the 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.

Again, we find absolutely no correlation of the media freedom index with the progress in *any* dimension of reform. Yet, penetration of Vedomosti and Kommersant independent daily newspapers and Radio Echo Moscow coverage have similar results to the internet penetration (unreported). Thus, we conclude that the media freedom index is poorly measured and, as

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a result, the coefficient estimates for regressions with the media freedom index have an attenuation bias.

Overall, the results are consistent for regional and firm-level regressions and for the existing firms and startups.

The economic significance of these results is as follows. A one SD increase in the Herfindahl-Hirschman index of industrial employment leads to a 2.4 and 3.4 percentage point larger decreases in the probability to get an illegitimate license for an average established firm and a startup firm, respectively, a 1.2 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 increase in the probability of "one-stop-shop" registration of an average startup as a result of deregulation. A one SD increase in the transparency of authorities leads the following improvement in the progress of deregulation reform for an average established firm: a 3 percentage point larger decrease in the probability of having an illegitimate license and a 1 percentage point larger drop in the probability to have more than one sanitary inspection in six-month period. For startups, a one SD increase in the government transparency leads to a 9 percentage point larger increase in probability of a "one-stop-shop" registration and a 3.5 percentage point larger decrease in the probability of an illegitimate license.

A one SD increase in the internet penetration leads to a 2 and 4 percentage point larger decreases in the probability of an illegitimate license in an established and a startup firm, respectively, a 1 percentage point larger decrease in the probability to be inspected by the sanitary agency, and a 11 percentage point larger increase of having to visit a single agency for registration.[22]

To summarize, our main finding in this section is that industrial concentration, government transparency, and internet penetration consistently significantly and robustly affected implementation of reform in all areas of regulation. Particularly interesting is the result about the industrial concentration which suggests that it is not the case that the industry

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

incumbents lobby for an increase of the entry regulations while keeping the regulations of their own activities (such as inspections) low. This result contrasts with the prediction of the regulatory capture theory and is consistent with the tollbooth theory of the nature of regulations.

4   The deregulation outcomes

An important question for testing the public choice and the public interest theories of regulation is whether regulation of different areas of economy is beneficial or detrimental for 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 a thriving business growth because they can generate more rents by preying on successful and profitable firms. This could lead to a reverse causality from business growth to higher regulation levels. 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 to find instruments for solving 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

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

The outcome variables come from the official Russia's statistical agency (Rosstat); they are available for all regions annually up until 2004 (inclusive). Thus, the data on outcomes are unavailable for 2006 when the sixth round of the MABS survey was conducted. Therefore, as our first stage, we use regression output for determinants of the progress of deregulation in rounds 1 to 5; the results of which are very similar to the reported results based on all 6 rounds. We summarize the outcome variables in the Panel C of Table A.1.

As regulation measures, we take the frequency of sanitary inspections, number of illegitimate licenses, and the number of agencies needed for registration. We do not consider how the length of license validity and the time needed for registration affect the outcomes because (as we found in section 3.2) the considered institutional determinants of deregulation progress did not significantly influence the reform progress in these areas and, therefore, we do not have sufficiently good instruments for them.[23]

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[23]In each 2SLS regression, we tested for relevance and for overidentification of the excluded instruments. The tables (described below) report F-statistics and Hansen J-statistics along with their respective p-values for excluded instruments. The tests yield that the model is correctly specified in each case.

4.1 Results: the effect of deregulation on outcomes

First, let us consider the estimates of the effect of regulation on the net entry (Panel A of Table 5) and employment (Panel B of Table 5) of small businesses. The table reports OLS and 2SLS estimates. 2SLS regressions (presented in the even columns of the table) show a statistically significant negative effect of a high frequency of sanitary inspections and a high number of illegitimate licenses on the log number of small businesses per capita. The share of firms with more than one agency for registration in the region has a negative but statistically insignificant effect on the net entry variable. All three measures of regulatory burden: the frequency of sanitary inspections, the number of illegitimate licenses, 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 as a share of population.

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 6% lower number of small businesses and 13% lower share of small business employment in 1000 people (which is equal to 0.7 percentage points or 0.2 SD of SME employment share). A one standard deviation increase in the log number of licenses per firm in a region leads to a 5.1% increase in the number of small businesses and a 30% (or 1.6 percentage point) increase in the small business employment share in this region. A one standard deviation increase in the share of firms with more than just one agency needed for registration leads to a 22% (or 1.2 percentage point) lower regional employment by small businesses.

In order to illustrate the direction and size of the bias in uninstrumented regressions, in addition to the second stage results of the 2SLS specification (Equation 4), for each regulatory measure we present results of the simple OLS regressions (odd columns). The bias in uninstrumented OLS estimates (both for the number and the employment share of small businesses) is positive and rather large. This is consistent with the view that predatory

regulators are attracted to the environments with more vibrant and growing business.[24]

The instruments, used for each of the regulatory measures in estimating 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. Thus, 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 dimensions of regulation; instead, we estimate the causal effect of the whole cluster of 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 6 presents the results: we find no significant effect of regulation on emissions (Panel A) or morbidity (Panel B). Under the assumption that these regulations aim at correcting such market failures as pollution externalities or provision of toxic goods by neglectful fly-by-night businesses, this evidence is contrary to the prediction of the public interest theory. The signs of the estimated coefficients are negative (as the public interest theory would suggest) for sanitary inspections and licensing and positive (contrary to the public interest theory) for registration agencies, but all the coefficients are very imprecisely estimated. It is worth mentioning that there is no systematic bias in uninstrumented regressions: for registration, the bias is actually downward. The absence of a systematic bias in the uninstrumented regressions for pollution and morbidity is itself a piece of evidence against the public interest theory as it predicts an upward bias. It is important to note, however, that the public health and pollution variables may be poorly measured, and therefore, one should treat the evidence of no relationship between pollution and morbidity, on the one hand, and regulations, on the other hand, merely as suggestive.

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[24]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.

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 the 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 transparency and control over corruption become slightly stronger with the 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.

Fifth, 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, internet penetration, 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 are above 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.

Finally, we repeat the analysis for all inspections (rather than just the sanitary inspection). The results are robust, but most of the variation comes from the most frequent sanitary inspection.

Overall, our results prove to be robust.

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. On average, the deregulation reform significantly lowered the actual regulatory burden on Russian firms; the reform progress, however, exhibited a vast regional variation. Four institutional factors had a robust, statistically significant, and economically strong effect on the implementation of deregulation reform in the Russian regions: government transparency, control over corruption, internet penetration and the access to other independent sources of media, and the presence of strong industrial lobby. These factors are associated with a better reform progress both in the area of the 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 the public interest theory and is fully consistent with the tollbooth theory (de Soto, 1990; Shleifer and Vishny, 1993; Djankov et al., 2002) of the nature of regulation: regions with transparent and accountable and least corrupt governments as well as more informed population are the ones that achieve better progress in deregulation. The regulatory capture theory is hard to reconcile with the data as there is no evidence that strong politically-powerful lobby of industrial incumbents slows down deregulation of entry.

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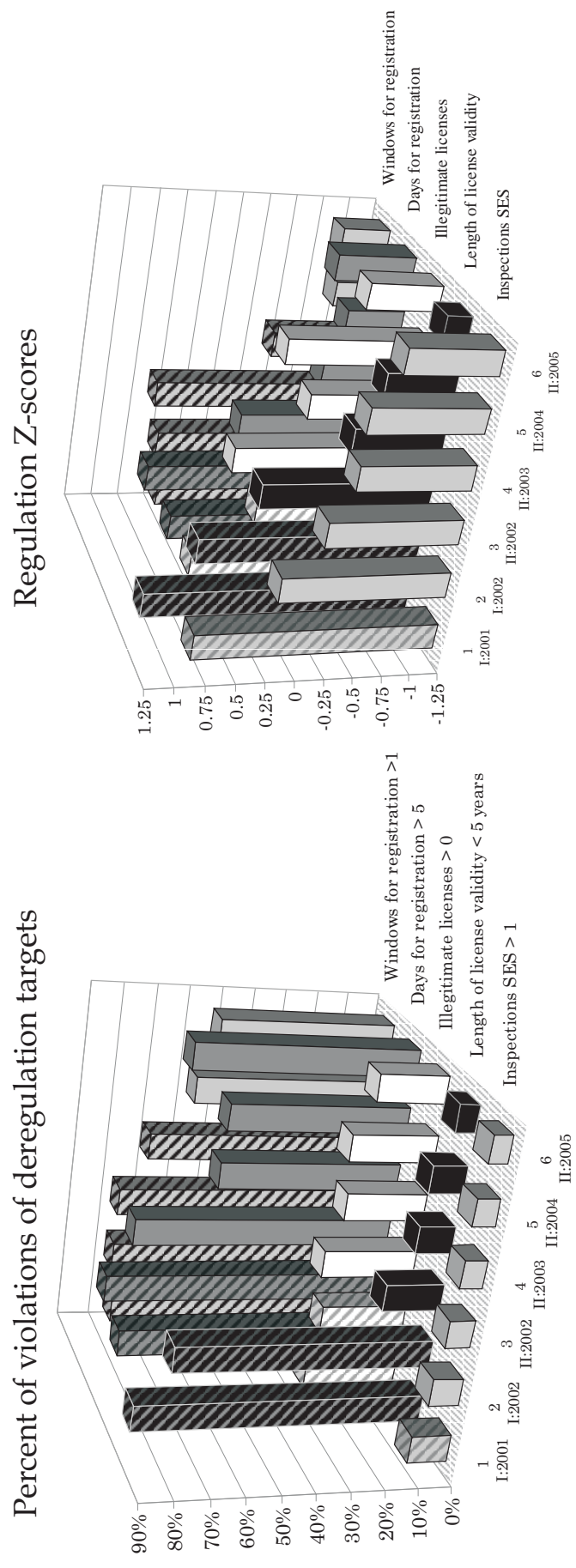
Figure 1: The Level of Violation of Deregulation Targets (left) and the Level of Regulation (right) Striped Columns Indicate Time Before Reform (specific for each area of regulation)

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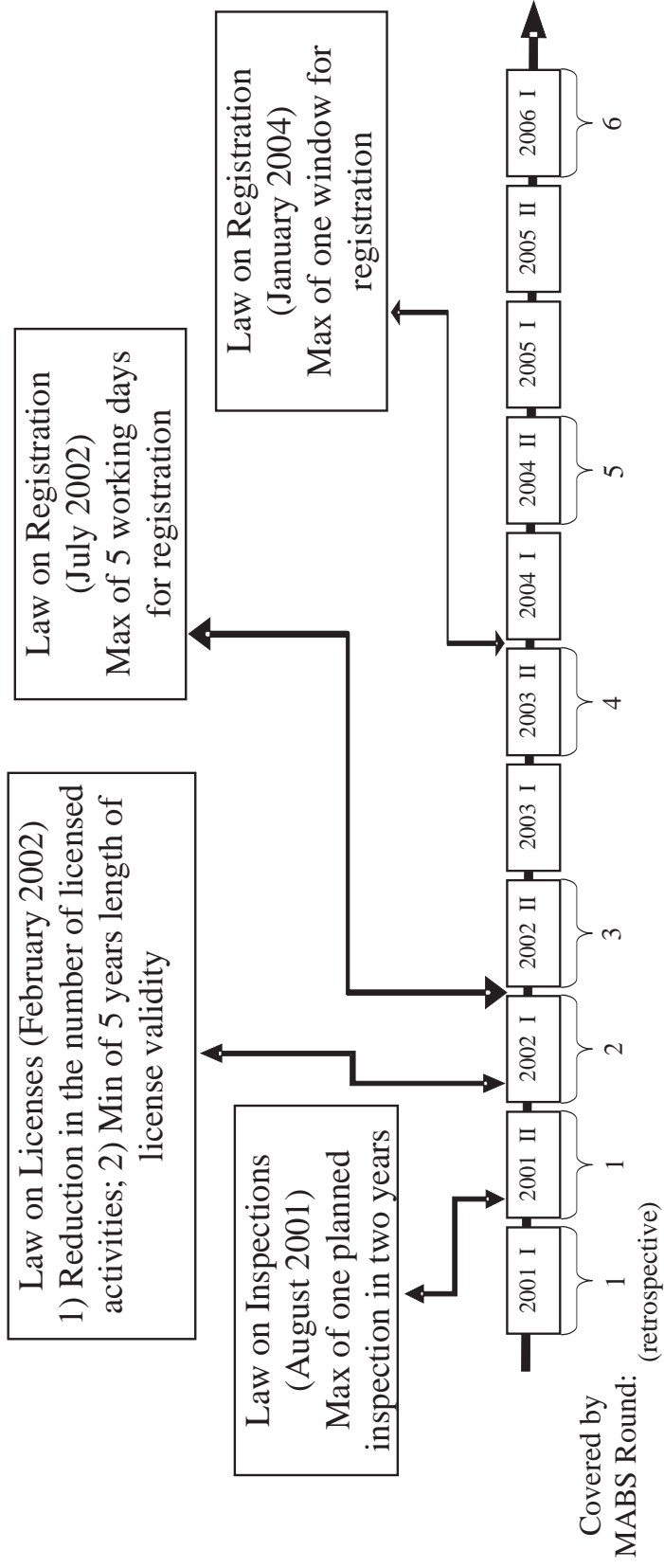
Figure 3: The Timing and Content of Deregulation Reform and Rounds of MABS Survey

Table 1: The List of Variables Measuring Regulatory Burden

	Variable:	Abbreviated name:	V
Panel A: Inspections	Log (number of sanitary inspections in six months)	log number of inspections	V
	Dummy for more than one sanitary inspection in six months	more than one sanitary inspection	V
Panel B: Licensing	Log (number of illegitimate licenses the firm has)	log number of illegitimate licenses	V
	Dummy for presence of an illegitimate license	at least one illegitimate license	V
	Negative of Log (term of license validity for the legitimate licenses)	minus log term of license validity	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	V
	Dummy for more than one agency for registration	more than one window for registration	V
	Log (days for registration)	log days 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:	regulation level	
	Panel of Z-scores for the number of illegitimate licenses, minus term of license validity, the number of sanitary inspections, the number of days for registration, and the number of windows for registration		
	Overall level of violation of deregulation targets:	violation of deregulation targets	V
	Panel of Z-scores for the shares of firms with too short license validity, an illegitimate license, more than one sanitary inspection, more than one week to register, and more than one window for registration		

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
	Violation of deregulation targets						Regulation level			
AFTER	-0.594	-0.64	-0.638	-0.619	-0.631	-0.693	-0.705	-0.703	-0.726	-0.697
	[4.27]***	[0.145]***	[0.152]***	[0.183]***	[0.147]***	[4.77]***	[0.157]***	[0.164]***	[0.189]***	[0.159]***
Transparency * AFTER		-0.06					-0.048			
		[0.012]***					[0.022]**			
Internet * AFTER			-0.048					-0.033		
			[0.028]*					[0.025]		
Corruption cont. * AFTER				-0.998					-0.083	
				[0.447]**					[0.436]	
Ind. concentr * AFTER					-1.922					-2.085
					[0.646]***					[0.717]***
Initial regulation * AFTER		-0.803	-0.793	-0.804	-0.787		-0.615	-0.615	-0.643	-0.616
		[0.062]***	[0.065]***	[0.073]***	[0.067]***		[0.072]***	[0.075]***	[0.130]***	[0.076]***
Log (population)	-0.617	1.192	0.794	0.125	-0.197	1.423	2.053	1.631	1.528	0.874
	[0.53]	[0.939]	[1.087]	[1.234]	[1.071]	[1.97]*	[0.922]**	[0.922]*	[0.830]*	[0.760]
Log (mean pc income)	-0.564	-0.326	-0.333	-0.693	-0.414	-0.523	-0.223	-0.238	-0.549	-0.264
	[1.65]	[0.385]	[0.435]	[0.460]	[0.441]	[1.43]	[0.310]	[0.320]	[0.342]	[0.316]
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	549	548	548	431	548	565	563	563	443	563
R-squared, overall	0.33	0.48	0.47	0.48	0.48	0.33	0.42	0.41	0.42	0.42
Regions*Regulations	100	99	99	79	99	100	99	99	79	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
	At least one illegitimate license				More than one sanitary inspection			
Transparency * AFTER	-0.007 [0.002]***				-0.003 [0.002]*			
Internet * AFTER		-0.008 [0.003]**				-0.004 [0.002]**		
Corruption cont. * AFTER			-0.129 [0.066]**				-0.033 [0.046]	
Ind. concentr * AFTER				-0.313 [0.112]***				-0.161 [0.067]**
Initial regulation * AFTER	-0.642 [0.027]***	-0.641 [0.028]***	-0.632 [0.031]***	-0.642 [0.027]***	-0.781 [0.028]***	-0.779 [0.028]***	-0.79 [0.029]***	-0.781 [0.028]***
Log (population)	0.248 [0.173]	0.376 [0.199]*	0.096 [0.186]	0.064 [0.163]	0.166 [0.138]	0.06 [0.127]	0.149 [0.160]	0.112 [0.136]
Log (mean pc income)	0.082 [0.057]	0.107 [0.060]*	0.07 [0.064]	0.078 [0.057]	-0.005 [0.038]	0.011 [0.040]	-0.004 [0.046]	-0.007 [0.038]
New firm dummy	-0.356 [0.037]***	-0.336 [0.036]***	0 [0.000]	-0.352 [0.037]***				
Firm's age	-0.003 [0.013]	-0.002 [0.013]	-0.001 [0.015]	-0.003 [0.013]	-0.005 [0.009]	-0.005 [0.009]	-0.002 [0.010]	-0.005 [0.009]
Firm's size	0.079 [0.037]**	0.079 [0.037]**	0.097 [0.042]**	0.079 [0.036]**	0.025 [0.023]	0.022 [0.023]	0.039 [0.030]	0.026 [0.023]
Firm's size squared	-0.009 [0.007]	-0.009 [0.007]	-0.012 [0.008]	-0.009 [0.007]	-0.001 [0.005]	0 [0.005]	-0.004 [0.006]	-0.001 [0.005]
State firm dummy	-0.012 [0.066]	-0.01 [0.066]	-0.014 [0.077]	-0.01 [0.067]	-0.059 [0.026]**	-0.061 [0.026]**	-0.037 [0.025]	-0.059 [0.026]**
Round fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm's fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,290	7,290	6,503	7,290	5,305	5,280	4,569	5,305
Overall R-squared	0.12	0.12	0.11	0.12	0.29	0.3	0.3	0.29
Number of clusters	2,270	2,270	2,215	2,270	1,522	1,516	1,518	1,522

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: Existing firms

	1	2	3	4	5	6	7	8
	More than one sanitary inspection				At least one illegitimate license, all firms			
Transparency * AFTER	-0.004 [0.001]***				-0.005 [0.002]***			
Internet * AFTER		-0.003 [0.002]*				-0.007 [0.002]***		
Corruption cont. * AFTER			0.017 [0.045]				-0.147 [0.061]**	
Ind. concentr * AFTER				-0.155 [0.057]***				-0.084 [0.046]*
Initial regulation * AFTER	-0.603 [0.126]***	-0.575 [0.135]***	-0.523 [0.203]**	-0.597 [0.134]***	-0.751 [0.137]***	-0.716 [0.139]***	-0.671 [0.141]***	-0.767 [0.155]***
Regional covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	119	119	99	119	119	119	119	103
Overall R-squared	0.42	0.41	0.48	0.41	0.54	0.53	0.52	0.4

Panel B: Newly registered start-ups

	9	10	11	12	13	14	15	16
	More than one window for registration				At least one illegitimate license, new firms			
Transparency * AFTER	-0.023 [0.012]*				-0.009 [0.004]**			
Internet * AFTER		-0.045 [0.024]*				-0.015 [0.006]**		
Corruption cont. * AFTER			-0.152 [0.290]				-0.027 [0.119]	
Ind. concentr * AFTER				-1.131 [0.342]***				-0.444 [0.215]**
Initial regulation * AFTER	-0.794 [0.379]**	-0.668 [0.371]*	-0.929 [0.465]**	-0.598 [0.377]	-0.915 [0.160]***	-0.935 [0.166]***	-0.867 [0.181]***	-0.841 [0.154]***
Regional covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	104	104	96	104	107	107	91	107
Overall R-squared	0.5	0.5	0.52	0.52	0.46	0.46	0.44	0.47

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 Small Business

Panel A: Regulation and (Net) Entry
Dependent variable - log of total number of small businesses

	1 OLS	2 2SLS	3 OLS	4 2SLS	5 OLS	6 2SLS
More than one sanitary inspection	-0.7 [0.413]*	-2.122 [0.918]**				
Log (number of illegitimate licenses)			0.078 [0.212]	-0.701 [0.421]*		
More than one window for registration					0.022 [0.081]	-0.2 [0.172]
Log (population)	0.192 [0.374]	0.287 [0.274]	0.134 [0.381]	0.25 [0.316]	0.812 [0.870]	0.598 [1.027]
Log (mean pc income)	0.01 [0.146]	0.001 [0.162]	0.021 [0.150]	-0.051 [0.151]	0.033 [0.166]	-0.058 [0.187]
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99	99	99	99	84	84
R-squared, within	0.1		0.07		0.13	
F-stat		6.5		7.79		8.73
J-test		1.58		0.2		0.09
p-value for J-test		0.21		0.65		0.76

Panel B: Regulation and Small Business Employment
Dependent variable - total employment in small business per 1000 people

	7 OLS	8 2SLS	9 OLS	10 2SLS	11 OLS	12 2SLS
More than one sanitary inspection	-0.036 [0.021]*	-0.09 [0.042]**				
Log (number of illegitimate licenses)			0.018 [0.011]*	-0.066 [0.040]*		
More than one window for registration					-0.008 [0.003]**	-0.017 [0.007]**
Log (population)	-0.092 [0.019]***	-0.088 [0.026]***	-0.097 [0.019]***	-0.084 [0.034]**	-0.041 [0.033]	-0.05 [0.035]
Log (mean pc income)	0.003 [0.007]	0.002 [0.006]	0.005 [0.007]	-0.003 [0.008]	0.001 [0.006]	-0.002 [0.007]
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99	99	99	99	84	84
R-squared, within	0.4		0.4		0.44	
F-stat		6.5		5.25		8.73
J-test		0.87		1.87		0.27
p-value for J-test		0.35		0.17		0.61

Note: Robust standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%. In each of the 2SLS, the excluded instruments are the cross-term of $AFTER$ with the initial level of the respective regulation and the cross-terms of $AFTER$ with a measure of government transparency. The choice of particular instruments is guided by maximization of F-statistic for the excluded instruments in the first stage subject to passing the overidentification test.

Table 6: Regulation, Pollution and Public Health

Panel A: Regulation and Pollution
Dependent variable - log emissions of contaminants into the atmosphere

	1 OLS	2 2SLS	3 OLS	4 2SLS	5 OLS	6 2SLS
More than one sanitary inspection	-0.521 [0.499]	-0.772 [1.078]				
Log (number of illegitimate licenses)			0.217 [0.251]	-0.301 [0.455]		
More than one window for registration					0.009 [0.098]	0.012 [0.171]
Log (population)	0.484 [0.451]	0.501 [0.266]*	0.417 [0.452]	0.494 [0.285]*	1.71 [1.048]	1.712 [1.208]
Log (mean pc income)	-0.279 [0.177]	-0.281 [0.196]	-0.256 [0.178]	-0.304 [0.216]	-0.354 [0.200]*	-0.353 [0.200]*
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99	99	99	99	84	84
R-squared, within	0.08		0.08		0.99	
F-stat		5.85		5.25		8.46
J-test		2.21		1.48		4.17
p-value for J-test		0.14		0.22		0.12

Panel B: Regulation and Public Health
Dependent variable - morbidity from injuries and poisoning per 1,000 people

	7 OLS	8 2SLS	9 OLS	10 2SLS	11 OLS	12 2SLS
More than one sanitary inspection	-8.203 [10.609]	-20.175 [38.755]				
Log (number of illegitimate licenses)			-3.121 [5.343]	-11.441 [12.809]		
More than one window for registration					0.204 [2.044]	0.886 [3.668]
Log (population)	-87.8 [9.6]***	-86.9 [7.9]***	-87.9 [9.6]***	-86.6 [7.8]***	-63.3 [21.9]***	-62.7 [22.5]***
Log (mean pc income)	-7.2 [3.754]*	-7.3 [3.3]**	-7.5 [3.8]*	-8.3 [3.3]**	-8.3 [4.2]*	-8.1 [3.1]***
Round and Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	99	99	99	99	84	84
R-squared, within	0.61		0.61		0.98	
F-stat		5.85		5.25		8.46
J-test		1.46		2.04		3.3
p-value for J-test		0.23		0.15		0.19

Note: Robust standard errors in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%. In each of the 2SLS, the excluded instruments are the cross-term of $AFTER$ with the initial level of the respective regulation and the cross-terms of $AFTER$ with a measure of government transparency. The choice of particular instruments is guided by maximization of F-statistic for the excluded instruments in the first stage subject to passing the overidentification test.

A   Data Appendix

Institutional measures

Summary statistics for all institutional measures are presented in Panel B of Table A.1.

The measures of local accountability

Government transparency: The regional indices of 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.

  Corruption: 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 control over corruption we take (1-"corruption volume"), with "corruption volume" variable available at www.anti-corr.ru/rating_regions/index.htm.

  Independent media sources: We use several alternative measures of the access of the public to independent media. First, the internet penetration variable — the number of personal computers connected to internet per 100 employees — comes from the official Russia's statistical agency (Rosstat). Second, we use a dummy that indicates regions with non-zero subscription to the two main independent (in 2000) daily newspapers — *Kommersant* and *Vedomosti*. These data come from their respective websites, www.kommersant.ru and www.vedomosti.ru. Third, we use a dummy for availability of the signal in the region of the largest independent radio station — *Echo Moscow*. These data come from the radio's website, www.echo.msk.ru. Fourth, we also take an index of regional media freedom 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. As a baseline, we report results with internet penetration; the results for the Vedomosti and Kommersant subscriptions and for the Echo Moscow coverage are very similar to the results for internet penetration. We have no significant results for the media freedom index.

The measures of 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					
Log number of sanitary inspections	9046	0.222	0.442	0.000	3.932
More than one sanitary inspection	9046	0.080	0.271	0.000	1.000
Log number of illegitimate licenses	11246	0.241	0.554	0.000	5.889
Presence of illegitimate licenses	11246	0.216	0.412	0.000	1.000
Log number of windows for registration	827	1.390	0.558	0.000	3.045
More than one window for registration	827	0.703	0.457	0.000	1.000
Minus log (term of license validity)	5058	0.336	0.472	0.000	1.000
Too short term of license validity	5058	-3.606	0.625	-5.889	-0.693
Log days for registration	820	2.711	0.843	0.262	5.903
More than one week to register	850	0.729	0.445	0.000	1.000
Overall regulation level (z-scores)	566	0.000	0.996	-2.691	3.952
Overall violations of the law (z-scores)	551	0.000	0.996	-3.358	3.425
Overall violations of the law (without z-scores)	551	0.399	0.328	0.000	1.000
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
Control over corruption	16	0.358	0.154	0.087	0.669
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
Internet penetration	20	3.450	2.460	1	12
Radio Echo Moskvi, signal coverage	20	0.600	0.503	0.000	1.000
Vedomosti daily, subscription	20	0.550	0.510	0.000	1.000
Kommersant daily, subscription	20	0.450	0.510	0.000	1.000
Media freedom index	20	42.040	12.650	18.000	75.000
Governor from the governing party	20	0.721	0.413	0.000	1.000
Panel C: Outcomes					
Share of SME employment in 1000 people	99	0.053	0.037	0.019	0.200
Log number of small businesses	99	2.560	1.135	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 results for all specific regulation measures

Institution:	Type:	Variable:	1 Panel of firms		2 Panel of regions	
			Coef	abs(T-stat)	Coef	abs(T-stat)
Transparency	INSP	more than one sanitary inspection	-0.003	[1.65]*	-0.004	[2.71]***
	INSP	log number of sanitary inspection	0.002	[0.92]	-0.003	[1.02]
	LIC	log number of illegitimate licenses	-0.006	[2.64]***	-0.008	[2.17]**
	LIC	presence of illegitimate licenses	-0.007	[2.73]***	-0.005	[2.99]***
	LIC	presence of illegitimate licenses, new firms			-0.009	[2.39]**
	REGIST	log number of windows for registration			-0.007	[0.41]
	REGIST	more than one window for registration			-0.023	[1.98]*
	LIC	minus log term of license validity	0.002	[0.65]	-0.005	[0.91]
	LIC	too short length of license validity	0.000	[0.16]	0.001	[0.28]
	REGIST	log number of days for registration			0.030	[1.04]
	REGIST	more than 5 days for registration			0.016	[1.56]
internet penetration	INSP	more than one sanitary inspection	-0.004	[2.15]**	-0.003	[1.87]*
	INSP	log number of sanitary inspection	0.003	[0.90]	0.001	[0.28]
	LIC	log number of illegitimate licenses	-0.008	[2.60]***	-0.011	[1.98]*
	LIC	presence of illegitimate licenses	-0.008	[2.43]**	-0.007	[2.91]***
	LIC	presence of illegitimate licenses, new firms			-0.015	[2.49]**
	REGIST	log number of windows for registration			-0.023	[0.80]
	REGIST	more than one window for registration			-0.045	[1.91]*
	LIC	minus log term of license validity	0.006	[1.14]	-0.006	[0.66]
	LIC	too short length of license validity	-0.003	[0.78]	0.006	[1.04]
	REGIST	log number of days for registration			-0.011	[0.17]
	REGIST	more than 5 days for registration			0.027	[1.32]
Control over corruption	INSP	more than one sanitary inspection	-0.033	[0.72]	0.017	[0.37]
	INSP	log number of sanitary inspection	-0.111	[1.87]*	-0.077	[1.00]
	LIC	log number of illegitimate licenses	-0.041	[0.60]	-0.143	[1.44]
	LIC	presence of illegitimate licenses	-0.129	[1.97]**	-0.104	[2.18]**
	LIC	presence of illegitimate licenses, new firms			-0.027	[0.23]
	REGIST	log number of windows for registration			0.148	[0.40]
	REGIST	more than one window for registration			0.152	[0.52]
	LIC	minus log term of license validity	0.049	[0.47]	0.187	[1.28]
	LIC	too short length of license validity	-0.071	[1.02]	0.047	[0.61]
	REGIST	log number of days for registration			0.151	[0.29]
	REGIST	more than 5 days for registration			0.465	[1.64]
Large business lobby	INSP	more than one sanitary inspection	-0.161	[2.40]**	-0.155	[2.74]***
	INSP	log number of sanitary inspection	-0.017	[0.19]	-0.225	[2.18]**
	LIC	log number of illegitimate licenses	-0.315	[2.79]***	-0.441	[1.74]*
	LIC	presence of illegitimate licenses	-0.313	[2.79]***	-0.147	[2.42]**
	LIC	presence of illegitimate licenses, new firms			-0.444	[2.06]**
	REGIST	log number of windows for registration			-0.971	[2.13]**
	REGIST	more than one window for registration			-1.131	[3.30]***
	LIC	minus log term of license validity	-0.071	[0.45]	-0.192	[0.88]
	LIC	too short length of license validity	-0.067	[0.79]	-0.210	[1.10]
	REGIST	log number of days for registration			-0.185	[0.17]
	REGIST	more than 5 days for registration			0.332	[0.66]

Note: "LIC," "INSP," and "REGIST," denote different types of regulation: licensing, inspections, and registration, respectively.