

Uncertainty as a Factor in Investment Decisions

The Case of the Russian Federation's Regions

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Abstract

This paper argues that although the bulk of the literature tends to focus on regulatory uncertainty stemming from formal practices, uncertainty that comes from unpredictable informal practices surrounding regulation is an underexplored additional form of regulatory uncertainty. The paper uses the results of empirical analysis of several unique firm-level data sets to argue that firms in Russian institutional environments adapt to informal practices of business-government interactions, so long as these practices are predictable. The paper draws a distinction between differences in levels of relatively well-ordered (and often centralized) and therefore predictable corruption—a predictable component of the cost of doing business—and variation in experiences with corruption, which often results from decentralized, unconstrained (“administrative”) corruption

and the rent-seeking incentives of lower level officials. It argues that a significant obstacle to investment decisions at the regional level is not so much formal or informal rules per se, but lack of predictability of their application. It also examines in-country inconsistency in property rights enforcement as another source of underexplored regulatory uncertainty tied to informal practice. Unlike administrative corruption, inconsistent property rights enforcement is a fundamental, existential threat to businesses. To test this hypothesis, the paper draws on a measure that captures private “raiders” attacks on firms—hostile, often violent takeovers of firms by outsiders aided and often abetted by law enforcement agencies. The paper argues that the greater is the number of raider attacks for a given region, the greater is the uncertainty and the less likely is investment.

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Uncertainty as a Factor in Investment Decisions: The Case of the Russian Federation's Regions*

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I. INTRODUCTION

Which is more important for businesses' investment decisions – the magnitude of the regulatory burden placed upon them or the consistency with which regulations are enforced? On the one hand, a large body of work built on Ronald Coase's (1960) theory of transaction costs suggests that excessive regulation can serve as a barrier to investment. From this perspective, high levels of regulation complicate the ability of firms to enter and exit markets, while also seriously hampering factor allocation of both capital and labor (c.f. Cooper and Haltiwanger 2006, Bentolila and Bertola 1990, Joyanovich 1982, Hopenhayen 1992, Erickson and Pakes 1998). On the other hand, an emerging body of work has pointed to regulatory uncertainty – uncertainty about how regulation will change or be enforced – as a key barrier to investment. This literature builds on the intuition that firms invest based on expected returns, which are discounted as the probability of negative shocks increases net costs (Pindyck 1991, Dixit and Pindyck 1994). Work on regulatory uncertainty argues that a lack of predictability in regulation and its enforcement increases the risks of negative shocks, thus decreasing firms' incentives to invest.

Thus far, the literatures on regulatory burdens and regulatory uncertainty have remained separate, making it difficult to understand which has a more profound influence on firms' investment decisions. More problematically, however, much of the literature on regulation has focused on formal, written regulations and institutions. For example, work on regulatory uncertainty has used proxy measures such as the number of anti-trust cases brought over time (Bittlingmayer 2001), the number of offices responsible for permitting (Feiock and Jeong 2002), history of passage and repeal of regulation (Fabrizio 2012), retroactive changes in investment regulation (Lyons and Mayo 2005), and survey responses on the anticipated direction of policy (Barrodale 2010; Engau and Hoffmann 2009). Although some work relies on measures that may capture informal institutions (c.f. Beazer 2012), most recent work has simplified uncertainty theoretically by simply looking at “overall uncertainty”, a broad measure that captures many channels, including informal ones, but evades important questions about the sources of uncertainty (c.f. Kang et al. 2014; Baker et al. 2015; Gulen and Ion 2015). This paper attempts to bridge these perspectives by joining a recent group of papers examining regulatory uncertainty arising from informal institutions and practices, which has so far gone underexplored in the literature.

We begin from the premise that a key source of regulatory uncertainty is *the distance between expectations given de jure regulation and de facto practice.*¹ The further the gap between these two, the less certainty firms have regarding applications of the law and the weaker incentives to invest. We then proceed to argue that unpredictable informal practices surrounding regulation are one important, but underexplored, way in which firms' expectations can differ from practice. In this paper, we focus on the predictability of two types of informal practice: corruption and state-led attacks on private property.

First, we argue that one source of regulatory uncertainty is corruption, which creates a gap between de facto practices and de jure policy that can be bridged with bribes. Existing work has been ambiguous about the relationship between regulatory uncertainty and corruption (c.f. Triesman 2007), since it is empirically unclear if corruption serves as an unexpected cost of business (Mauro 1995) or a predictable means of cutting through burdensome regulation or attracting state attention (Leff 1964; Slinko et al. 2005). In this paper, however, we draw a distinction between differences in *levels* of relatively well-ordered (and often centralized) and therefore predictable corruption – a predictable component of the cost of doing business – and *variation in experiences with corruption*, which often results from decentralized, unconstrained (a.k.a. “administrative”) corruption and the

¹ The former is measured by the 2012 Doing Business in Russia's Regions data set, and the latter by the 2012 EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS) for Russian regions.

rent-seeking incentives of lower level officials. This paper argues that the latter is an important source of regulatory uncertainty and that the greater is the variation in firms' experiences with intraregional corruption, the less certainty over enforcement of regulations (or the "correct" bribe to elicit enforcement) and the fewer incentives to invest. Thus, we explicitly attempt to tie together literatures on administrative corruption and uncertainty, testing these hypotheses using data on intra-regional variation on corruption gleaned from aggregating firms' responses on corruption questions in the Russia's Regions Business Environment and Enterprise Performance Survey (RR BEEPS).

Second, the paper also examines *in-country inconsistency in property rights enforcement* as another source of underexplored regulatory uncertainty tied to informal practice. Drawing on emerging literatures on violence as a non-market business tactic, we argue that the willingness of the state to selectively enforce property rights to achieve its own ends opens up the possibility of using non-market, extra-legal strategies to acquire firms and assets. In the contemporary Russian context, such strategies are carried out hand-in-glove with law enforcement officials, who often perpetrate violence against business owners in ways that enable rivals to strip them of assets (Gerber and Mendelson 2008; Firestone 2010; Gans-Morse 2014; Belokurova 2012; Rochlitz 2014). Although in theory formal legal protections prevent such practices, informal practices by state organs largely define the actual "rules-of-the-game" and govern expectations about the willingness of the state to participate in expropriation. By allowing some to make use of extra-legal strategies to strip others of property, the state therefore creates uncertainty about how and when fundamental protections will be enforced and depresses investment (North, Wallace, and Weingast 2009). Unlike administrative corruption, however, inconsistent property rights enforcement is a fundamental, existential threat to businesses and, in the Russian context, to the life and liberty of owners. To test this hypothesis, the paper draws on a measure that captures private "raiders" attacks on firms – hostile, often violent takeovers of firms by outsiders aided and abetted by law enforcement agencies.² Arguably, the greater the number of raider attacks for a given region, the greater the uncertainty and the less likely investment.

In this paper, we compare these two important aspects of regulation using data from the Russian Federation in order to contribute to the literature and to advise policy making more broadly. Empirically, our paper focuses on micro-level firm investment behavior and how it is shaped (or not) by burdensome informal practices associated with regulation and with uncertainty in these informal practices. Specifically we focus on corruption and violent, state-abetted "raider" attacks on firms. We note that our approach is in contrast to the more macro-level focus of much of the existing literature, as well as its focus on formal, written regulation.

Our paper also differs empirically from many contributions in the literature on regulation and investment in that our focus is on a single country. Focusing on a single country allows us to dismiss a number of potentially confounding omitted variables – historical legacies, culture, formal legal environment, etc. – that bedevil cross-national studies. It also allows us to deal with the more subtle problems stemming from the fact that respondents in different countries may perceive corruption differently for cultural or historic reasons or may simply have a different scale in mind when answering questions about it (Treisman 2007).

To examine the relationship between regulation and investment, our primary data source is the Russian Firms in a Global Economy Survey (RuFIGE), which we combine with data on corruption from the 2011/12 EBRD-World Bank Business Environment and Enterprise Performance Survey for Russian regions (RR BEEPS) and

² This indicator is calculated using a publicly accessible database of complaints to the NGO "Business Against Corruption" from entrepreneurs claiming to have faced unlawful criminal prosecution (c.f. <http://www.nocorruption.biz/?cat=6>).

data on “raider” attacks from the Center for Public Procedures “Business Against Corruption”. The latter also allows us to make an important empirical contribution to the literatures on state-sponsored violence and property rights. Because raider attacks in Russia are typically tied to real violations of the law, which are then used by the state to expropriate assets in support of private interests; it is difficult to disentangle state-abetted violence from typical law enforcement practices. Existing studies have consequently been limited to surveys of the perceptions of firm managers and qualitative work. Our data from “Business Against Corruption” consists of actual reported instances of violence against firms subjected to multiple reviews to insure it reflects real state-abetted violence against firms (see Section IV). As such, we are among the first to study state-abetted violence and investment in Russia using objective data.

Substantively, our paper can provide important guidance to policy makers looking to improve their area’s business climate and investment levels. Limited time, resources, and political capital often mean that politicians face real trade-offs when making regulatory reforms. This paper intends to provide valuable insights into the importance of lowering overall regulatory barriers versus improving the consistency of regulatory enforcement that should make this trade-off easier to navigate.

We should note at the outset that this paper is an exploratory exercise. Our goal is not necessarily to produce strong causal claims, but to validate whether there is a relationship between our proxies for uncertainty in regulatory enforcement – variation in corruption and inconsistency in property rights enforcement – and investment behavior. We leave a more causally rigorous empirical design for future iterations of this paper. Nonetheless, our results do indicate strong (and negative) correlations between these proxies of uncertainty in regulatory enforcement and the willingness of firms to invest in Russia. Despite our inability to argue strongly for causation, we believe that these correlations are interesting in and of themselves given the relative paucity of tests of the effect of uncertainty in informal practices related to regulation on investment. To our knowledge only Malesky and Samphantharak (2008) and Wei (1997) provide micro-level tests of the effect of variation in corruption on investment. We are aware of no micro-level studies using actual data on state-abetted hostile take-overs and violence against firms to explore investment decisions.

The next section presents an overview of the literature. Section III provides some context for our study by summarizing contemporary Russian business and institutional environments. Section IV discusses the data, presents and operationalizes our hypotheses, and presents our estimation strategy. Section V presents our regression results and section VI concludes with a brief discussion of policy implications and issues for further research.

II. LITERATURE REVIEW

Regulation influences all aspects of firm behavior, including the ability of firms to enter into new markets, exit old ones, interact with customers, and allocate capital and labor. Traditional work on regulation and investment has argued that compliance imposes transaction costs on firms, which negatively affect factor accumulation, profits, and productivity (c.f. Cooper and Haltiwanger 2006, Cooper and Willis 2003, Bentolila and Bertola 1990, Joyanovich 1982, Hopenhayen 1992, Erickson and Pakes 1998). Simply put, the more excessive are regulatory burdens and the more invasive procedures tied to them, the greater transaction costs incurred by firms. This in turn directly impacts the returns firms can expect from their investments, making them less likely to invest. Empirically, recent work has found links between regulation and investment that suggest that excessive regulation indeed depresses investment (Eifert 2009; Besley and Burgess 2004) and

leads to lower macro-economic growth (Eifert 2009, Djankov et al. 2006, Busse and Groizard 2008). Importantly, however, these relationships appear to be conditional. Regulatory burdens only impose large costs on firms in institutionally weak environments, where there are few constraints on state officials and excessive regulation allows officials to extract bribes from firms in exchange for relief. This suggests that levels of corruption are a potentially useful marker of high levels of regulation, which we discuss in further detail below.

Contemporary work on investment and uncertainty, by contrast, stems from the straightforward insight that firms' base investment decisions in part on expectations about the risk of future negative shocks, which cause firms to discount expected returns (Pindyck 1991, Dixit and Pindyck 1994). The literature argues that policy uncertainty is a major source of such risk, causing firms to dampen investment in presence of these risks (c.f. Rodrik 1991; Higgs 1997; Hassett and Metcalf 1999). Subsequent theoretic work focused on the role of political uncertainty has tended to focus on two primary types of shocks, disaggregating the general concept of political uncertainty to understand better how it relates to investment decisions.

The first source of uncertainty stems from both the anticipation of changes in policies, laws, and norms, along with actual changes in these. Firms are keenly aware that state officials both have the power to change policies unexpectedly and have time-inconsistent policy preferences – preferences that shift due to changing circumstances – setting up a classic commitment problem in which firms can never be sure politicians will not alter existing policy to suit shifting future preferences at the expense of firms (Kydland 1977; Frye 2010). Both shifts in policies and shifts in the composition of political structures can therefore signal future change and depress investment.

A second source of uncertainty stems from inconsistency in the application of existing rules. Due to limited time and resources, politicians must delegate enforcement to professional bureaucrats, who possess informational advantages stemming from specialized knowledge and training (Shipan 2004; Weingast and Moran 1983). Principal-agent theory suggests that delegation comes with risks, however, since the informational advantages possessed by bureaucrats allow them to bend the letter of the law to suit themselves in ways politicians might not have intended (McNollgast 1987). On the one hand, politicians can prevent deviations by assigning rules and procedures to govern all possible outcomes. On the other hand, covering contingencies greatly expands the amount of time and effort required to write laws, incentivizing politicians to grant bureaucrats leeway (i.e. discretion). As a result, politicians must navigate a trade-off between constraining bureaucrats and providing enough discretion in enforcement to allow bureaucrats to complete complex tasks (Huber and Shipan 2002). For firms, bureaucratic discretion can therefore create deep uncertainty about how laws will be applied in practice, even when laws do not actually change.

How does regulatory uncertainty manifest itself? The most benign form of uncertainty about regulatory enforcement stems from the possibility of changing priorities among regulators (or the politicians overseeing them), leading regulators to apply the same law differently at different times (Bittlingmayer 2001). The greater the discretion granted to regulators to enforce laws, the more uncertainty for firms. Less benign is uncertainty arising from the ability of state officials and rival firms to prey on businesses. The ability of state officials to abuse their positions to seek rents at the expense of society may go hand-in-hand with discretion in settings with weak institutional oversight (Olson 2000; North and Weingast 1990; Beazer 2012). Indeed, as Gerber and Mendelson (2008) argue, in such settings officials have strong incentives to engage in “predatory policing”, which enables them to use their official authority for self-enrichment. These insights are central to much of the work in the new institutional economics tradition, which argues that the state's ability to prey on investments

by firms and individuals has adverse effects on investment (c.f. North 1989; Acemoglu and Robinson 2001; North, Wallace, and Weingast 2009; Gehlbach and Keefer 2012).

Although work on corruption is rarely directly connected to the concept of regulatory uncertainty, there is a strong overlap. Demands for bribes create a disjunction between *de jure* regulations and *de facto* practice, since they are used to obtain services and assistance that are nominally enshrined by law and/or to speed up their provision. This disjunction is particularly large when corruption is not being centrally coordinated by higher authorities, resulting in a classic tragedy of the commons in which unconstrained bureaucrats, facing competition by other bureaucrats for bribe revenues, maximize their utility by demanding large short term bribes and ignoring the long-term consequences of their actions (Shleifer and Vishny 1993; Dmitrov 2009). Similarly, the absence of property rights enforcement by state officials – whether due to bribes, lack of capacity, or indifference – can also create uncertainty allowing for the use of non-market tactics and violence to expropriate assets from firms. Numerous studies have documented both the violent tactics that firms use against each other in the absence of state intervention and the modes of defense adopted in such environments (Firestone 2010; Gans-Morse 2011; Belokurova 2012; Rochlitz 2014; Yakovlev et al. 2014; Duvanova 2014). Such tactics indicate a wide gap between *de jure* property rights protections and *de facto* practice, precisely the sort of distinctions which exemplify regulatory uncertainty. As before, distinct sources of regulatory uncertainty - corruption and weak property rights protections vis-à-vis private actors- should decrease incentives for investment.

Taken together, these strands of work suggest that any theory of regulatory uncertainty needs to take into account two sources of regulatory uncertainty. On the one hand, regulatory uncertainty arises when there is a difference between *de jure* laws and regulations and their *de facto* practice. *De jure* law is composed of the rules and procedures formally laid out in legal codices and regulatory guidance that guide business activity, while *de facto* practice refers to the actual rules and procedure experienced by businesses in their day to day dealings with government. In other words, it is important to distinguish between the letter of the law and its actual practice. To the extent that the law encapsulates firms' expectations about how the government will intervene in the market, it in turn shapes expectations about the risk of investment and potential returns. To a large extent, existing work has primarily focused on these types of divergence between *de jure* and *de facto* laws/regulations.

On the other hand, the theoretical framework of existing work suggests that uncertainty need not only be governed by differences in the gap between formal *de jure* rules and *de facto* ones. If divergences between written laws and practices are long running and well-established, it need not shape investment decisions. Firms will simply adopt existing practice as their baseline expectation for how the government will intervene in markets. Work on corruption and property rights enforcement therefore suggests that it is important to pay attention to the predictability of informal practices, as well. If corruption is centralized and well-organized and bribes are well-established and consistent, then there is little uncertainty for firms. By contrast, when corruption is decentralized and the size of bribes varies wildly, then uncertainty abounds. Similarly, if the state engages in wholesale expropriation, contra to established informal practices, firms are left uncertain. In both circumstances, investment should decrease. We discuss the formal hypotheses that derive from these points in greater detail in section IV.

Empirically, studies of policy inconsistency have made use of measures that capture both direct policy changes and political variables associated with the possibility of such changes. With respect to the former, prominent studies have examined survey evidence of perceived predictability in policy changes (Brunetti et al. 1998) and

changes to tax and investment laws (c.f. Auerbach and Hassett 1991; Cummins, Hassett, and Hubbard 1996; Handley 2014). With respect to the latter, scholars have used political regime types and veto points (Kenyon and Naoi 2010, Frye 2010, Jensen 2003, Henisz and Zelner 2001), political polarization between parties (Frye 2010, Frye 2002), leadership change and elections (Nishide and Nomi 2009; Kim et al. 2012; Jens 2013; Julio and Yook 2013; Kelly, Lubos, and Pastor 2014), and political violence (Barro 1991, Brunetti et al. 1998) as proxies indicating changes in the incentive structure underpinning the state's preferences. Most such work has found that policy uncertainty decreases investment at both the micro- and macro-levels.

Studies focused on measuring inconsistency in regulatory enforcement have tended to do so directly, by examining the number of anti-trust cases brought over time (Bittlingmayer 2001), the number of offices responsible for permitting (Feiock and Jeong 2002), history of passage and repeal of regulation (Fabrizio 2012), retroactive changes in investment regulation (Lyons and Mayo 2005), survey responses on the anticipated direction of policy (Barrodale 2010; Engau and Hoffmann 2009), and surveys of bureaucratic discretion (Beazer 2012). A more recent body of work has also begun to examine the differences between *de jure* expectations on the time needed to receive various government services and the *de facto* time needed (Hallward-Driemeier and Pritchett 2015), although this body of work has been more concerned with documenting this gap and is correlates rather than its effect on investment. Work on corruption, although rarely couched in terms of regulatory uncertainty, has instead tended to use survey based measures: focusing on both measures of “grand” corruption – high-level corruption assessed via expert surveys – and the actual experiences of individuals and firms assessed through direct survey questions. Although evidence for a direct effect of corruption on investment is mixed (c.f. Mauro 1995; Slinko et al. 2005; Treisman 2007), an emerging body of work suggests that the predictability of corruption is critical to investment decisions (Malesky and Samphantharak 2008; Wei 1997; World Bank 1997).

Finally, several empirical studies have also connected property rights protection directly to investment, albeit mostly through the use of macro-level data (c.f. Jensen 2006; Gehlbach and Keefer 2012). Qualitative studies have shed some light on how this mechanism works within the Russian context. The practice of predatory policing and use of inconsistent property rights protections by state officials to enrich themselves was first directly analyzed by Gerber and Mendelson (2008). Subsequent work has shed light on the legal framework of such predation, as well as the ways in which private threats by firms to other firms were replaced by state threats to property rights including seizing firms' assets, illegal corporate raiding, extortion, illicit fines, and unlawful arrests of businesspeople (Firestone 2010; Gans-Morse 2012). In contrast to the purely pecuniary motives cited by traditional work on state-led expropriation, however, evidence suggests that inconsistent property rights enforcement by Russian officials can also be tied to political incentives. Analyzing 312 cases of illegal corporate raiding between 1999 and 2010 collected from Russian mass-media, Rochlitz (2014) shows that electoral victories for the ruling party are positively correlated with hostile, violent takeovers in Russia's regions. He argues that the federal center may tolerate a certain degree of predatory activities by regional elites, as long as these elites are able to deliver a sufficiently high level of electoral support for the center. Finally, Yakovlev et al. (2014) analyzed the logic of collective action in the Russian business community to resist predatory activity by law enforcement bodies.

III. RUSSIA'S INSTITUTIONAL CONTEXT

Before turning to a discussion of this paper's research design, hypotheses, and data, it is worth providing some background on Russia's institutional setting in order to provide a better understanding of its potential consequences for regulatory uncertainty. This provides important contextual details necessary for

understanding our choice of measures and helps to define the extent to which our findings should be generalizable to other country settings. One of the major peculiarities of Russia with respect to other transition economies is the nature and extent of the “corporate raiding” phenomenon. Speaking in 2008, the American jurist Thomas Firestone noted:

The illegal takeover of businesses, commonly known in Russian as "reiderstvo" (raiding), has become a major threat to domestic and foreign investors in Russia. "Reiderstvo" differs greatly from U.S. hostile takeover practice in that it relies on criminal methods such as fraud, blackmail, obstruction of justice, and actual and threatened physical violence. At the same time, though, "reiderstvo" is not just simple thuggery. In contrast to more primitive criminals, Russian "reideri" rely on court orders, resolutions of shareholders and boards of directors, lawsuits, bankruptcy proceedings, and other ostensibly "legal" means as a cover for their criminal activity. "Reiderstvo" is also more ambitious than classic protection schemes in that it seeks not just a portion of the target business' profits but the entire business itself... In short, it is a new and sophisticated form of organized crime.” (Firestone, 2008, p.1207)

In short, raiding in Russia was not merely a difference of degree from similar practices in the West: it was a fundamental difference in kind. And most crucially for our purposes, this raiding made active use of inconsistency in legal and regulatory enforcement as a key tool.

Corporate raiding in Russia was tied to racket schemes and mass violation of shareholder rights in the 1990s (Volkov 1999; Black, Kraakman, and Tarasova 2000). These practices reflected major fights over the control of shares between rival businessmen and business groups. However, Volkov’s (2004) work, which mainly analyzed the use of bankruptcy law in the take-over of businesses, also highlighted the active role of state coercive organizations in the take-over process. Such groups engaged in selective enforcement of the law in the interests of powerful allied corporate raiders and privileged business groups.

The involvement of representatives of state coercive organizations in take-over processes became more widespread and easily observed after the “YUKOS Affair” in 2003 – 2004. The incident was an outward symptom of a deeper fight between the highest levels of the federal bureaucracy and businesses over the extent of the latter’s influence on government and revenue generated from resource exports. Whereas businesses had a great deal of power and influence prior to the incident, YUKOS’ bankruptcy and the lengthy terms of imprisonment for its major officers signaled that business had become a junior partner in the ruling coalition. Yakovlev (2006) highlights one of the major implications of this shift, noting that whereas *before* business-state relations had been characterized by *classical state-capture*, where major businesses suborn the state apparatus, Russia began to *move towards a model of business capture*, in which the state took over private firms and subsumed business interests to its own.

Recently, however, the rapid declines in political competition, loss of independence by the judiciary, and general weakness of the press and civil society have made Russian businesses ever more dependent on the decisions of bureaucrats backed by the state’s coercive organizations. Due to this, state coercive organizations have begun to follow the logic of “predatory policing”, under which security services use their authority for their own material benefit rather than fighting crime or protecting elite interests (Gerber and Mendelson 2008). Clear

examples of this in Russia include the Euroset-Motorola incident (2006),³ the “Chemist Affair” (2006 – 2008),⁴ and the “Magnitsky Affair” (2008 – 2009). In all three cases, state coercive organizations made use of their formal policing and indictment powers in order to bring criminal proceedings that ultimately allowed them to take over entire firms or forced them to divest assets.

Dmitri Kamenshchik, the owner of Moscow’s Domodedovo airport who was arrested by the state as part of a “raider” attack in 2016,⁵ summed up the problem of government-abetted raiding for firms nicely:

“It is not clear to us which events are part of the plans of raiders, which take place by themselves (происходят сами по себе), and which are part of the lawful activities of the government. Raiders do not function as independent, self-sufficient economic agents, functioning instead as parasites that penetrate into the cracks and defects of the government machine. In this way, the government apparatus becomes their means of production. To the extent that raiders do not announce themselves, everything looks like law enforcement organs and their controlling agencies are showing a genuine interest in you. Moreover, you know that checking on you is within the rights of government bodies. To what extent is this interest genuine and appropriate? Is there an illegal motive behind it? We do not know.”⁶

Kamenshchik’s commentary is valuable for understanding the phenomenon of violent pressure on business in Russia. On the one hand, it is a mass phenomenon, which has been widely and openly discussed in the press. There is evidence of tens of thousands of criminal cases each year and that the problem is recognized by high level government officials.⁷ On the other hand, the problem with these tens of thousands of cases is that in many of them business owners also broke the law, whether due to non-payment of taxes, credit fraud, violations of investor rights, etc. In these cases, it is objectively difficult to separate criminal cases where the government is acting within the law from those where state power is used to capture and redistribute assets in the service of private interests. Moreover, in practice, the ability of raiders to use state-abetted violent pressures against a given business is tied to the real violations committed by that business’ owner. Thus the line becomes even more blurred and separating violent pressure from real crimes becomes difficult. Partially due to this, existing

³ Dmitry Kr’ajen, Rodion Levitsky, “OplatapoKotrafaktu”, Kommersant, April 4, 2006
<http://www.kommersant.ru/doc/662801>.

⁴ Gregory L. White, “Once-Jailed Russian Executive Pushes Law Changes”, The Wall Street Journal, December 30, 2009
<http://online.wsj.com/article/SB126212533991109359.html>; Vladimir Ruvinsky, “Russian entrepreneurs lead fight against corruption” // The Telegraph, April 27, 2011,
<http://www.telegraph.co.uk/sponsored/rbth/politics/8476577/Russian-entrepreneurs-lead-fight-against-corruption.html>.

⁵ Kamenshchik was arrested in February of 2016 on the basis of accusations that he negligently handled security in 2011 in a way that allowed for a major terrorist incident at his airport: Domodedovo. Interestingly, the Prosecutor General’s Office opposed the arrest and insisted that charges be dropped, since laws mandating the security procedures Kamenshchik was accused of not performing were passed only after the attack at Domodedovo. Typical comments in the Russian media indicate that the criminal case was part of a struggle for ownership of the airport (*c.f.* http://www.bbc.com/russian/russia/2016/02/160219_qd_kamenshchik_arrest_business). Kamenshchik was freed in July 2016 and retains control of Domodedovo. For more information, *see* <http://www.vedomosti.ru/business/articles/2016/07/01/647600-sud-osvobodil-kamenschika-iz-pod-domashnego-aresta>.

⁶ Interview of Dmitri Kamenshchik in “Vedomosti”, 20 October 2015, Available at:
<http://www.vedomosti.ru/newspaper/articles/2014/10/20/sobstvennik-osnovnaya-ugroza-dlya-kompanii-dmitrij>.

⁷ *C.f.* Message from the President of the Federal Assembly, 3 December 2015, Available at:
<http://kremlin.ru/events/president/news/50864>.

work on violence against firms in Russia has tended to be either qualitative in nature or use perceptions based measures from surveys of firms. As noted in the introduction, our paper provides one of the first systematic tests using objective data, which we discuss in detail below.

The government has recognized the extent of pressure on businesses and its negative consequences for economic development. One example of attempts to react to this phenomenon is the changes made to the criminal code in 2009 to prevent arrests of business owners whose firms are being investigated. Another project, the NGO Center for Public Procedures “Business Against Corruption” (BAC-Center) was founded in 2011 by the association ‘Business Russia’ with direct support by top-level governmental officials and given a mandate to track violent pressure on firms and raider attacks. State support for the center at the highest levels was clearly signaled when the office of the ombudsman for entrepreneurs was formed within the presidential administration in 2012 and the center was formally adjoined to it (Yakovlev, Sobolev, and Kazun 2014).

However, even after these high-level attempts to limit pressure on businesses, the situation did not change substantially. The arrest of billionaire Vladimir Evtushenkov, who was the principal owner of the “Sistema” holding company, and the subsequent confiscation of his company’s shares in the oil company “Bashneft” has shown that even completely loyal oligarchs are not necessarily protected from unpredictable pressure from the state. In Evtushenkov’s case, his firm’s shares in “Bashneft” were coveted by state-owned firms.⁸ In February of 2016, President Vladimir Putin personally took the initiative to create a special working group to resolve conflicts between the coercive apparatus and businesses.⁹ On the one hand, the President’s initiative reflect an awareness at the highest levels that the continued threat of coercive structures to property rights is a major issue for future economic development. On the other hand, the creation of this group can also be regarded as recognition from the country’s top leadership that previous attempts to solve the problem of pressure on businesses have failed.

IV. DATA, RESEARCH DESIGN, AND HYPOTHESES

A. Data

This paper uses data from two enterprise surveys to explore regulatory uncertainty stemming from informal practice. Our main firm-level data comes from the Russian Firms in a Global Economy (RuFIGE) survey that was conducted by the Institute for Industrial and Market Studies, Higher School of Economics. The survey was conducted as part of a project aimed at assessing the comparative advantage of Russian manufacturing firms on domestic and global markets in a comparative perspective. The survey took place in summer and autumn of 2014 and included 1,950 firms in 60 Russian regions. We choose to use the RuFIGE data set as our primary firm-level data for several reasons. First, RuFIGE is the most recent firm-level survey to provide data on investment, providing a more contemporaneous sense of how uncertainty is shaping investment decisions in Russia’s regions. Second, the RuFIGE data set also is unique in including questions about investment over a longer period (3 years), which helps to provide a more stable, less variance driven understanding of investment decisions. Finally, RuFIGE (similarly to the RR BEEPS) includes numerous questions on ownership structure, the receipt of support from the state, and receipt of public procurement contracts. These variables are likely correlated with the extent to which firms have political connections that can be used to ameliorate the effects

⁸ “The Arrest Of A Billionaire Does Not Bode Well For Russia's Economy” // <http://www.businessinsider.com/the-arrest-of-a-russian-billionaire-does-not-bode-well-for-russias-economy-2014-9>.

⁹ <http://www.kremlin.ru/events/president/news/51329>.

of uncertainty, particularly uncertainty deriving from more predatory practices such as unconstrained corruption and weak property rights (Gehlbach 2008; Gehlbach and Keefer 2012).

Because RuFIGE does not include questions about corruption, these firm-level data were supplemented with regional level data collected from the RR BEEPS. This survey was conducted between August 2011 and June 2012 as part of the fifth round of the Business Environment and Enterprise Performance Survey (BEEPS), a joint initiative of the World Bank Group (WB) and the European Bank for Reconstruction and Development (EBRD). The main objective of the survey was to gain an understanding of firms' perception of the environment in which they operate and it was the first BEEPS survey to provide representative, albeit small, sub-national samples. The survey covered 4,223 firms in 37 Russian regions.

Regional-level independent variables, which we discuss in detail below, were derived from the RR BEEPS data for three main reasons. First, because BEEPS was conducted several years before RuFIGE, the probability that the investment patterns we observe are driving corruption outcomes in the regions somewhat diminishes. Second, by using regional level data generated by a group of firms outside of our primary sample (RuFIGE), the probability that any relationship observed is due to the peculiarities of the RuFIGE sample also somewhat diminishes, and our regional variables data is independent of our firm-level data. Finally, we also note that using BEEPS measure provides a fuller and more complete measure of regional level variables, as it is representative for a wider range of sectors than RuFIGE.

An addition, we also use a measure of violent corporate raiding in Russian regions introduced in Kazun (2015) to capture uncertainty over property rights enforcement. This indicator is calculated using a publicly accessible database of complaints to the NGO "Business Against Corruption" from entrepreneurs claiming to have faced unlawful criminal prosecution (*c.f.* <http://www.nocorruption.biz/?cat=6>). The data from the registry include information about the initiation of criminal cases, the types of business activities carried out by the business issuing the complaint, and the region in which it is located. We discuss both of these measures in greater depth below.

Further regional controls for our regressions were collected from data published by the Federal State Statistics Service of Russian Federation and by the Ministry of Regional Development of Russian Federation.

B. Hypotheses

Drawing on the literature reviewed above, this paper aims to distinguish between the effect of regulatory burdens and regulatory uncertainty, on the one hand, and of different types of regulatory uncertainty, on the other. With respect to regulatory burden, the literature noted above generates a straightforward prediction: greater regulatory burdens are associated with greater transaction costs, which decrease incentives to invest. This suggests:

Hypothesis 1: The greater the regulatory burden on firms, the less likely they are to invest.

Typically, the overall level of regulation in Russia has been measured using indicators such as the World Bank's Doing Business indicator, which measures how difficult regulations make certain business activities (*c.f.* Eiffert 2009). This measure was constructed using data from experts on statutory regulations; however, making it inappropriate for a study such as ours that is concerned primarily with practices related to *informal regulatory enforcement*. Instead, here we concern ourselves with the level of corruption, which we argue likely represents an excessive, informal regulatory burden on firms. Such a burden can emerge either due to excessive regulatory

zeal, which requires firms to pay to avoid being charged with violations, or excessive sloth, requiring firms to pay to receive services. In either case, corruption represents additional costs to firms tied to regulatory enforcement. It is worth noting, however, that the negative effects associated with excessive regulatory burdens goes hand-in-hand with high levels of corruption empirically. This suggests that regulation is only problematic for investment when rent-seeking officials abuse regulatory burdens for self-enrichment using informal practices such as bribe-taking (Eiffert 2009).

Box 1: Uncertainty from violation of formal rules and regulations by authorities.

One more potentially important source of regulatory uncertainty for firms could stem from the violation of formal rules and regulations by authorities. These could be e.g. violation of time limits, or limits in number of required procedures prescribed by formal rules and regulations. If *de jure* rules and regulations are not necessarily obeyed by authorities, this constitutes not only additional costs, but also additional uncertainty for the business. While we are not concerned with regulatory uncertainty stemming from formal, written rules in our main paper, we did examine whether uncertainty in these rules mattered for investment.

We tried to estimate this type of uncertainty for Russian firms using World Bank Doing Business 2012 and BEEPS 2012 data for Russian regions. Our idea was to compare Doing Business and BEEPS data for the number of days required to get a construction permit or to obtain electrical connections in Russian regions. While Doing Business data represents '*de jure*' written regulations, BEEPS data reflect the situation '*de facto*' in the regions. Yet, the data indicate that, at least with respect to time required to get construction permits or to obtain electricity connection, no systematic violation of '*de jure*' rules is observed in Russian regions. Only in 4 out of 26 regions covered by the data on the number of days needed to get a construction permit did *de facto* measures exceed the *de jure* number of days. The same situation occurs for electrical connections. Graphs A1 and A2 in the Annex provide the comparison of *de jure* and *de facto* number of days required to get construction permits and electricity connection in Russian regions to illustrate this. Consequently, we do not believe that the comparison of Doing Business and BEEPS Russian Regions data reflects regulatory uncertainty in the way we theorize it in this paper, because formal rules and regulations do not appear to be being violated by authorities. If anything, these data suggest firms may be more likely to invest due to uncertainty having upside risks. This, of course, is not to say that Russian firms do not face negative uncertainty linked to formal regulation. Nonetheless, in absence of new data sources, we cannot measure the extent of negative uncertainty linked to formal regulations.

To measure the level of corruption, we make use of the two variables that draw on the same question about the percentage of annual sales spent on bribe payments taken from questions on the RR BEEPS 2012 survey.¹⁰ The first, "bribe incidence" is the share of regional firms (for each region) that reported paying some percentage and those answering "don't know" and measures how common bribery is in the region.¹¹ The second measure is the regional mean value of bribes paid by firms reporting that they paid bribes, "bribe tax", which measures

¹⁰ The RR BEEPS question read as follows: "It is said that establishments are sometimes required to make gifts or informal payments to public officials to get things done" with regard to customs, taxes, licenses, regulations, services, etc. On average, what percentage of total annual sales, or estimated total annual value, do establishments like this one pay in informal payments or gifts to public officials for this purpose?"

¹¹ We pool positive answers and "don't know" responses together under the assumption that asking firms directly about the size of bribes they pay is a sensitive question and that "don't know" responses mask genuine fear of admitting to paying bribes.

the costs of corruption. We assume that where regulatory burdens are excessively high, and generate high costs for firms, firms will try to reduce regulatory burden by using extra legal channels in order to obtain relief. Therefore, high corruption (gifts or informal payments to public officials to “get things done”) reflects high regulatory burden in a given region.

The work on regulatory uncertainty reviewed above likewise generates fairly simple predictions: high regulatory uncertainty increases the volatility of policy and increases firms’ fears of negative shocks, this decreases incentives to invest. Thus:

Hypothesis 2: The greater the degree of regulatory uncertainty for firms, the less likely they are to invest.

As discussed above, however, the sources of regulatory uncertainty have important implications for both theory and policy. Regulatory uncertainty stemming from informal institutions and practice has gone particularly underexplored in existing work. In this paper, we therefore propose two sub-hypotheses that explore specific facets of informal institutions and their relationship to investment:

Hypothesis 2.a: Variation in intra-regional use of informal payments/procedures creates uncertainty over when, and for whom, regulations will be enforced and government services provided. Intra-regional variation in informal payments should decrease investment.

Recall that in our discussion of existing work above we point to an important distinction in the literature between centralized and decentralized administrative corruption. In the former case, centralized authorities (at the federal level, regional level, or both) can impose limits and boundaries on bribes to officials, constraining competition to extract rents and regulating the ways and amounts that officials can demand. In such settings, we would expect that the bribe demanded for any given government service is predictable, regardless of the actual size of the bribe demanded or how many firms pay them. In the latter case, however, the lack of a higher authority to provide constraints mean that officials may set bribes at any level that they desire and the market can bear.

As no central authority coordinates these actions, different bureaucrats are likely to demand different bribes – depending on their evaluations of the market – and the bribes needed to secure services should become more unpredictable. The unpredictable nature of such corruption, in turn, creates uncertainty about regulatory enforcement, since firms are unsure of who will be forced to make informal payments, for how much, and to whom in order to receive basic services. Whereas differences in *de jure* and *de facto* law can arise for benign reasons, such as changing regulator priorities or differing interpretations across regions, however, variation in corruption stems mostly from the desire of officials to rent-seek and the inability (or unwillingness) of higher level officials to centralize these practices. In other words, variation in administrative corruption takes on the form of a direct, predatory cost of doing business.

To approximate regulatory uncertainty we computed the regional variation of “bribe tax” or the percentage of annual sales spent on bribe payments taken from questions on the RR BEEPS 2012 survey from those firms that answered the question.¹² Our indicator is calculated as a standard deviation of the aggregate bribe tax

¹² The RR BEEPS question read as follows: “It is said that establishments are sometimes required to make gifts or informal payments to public officials to “get things done” with regard to customs, taxes, licenses, regulations, services, etc. On average, what percentage of total annual sales, or estimated total annual value, do establishments like this one pay in informal payments or gifts to public officials for this purpose?”

variable for each region divided by the regional mean of bribe tax, thus capturing variation across firms and within regions on the extent to which informal payments are made.

Our preferred interpretation of this variable is that it represents heterogeneity in the value of the bribes corrupt officials extract from firms. Alternatively, though, this variable might represent regional heterogeneity in bribes, for example among cities or sectors, rather than variation experienced at the level of the firm. It could also represent price discrimination among public officials, who set prices based on their estimates of firms' willingness and ability to pay. In any of these cases, however, we argue that the fact that there are different rules in different parts of the region or for different firms is indicative of weaker controls by the regional government. That is, the ability of officials at lower levels to set their own prices goes hand-in-hand with decentralized corruption, which we identified in section 2 as a key source of uncertainty.¹³ Even if corruption's cost is relatively stable in the short term, bureaucratic discretion means that it could change: an important consideration for long-term investment. Consequently, in this paper we argue that a larger coefficient of variation indicates greater decentralization and weaker constraints on corruption, as well as greater regulatory uncertainty.

Hypothesis 2.b. A higher volume of business attacks on other businesses' property rights increases regulatory uncertainty, which should decrease investment.

As noted above, threats to firms' fundamental property rights constitute the ultimate source of regulatory uncertainty, since this threat emerges from the unwillingness or inability of state actors to properly enforce property rights. Where state officials condone attacks on one group of firms by another, these threats are *prima facie* sources of uncertainty about when, and for whom, regulations apply. Observationally, the logic of this hypothesis is similar to our predictions about the distance between *de jure* and *de facto* law or the predictability of corruption. We argue, however, that inconsistent property rights enforcement fundamentally differs from other forms of regulatory uncertainty in type, as well as degree. Whereas the distance between *de jure* and *de facto* law rests on changes in interpretation and variation in bribery is akin to a cost of doing business, inconsistent property rights enforcement presents a more fundamental threat. Where property rights enforcement is inconsistent, firms' decisions about investment must take into account existential threats. Because firms cannot be sure that the state will protect their assets against extra-legal actions, firms have less incentive to invest.

To measure threats to property rights, in this paper we follow Kazun (2015) and use data compiled by the Center "Business against Corruption" to create a regional level variable that records the "intensity" of "raider" attacks in Russian regions in 2011-2013. BAC is the first organization for the protection of businessmen's rights in contemporary Russia to collect systematic, detailed data on "raiding" in Russia. To be added to the database, complaints to BAC should meet two basic criteria: (1) the victim of the conflict must be a businessman or a company and (2) the case must involve a raider attack or corruption (i.e. private disputes between businessmen are not subject to review). The BAC Statute envisages different stages of review, including information gathering, a request to the regional office of the business association "Business Russia", a legal opinion, resolution by the co-chairpersons on referral of the case to the BAC Public Council, and review of the issue at the BAC Public Council (Yakovlev et al, 2014). Incentives for firm owners to use the process are tied to the ability of BAC, upon successful review of an application, to provide official aid and for its co-chairs to attempt to have law enforcements' actions and decisions revised. The last step in the process involves a public hearing with representatives of the BAC Public Council, leading entrepreneurs, public figures, and representatives of

¹³We thank Steven Knack and Phillip Keefer for their useful suggestions regarding the interpretation of this variable.

the law enforcement agency accused of abuse and formal findings by legal experts. As a consequence, public scrutiny tends to prevent many whose cases do not involve genuine abuse from applying, while the intense scrutiny provides encouragement to those convinced their case was mishandled that they will be publicly vindicated and made whole. It is striking that out of tens of thousands of criminal cases brought against businessmen each year, only 600 appear in our data from 2011 – 2013.¹⁴

We generate our measure of “raider attacks” for each region by summing the total number of complaints over the 2011 – 2013 period and by weighting this sum by the extent of business activity in each region (in this case the Gross Regional Product (GRP) in 100 million Rubles). In this paper, we argue that BAC’s measure represents violent pressure on business owners to transfer assets to outside groups, whether other businesses or state actors. The greater the number of such attacks, the fewer incentives firms will have to invest. Picture 1 illustrates how our normalized measure is distributed across Russia’s regions. It is worth noting that previous analyses of this data have found that reports of violence against firms tend to be higher in regions with a larger share of industry and/or retail, regions where authorities prosecute more economic crimes, and regions with weak civil society (Kazun 2015).

Picture 1: Regional distribution of raider attacks (weighed by the GRP in 100 million Rubles)



¹⁴ This is even more telling, because BAC was well known to the business community. Between June 2012 (when Boris Titov was appointed a Representative of for Protection of Entrepreneur and BAC became a part of Representative’s organization) and mid-2013, BAC was mentioned in the central and regional media outlets on average 30 to 70 times each month.

C. Methodology and estimates

To test our hypotheses, we use a standard probit regression model with robust standard errors clustered at the regional level and the functional form:

$$Y_{it} = \alpha + \beta X_t + \gamma R_t + \delta F_{it} + \varepsilon_{it}, \text{ where}$$

Y is a dummy variable that takes the value 1 if firm i in region t made a capital investment between 2011 and 2013 and 0 otherwise drawn from the 2014 RUFIGE survey. X is one of the regional-level variables of interest (i.e. measures of regulatory burden or uncertainty) described above. Our primary regional control (R) is the log GRP per capita in 2008 and is meant to control for initial conditions in the regions. We use only this variable in order to present a more parsimonious model, although in additional models we check the robustness of our results by introducing other regional level controls.

Finally, F is a matrix of firm-level controls drawn from the RUFIGE survey. Firm-level controls (F) include log employment at the firm, dummy variables indicating whether the firm received state support or state orders, indicators of whether the firm has foreign or state ownership, an indicator of the type of locality the firm is located in (i.e. city, village, etc.), and a set of dummy variables indicating the firms primary sector of economic activity.

We present descriptive statistics for all variables used in our analysis in Table A3 in the Annex. Similarly, Table A4 provides information on the correlation for our regional-level variables of interest.

Before proceeding, we note again that in this particular paper we do not seek to make strong causal claims about the relationship between uncertainty and investment. This paper is instead meant to be exploratory and seeks to establish the presence of a correlation between these variables to serve as a stepping-stone for future work. We believe that identifying a strong correlation between variation in levels of corruption or inconsistent property rights enforcement, on the one hand, and investment behavior, on the other, is a valuable contribution in its own right. As noted in the introduction of this paper, precious few micro-level studies of variability in corruption have been conducted (Malesky and Samphantharak 2008; Wei 1997) and to our knowledge none exist using actual measures of state-abetted violence against firms. Even without the ability to make strong causal claims, the relationships examined in this paper are therefore interesting in their own right.

V. REGRESSION RESULTS AND DISCUSSION

Table 1 presents the results of our main tests. For ease of interpretation, we present the marginal effects for each variable in the table rather than the beta coefficients. Models 1.1 – 1.3 present the results for *Hypothesis 1* and seem to imply little support for it. Both the “bribe incidence” variable, indicating the dispersion of corruption, and the “bribe tax” variable, indicating the average bribe paid, are not significant at conventional levels in any of the models. This suggests that absolute levels of corruption are not significantly related to the investment decisions of firms. This interpretation is consistent with the idea that corruption is regarded by firms as a tax, like any other, to be planned around (Mauro 1995). It is worth noting that the point estimate for bribe incidence is negative, which is consistent with the expected negative relationship between investment and regulatory burdens found in much of the literature (Eifert 2009; Djankov et al. 2006). Conversely, the estimate for bribe tax is unexpectedly (from the standpoint of existing work) positive, which indicates that an increase in the average level of bribes in a region is associated with higher levels of firm investment. These results should be interpreted cautiously, however, since they do not reach conventional levels of significance and the point estimates are unlikely to be correct.

Models 1.4 – 1.5 introduce one of the proxies for regulatory uncertainty—a measure of the variation in “bribe tax”. The variable is negative and statistically significant, as expected by *Hypothesis 2.a*, suggesting that unpredictable bribery is indeed likely to decrease the probability of investment by firms. This result comports with previous findings by Malesky and Samphantharak (2008) using firm-level micro-data from Cambodia and cross-national, macro designs used by Wei (1997) and Campos et al. (1999). It is also comports more broadly with the literature on regulatory uncertainty, which has almost always found that uncertainty in the enforcement of written regulations leads to declines in investment (Hallward-Driemeier and Pritchett 2015; Fabrizio 2012; Barrodale 2010; Engau and Hoffmann 2009; Lyons and Mayo 2005; Bittlingmayer 2001). Where our results differ, however, is that we examine not the difference between *de jure* and *de facto* written regulations, but the predictability of informal practices – specifically corruption – that are indelibly tied to them.

Similarly, Models 1.6-1.7 introduce our measure of raider attacks into our specification and the results indicate that raider attacks have a negative and significant effect on investment decisions. This finding indicates that as raider attacks increase, firms are less likely to invest and is consistent with *Hypothesis 2.b*, which suggests that a higher volume of raider attacks decreases the probability of investment due to uncertainty by firms about the sanctity of their property rights. Again, while this relationship comports with theoretical expectations (*cf.* North, Wallis, and Weingast 2009), this result is novel to the extent that we are unaware of any quantitative test of these expectations.

It is worth noting that in Models 1.5 and 1.7, we compare the effect of “bribe incidence” and “bribe tax” to our measures of regulatory uncertainty, variation in bribery and raider attacks, respectively. In both cases, our measures of regulatory uncertainty remain significant, while “bribe tax” and “bribe incidence” remain statistically insignificant at conventional levels.

Turning briefly to our control variables, it is worth noting that employment is a positive and statistically significant predictor of investment, with larger firms being more likely to invest. The effect of state involvement is more complex, however. On the one hand, the receipt of state orders by the firm is also a positive and statistically significant predictor of investment. On the other hand, while receipt of state support is a positive predictor of investment, it is not significant at conventional levels. Finally, state owned firms are less likely to have invested; this result holds at conventional levels

In order to check the robustness of our results, we ran a number of alternative specifications. To check whether outliers may be driving our results, we tried specifications where we omitted Russia’s two largest (by population and economic output) regions, Moscow City and St. Petersburg. We also omitted Primorskii Krai, which is a serious outlier along the “bribe tax” variable. We also included additional regional level controls in our main specifications that account for budgetary transfers from the federal center and regional spending. Neither of these variables was significant at conventional levels and neither substantially altered our main results either substantively or statistically. We also controlled for regional mineral wealth by including a variable that captures the value added to regional GRP by mining activities (both oil and mineral). Again, the addition of this new control does not alter our main results.¹⁵

¹⁵ All robustness results described here are available upon request.

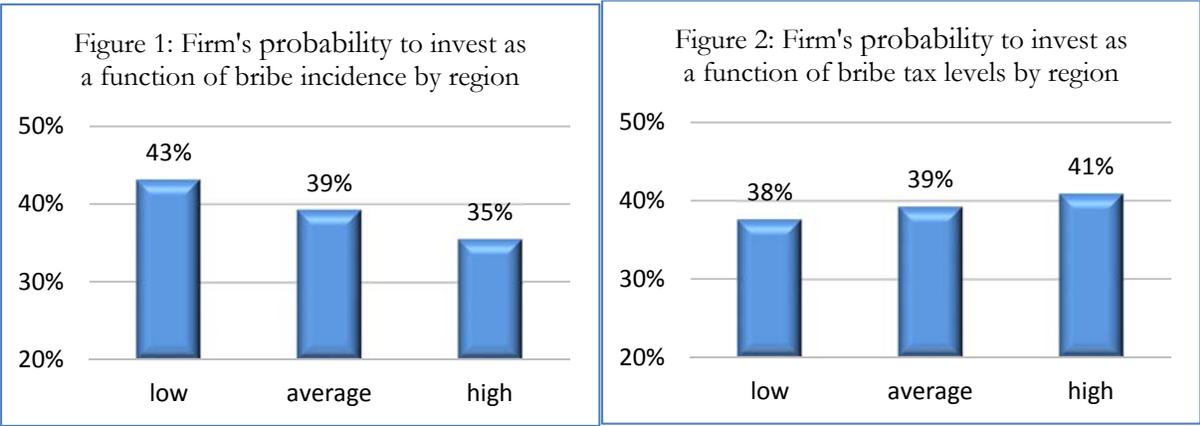
Table 1. The Determinants of Russian Firms' Decision to Invest between 2011 and 2013

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Firm implemented investment in 2011-2013, dummy						
Bribe incidence, BEEPS data	-0.12 (0.27)		-0.14 (0.27)		-0.36 (0.29)		-0.06 (0.33)
Bribe tax, mean, BEEPS data		0.69 (0.56)	0.69 (0.55)		0.36 (0.63)		0.62 (0.50)
Bribe tax, variation, BEEPS data				-0.11** (0.06)	-0.14* (0.08)		
Raider attacks normalized by GRP						-0.07*** (0.03)	-0.07** (0.03)
Log GRP per capita, 2008	0.12 (0.08)	0.11 (0.09)	0.11 (0.09)	0.10 (0.08)	0.11 (0.08)	-0.01 (0.08)	-0.00 (0.09)
Employment at the firm, log	0.09*** (0.01)	0.09*** (0.01)	0.09*** (0.01)	0.09*** (0.01)	0.09*** (0.01)	0.09*** (0.01)	0.09*** (0.01)
Firm receives support from government	0.02 (0.04)	0.03 (0.04)	0.03 (0.04)	0.03 (0.04)	0.03 (0.04)	0.01 (0.04)	0.01 (0.04)
Firm receives state orders	0.10** (0.05)	0.09** (0.05)	0.09** (0.05)	0.11** (0.05)	0.10** (0.05)	0.10** (0.05)	0.10** (0.05)
Controls for type of property, type of locality, and sector	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,360	1,346	1,346	1,346	1,346	1,360	1,346

Probit regressions. Average marginal effects presented. Robust standard errors clustered at the regional level are in the parenthesis.

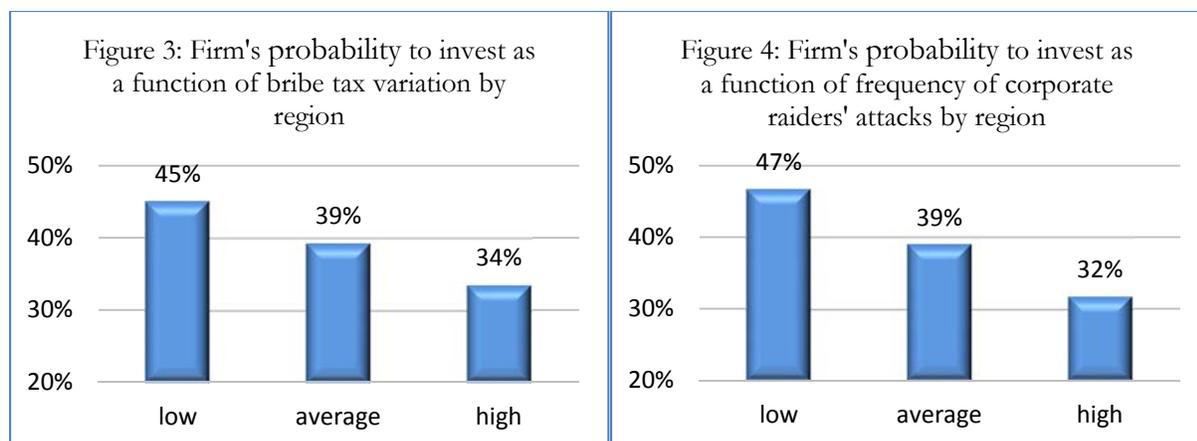
*** p<0.01, ** p<0.05, * p<0.1

Substantively, the results from Table 1 appear to have a large effect on the probability of firm investment. Figures 1 through 4 illustrate the substantive significance of our results by indicating the probability that the average firm in an average region would make an investment decision depending on levels of our variables of interest.¹⁶ Figures 1 and 2 are included for reference and indicate how investment probability changes at various absolute levels of “bribe tax” and “bribe incidence”, respectively. Figure 1 shows that an increase of the average regional percentage of firms reporting that they paid a bribe from low to high results in a decrease in the probability of investment of about 8 percentage points. Figure 2 indicates that a change in the average reported bribe tax from low to high results in an increased probability of investment of about 3%. Since the main effect of the above two variables was statistically insignificant, these effects should be interpreted cautiously. The point estimates shown in the figures overlap significantly when one takes into account the confidence interval of the estimated substantive effect (omitted from the figures for clarity).



Figures 3 and 4 illustrate the substantive effect of our measures of regulatory uncertainty, variation for bribes paid (variation in “bribe tax”) and raider attacks, respectively. Figure 3 indicates that going from low level of variation in “bribe tax” to high level makes the average firm 11% less likely to invest. In relative terms, this shift decreases firms’ propensity to invest by about a fourth. Similarly, going from a standard deviation below the regional average number of raider attacks to one standard deviation above results in a decline in the probability of investment of about 15%; i.e. firms’ propensity to invest decreases by about a third. Both of these effects are not only significant, but also large and indicate the importance of regulatory uncertainty in the investment decisions of firms.

¹⁶This and other charts were generated by placing all variables at their mean values and fixing the variable(s) of interest at their mean for “average” values, mean minus one standard deviation for “low” values, and mean plus one standard deviation for “high” values.



Before concluding, it is worth briefly discussing the possible policy implications of our results. First, our results strongly suggested that there is great value added from decreasing the unpredictability of regulatory enforcement. In particular, our results suggest that decentralized, unpredictable corruption decreases the incentives of firms to invest. We speculate that in Russia, much of the unpredictability of corruption and of regulatory enforcement stems from a lack of information on the part of regional authorities (and for that matter Federal Authorities) about the activities of lower level bureaucrats in the regions. We speculate that one means of decreasing uncertainty is to therefore provide information to regional authorities, who can then clamp down on local bureaucrats who are enforcing regulation in unpredictable ways in order to generate rents. Such information could potentially be provided using collaborative institutions built between regional governments and businesses that can serve to alert authorities to problems (McCubbins and Schwartz 1984; McNollGast 1987). Examples of such “fire alarm” institutions can include regular meeting between regional governors and business representatives, consultative groups attached to regional government institutions, etc.

While a great deal of work has been done on such institutions in the context of developed countries, analysis of existing institutions of this nature in the Russian context, their roles, and their ultimate effect on the reduction of uncertainty in the business environment is a potentially valuable area for future research. Our results also suggest that generally greater oversight of local officials by higher level authorities might also be helpful, although centralizing power may not restrain lower level bureaucrats if the logic of such centralization is mainly political (*c.f.* Magaloni 2008; Reuter 2016).

Secondly, there is still large variation in the intensity of raiders’ attacks on businesses in Russia’s regions. Since law enforcement agencies are directly subordinate to the central Federal Government, however, this problem cannot be resolved at the regional administrative level. Despite the nominal primacy of the federal government, however, the problem of raider attacks has resisted efforts by the federal government and the President since at least 2009. The failed experiences in resolving this problem suggest that simple solutions, such as amending existing laws or establishing new control bodies, are ineffective. We believe that the problem can only be solved through deeper institutional changes to the incentive structures of law enforcement agencies themselves.

One promising change would be to modify the ways in which law enforcement officials are evaluated for promotions to better incentivize them to protect the property rights of businesses. For example, data on raider’s attacks could be used to define “problematic” and “best practice” regions for investment. Using this data as a guideline, human resources policy could be modified to reward officials in the “best practices” regions and punish those in the “problematic” ones, as well as to reward officials whose regions move between these two groups. A data driven approach to promotions and retention among regional authorities is similar to human resources practices carried out at the regional level in China, where such policies were

critical to aligning the incentives of lower level bureaucrats with the promotion of local economic development (*cf.* Landry 2008).

VI. CONCLUSIONS AND FUTURE RESEARCH

This paper examined how the investment decisions of firms in different regions of the Russian Federation are shaped by informal practices linked to regulatory enforcement and their consistency. Specifically, we examined how levels of corruption compare to uncertainty about the level of corruption and inconsistency in property rights enforcement. Our hypotheses on levels of corruption were straightforward and we argued that in a highly regulated environment like Russia, high regional average levels of corruption should create conditions which depress investment. That is, corruption enables high levels of regulation to impose heavy transaction costs on firms. Our hypotheses on uncertainty instead stem from the preposition that in imperfect institutional environment – where laws are explicitly being broken or applied selectively – firms must inevitably adjust to these informal rules. Part of this adjustment involves adopting expectations about how these informal practices will be carried out and growing comfortable with making investment decisions influenced by these expectations. As with the more formal regulatory environment, however, firms must also adjust their expected returns on investment based on expectations about shifts in these informal institutions. The greater uncertainty in how informal practices will function, the less likely investment. In this paper, we explored two types of uncertainty that can emerge in imperfect institutional settings: administrative corruption in the absence of centralizing authorities and inconsistency in property rights enforcement as exemplified by violent “raider” attacks abetted by the authorities.

To test our hypotheses, we combined data from several recent sources. Information about firms’ investment decisions (and other firm-level indicators) was extracted from the 2014 RuFIGE survey; data on corruption levels and variation within regions was taken from the 2012 RR BEEPS; and finally, data on raider’s attacks was taken from complaints about raider’s activity filed with the Center “Business Against Corruption”.

Our regression analysis suggests that levels of corruption were not an important factor in investment decision, casting doubt on whether regulatory burdens are as important as uncertainty in firms’ decision-making. We did find evidence that uncertainty in the informal practices surrounding regulatory enforcement did matter, however. Most notably, variation in the size of bribes that firms expected to pay, as estimated by respondents, was a significant predictor of investment. The greater the variation, the less likely firms were to invest. From our perspective, this means that firms active in Russia adapted to informal practices that spring up around business-government interactions, so long as they were predictable. Similarly, we find that the greater the number of raider attacks in a region, the less likely investment. Again, this suggests that uncertainty about property rights enforcement weighed heavily on firms. Consequently, we conclude that a significant obstacle to investment decisions at the regional level in Russia stems not from the presence of informal rules *per se*, but the lack of predictability in their application.

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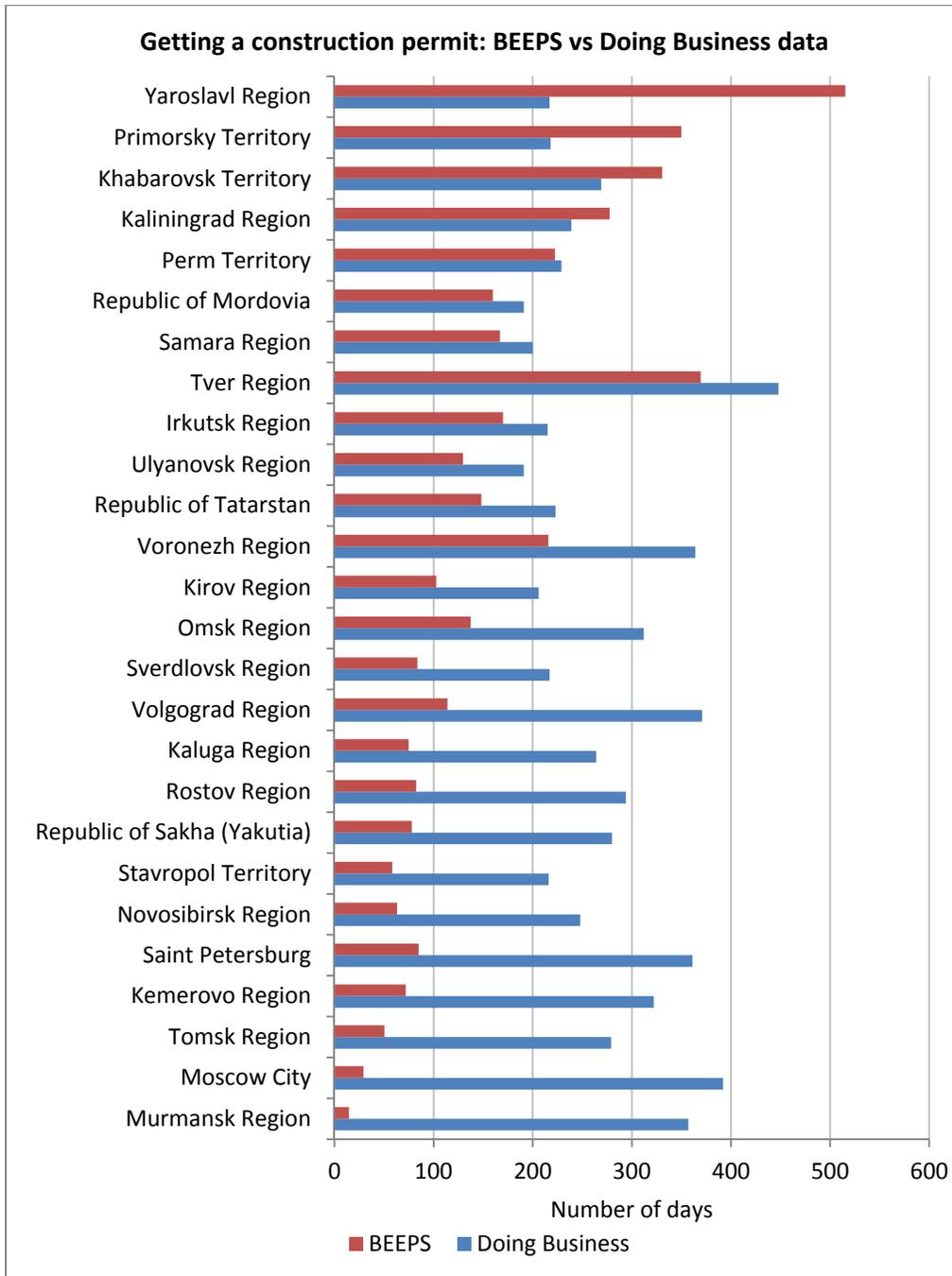
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Annex

Graph A1. Number of days required to obtain a construction permit: BEEPS vs Doing Business data.



Graph A2. Number of days required to obtain an electricity connection: BEEPS vs Doing Business data.

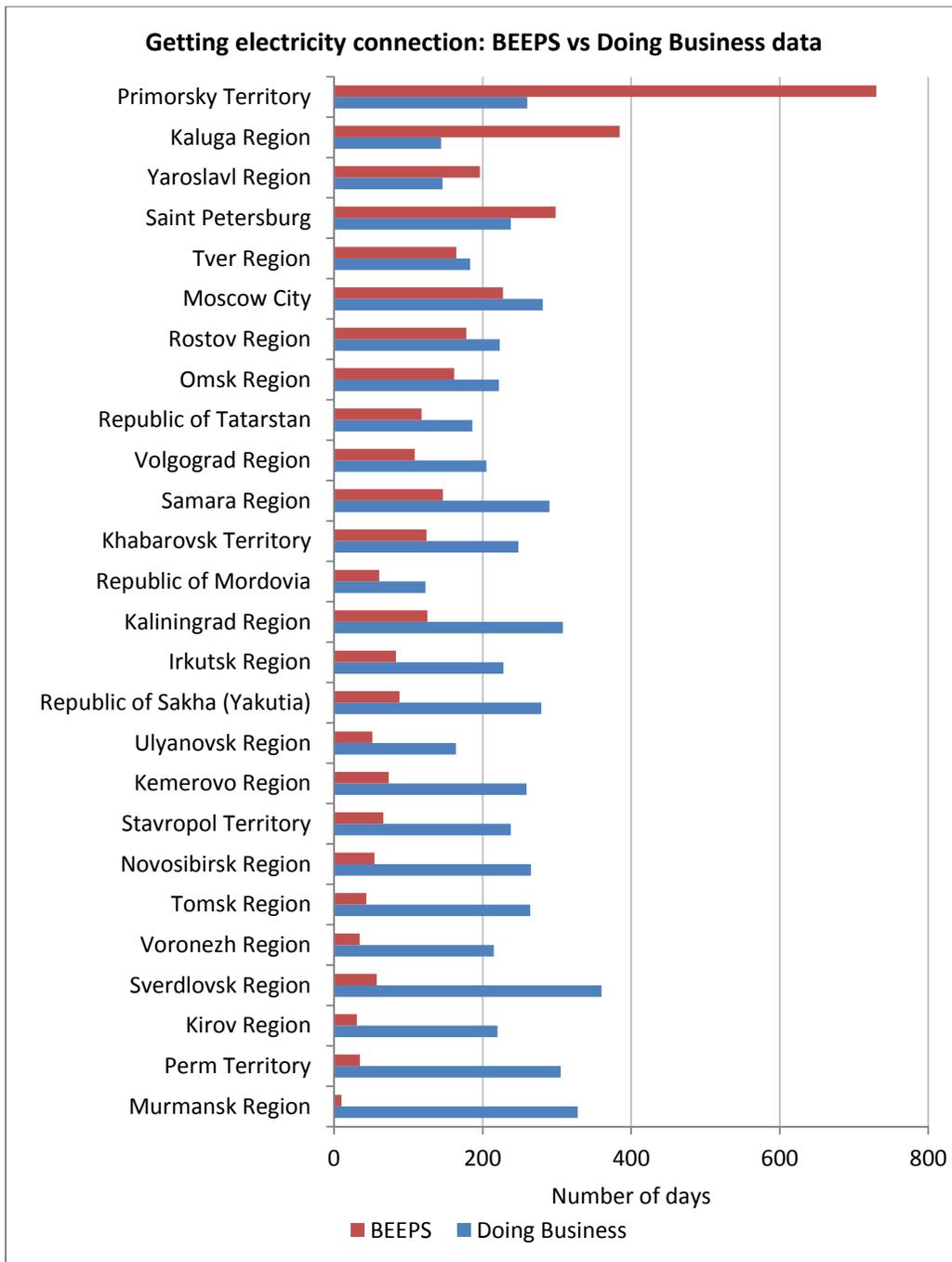


Table A3. Descriptive statistics

Variable	Type	No. of observations	Mean	Std. Dev.	Min	Max
Region-level variables						
Bribe incidence, BEEPS data	continuous	35	0.13	0.08	0.00	0.41
Bribe tax, mean, BEEPS data	continuous	34	0.08	0.05	0.02	0.34
Bribe tax, variation, BEEPS data	continuous	34	1.1	0.4	0.4	1.9
Raider attacks normalized by GRP	continuous	35	1.8	1.0	0.6	4.0
GRP per capita, 2008, rubles	continuous	35	204535.6	106495.3	99503.3	734242.0
Firm-level variables						
Firm invested in 2011-2013	binary	1500	0.40		0	1
Average annual number of employees	continuous	1428	100.78	231.26	0	53000
Firm receives support from the government	binary	1488	0.15		0	1
Firm receives state orders	binary	1481	0.20		0	1
Presence of state property	binary	1536	0.02		0	1
Presence of foreign property	binary	1536	0.02		0	1
No response to property question	binary	1536	0.18		0	1
Sector: Food industry	binary	1536	0.18		0	1
Sector: Textiles, clothing, leather footwear	binary	1536	0.18		0	1
Sector: Timber processing, pulp and paper	binary	1536	0.11		0	1
Sector: Chemicals. Cooking and petroleum products, rubber and plastic articles	binary	1536	0.10		0	1
Sector: Other non-metal products	binary	1536	0.08		0	1
Sector: Iron and steel processing, iron and steel articles	binary	1536	0.12		0	1
Sector: Manufacturing of machines and tools	binary	1536	0.13		0	1
Sector: Manufacturing of electric power generation equipment, electronics, and optical equipment	binary	1536	0.07		0	1
Sector: Manufacturing of transportation vehicles and equipment	binary	1536	0.03		0	1

Table A4. Correlation of region-level institutional and regulatory environment variables

	Bribe incidence, BEEPS data	Bribe tax, mean, BEEPS data	Bribe tax, variation, BEEPS data	Raider attacks normalized by GRP
Bribe incidence, BEEPS data	1			
Bribe tax, mean, BEEPS data	-0.29*	1		
Bribe tax, variation, BEEPS data	-0.17	-0.31*	1	
Raider attacks normalized by GRP	-0.02	-0.22	0.15	1