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TRAINING STRATEGIES AND SKILL DEVELOPMENT AMID WEAK INSTITUTIONS: EVIDENCE FROM RUSSIA

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How do firms decide between different strategies for acquiring highly skilled workers? Ronald Coase (1937) famously argued that firms face trade-offs between "making" required inputs within the firm and contracting with outside actors to "buy" them. Similar trade-offs abound in deciding between in-plant training and outsourcing to either public or private, third parties. Existing theory on firms' training strategies is premised on the ability of firms to solve a fundamental commitment problem, which retards cooperation between firms and other actors. Only with a strong civil society – employers' associations and labor unions –or free, transparent and efficient market mechanisms is cooperation possible. Contemporary Russia presents a puzzle to this work. On the one hand, firms increasingly make costly co-investments with state-run schools and outsource training to private third-parties. On the other hand, civil society and judicial institutions are weak in Russia, making it difficult for firms to punish counterparties, at the same time that its markets have failed to fully make the transition to free and transparent capitalism. This paper argues that absent strong civil society and free, transparent markets, firms can overcome commitment problems and work with third-parties so long as their regional governments have strong state capacity and are politically accountable. The former assures firms that central, regional authorities can monitor school officials and private-third parties to ensure agreements are honored, while the latter creates incentives for regional authorities to do so. These theories are tested on original survey data covering 690 firms in 12 Russian regions.

Keywords: Skill Development, Human Capital, Credible Commitment, Institutional Quality, Firms, Training strategies, Russia

JEL Codes: D22, J24, I25, L21, L23

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Introduction

How do firms decide between different strategies for acquiring highly skilled workers? Ronald Coase (1937) famously argued that firms face trade-offs in how they acquire inputs. Some firms prefer to conduct economic activity within the firm and "make" what they require, while others contract with outside actors and "buy" what they need. This distinction translates rather well to considering the skill development strategies of firms, who often face the choice between "making" skill via in-plant training or "buying" it from a third-party, whether a private-sector educational provider or a public, state-run school. For firms, such choices are akin to traditional investments, albeit in human capital rather than production (Finegold and Soskice 1988) and have important implications for the firms' competitiveness, particularly in the developing world. An emerging literature in the political economy of development has focused on the difficulty that firms in middle income countries, particularly, face in acquiring the high quality skill needed to compete with the highly productive, technologically sophisticated firms of the advanced, industrialized democracies (Doner and Schneider 2016; Agenor and Canuto 2012; Aiyar et al. 2013). One solution to this problem is to forge strong links beteen firms and training organizations, particularly state schools, that enable firms to take advantage of economies of scale in training, while simultaneously insuring that workers emerge with the skills needed by firms (Hoffman and Schwartz 2015, Newman and Winstron 2016, Remington and Marques 2017). Forging such links, however, requires the answer to the first order question, when do firms outsource in the first place and what makes particular types of partners more attractive? By understanding the conditions under which firms are willing to outsource training to the state in the first place, as opposed to producing skill in house or via private contractors, policy makers can better calibrate their reforms to entice firms.

Unfortunately, existing work on vocational education and retraining in the Varieties of Capitalism literature has mostly examined one facet of this choice: contrasting preferences for collectivist (solidaristic) arrangements, to which many firms contribute and from which all benefit (*c.f.* Busemeyer and Trampusch 2012*;* Trampusch 2010, Thelen 2004, Hall and Soskice 2001), with those for segmentalist programs run by a single firm. Theoretically, this work has emphasized the importance of skilled labor to firms' competitive strategy, economies of scale, and institutions that enable firms and partners to credibly commit to each other to explain preferences over these systems and the willingness of firms to cooperate. To the extent that this

work has addressed the types of partners that firms prefer, it has mostly relied on the distinction between Liberal Market Economies (LMEs) and Coordinated Market Economies (CMEs). In the former, efficient, transparent markets and strong contract enforcement enable firms to work with privately run, for-profit providers of education to outsource their training needs (Streeck and Thelen 2005). In the latter, a complex web of institutions that jointly link business associations, labor unions, and the state enable firms to form complex, cooperative partnerships with state-run institutions to provide for skill (*c.f.* Estevez-Abe et al. 2001).

Central to this literature is that the under provision of skill can result from market failures between employers and workers, among employers, and between employers and the state). In order to be willing to invest in skill training, firms must receive credible commitments that rivals will not free-ride by poaching their workers, the state will provide the skills firms actually demand, and that the state will enforce contracts with private providers properly (Thelen 2004; Culpepper 2003, Martin and Swank 2012, Busemeyer and Trampusch 2012). This paper explores an observable implication of this focus for how firms hire their workers: absent credible commitments firms should not outsource training to third parties at all. It argues that the identity of the actors that firms are "buying" from has important implications for how credible commitments can be forged with them and the institutional preconditions necessary for contracting with them for skill provision. This paper specifically focuses on choices between in-plant training, outsourcing to private third-parties, or hiring from state institutions. Building on the author's previous work (*c.f.* Marques and Remington 2016, Remington and Marques 2017), the central proposition of the paper is that where markets are opaque and inefficient and civil society is weak, cooperation with both state and private counter-parties is viable in the presence of political accountability. Cooperation with the state is also a viable option where firms are able to forge direct links to top-level central authorities and where the latter have a sufficiently strong state apparatus to monitor the compliance of local level officials with agreements for public-private partnerships with firms. Thus, this paper contribute theoretically to work on VET, specifically, and the political economy of investment, more broadly, by looking beyond the often studied contrast between segmentalist and collectivist skill development strategies to study the first-order problem of whom firms are willing to work with in the first place.

It is worth noting that while the insights of the Varieties of Capitalism tradition and work on VET that emerged from it have been fruitful, the previously cited literature suffers from a

narrow focus on the countries of the OECD. As a consequence, it is not clear how general the findings are to the developed world, where many of the characteristics.[3] This paper also contributes to the literature empirically by exploring whether firms' decisions over how and with whom to train their workers extend beyond the developed, OECD context in which many where developed by exploiting a survey of 690 Russian firms across 12 regions. On the one hand, Russia's post-communist transition to a market economy is incomplete, rendering markets incapable of providing transparent pricing signals and enabling smooth and efficient exchange. Critically, property rights and contract enforcement remain quite weak, casting doubt on whether traditional predictors of preferences for free-market solutions should apply (*c.f.* Frye 2017; Frye 2006; Frye 2004). Absent strong market mechanisms firms should prefer in-plant training to minimize risk. On the other hand, Russia also features historically weak civil society. Labor unions remain largely captured by the state and employers, whereas business associations, built around voluntary membership, have been unable to overcome their historical inability to hold the state accountable through collective action in most areas (*c.f.* Duvanova 2014, Ashwin and Clarke 2003, Crowley 1997).[4] In the absence of strong encompassing social associations, existing work would predict that cooperative skill formation arrangements are all but impossible and all training should operate via market mechanisms (Martin and Swank 2008; Estevez-Abe et al. 2001; Streeck and Schmitter 1985).

Empirically, however, Russian firms often decide against providing skill primarily within the plant. Elsewhere, we have documented the reemergence of complex, costly links between Russian firms, regional governments, and local state-run schools in several of Russia's regions (Remington and Marques 2017) and a puzzling amount of variation in how and when these forms are adopted (Marques and Remington 2016). Outsourcing to private, for-profit providers of education services has also become an increasingly common practice (*c.f.* Tan et al. 2007, 2003). Why then, are firms willing to engage with third-parties?

In the following section, we briefly review some existing explanations for firms' decisions to train workers on their own versus contracting with other actors to do so. We then develop our argument as to why firms that adopt a cooperative strategy might prefer to work with state-based actors as opposed to outsourcing to third-party, private firms. Section three

[3] Although for an important exception, *c.f.* Doner and Schneider 2016 and Schneider 2013.
[4] Although collective protection of members' property rights has been one area where business associations have had some success, *c.f.* Duvanova 2014.

briefly describes our data sources and outlines our empirical strategy. Section four presents our main results and robustness checks. Section five concludes.

Theory

The literature on firms' preferences training strategies in social science can roughly be divided into theories that focus on micro-level, firm characteristics and macro-level factors describing the institutional environment firms find themselves in. At the micro-level, work on vocational education and training has long emphasized that developing skills share many characteristics with capital or R&D investment (Finegold and Soskice 1988), albeit with additional and unique risks stemming from the ability of rival forms to expropriate investment by poaching workers (Stevens 1996; Acemoglu and Pischke 1998). Firms must carefully weigh their expected future returns from investing in skill development with its costs. An important determinant of expected future returns on investment is the nature of product market competition faced by a given firm and its market strategy. Where firms are competing over the quality of their final product, as opposed to quantity and price, skilled workers are particularly important to success (*c.f.* Eichengreen et al. 2013; Thelen and Busemeyer 2012) and can predispose firms to compromises with labor that create labor market institutions conducive to nurturing skill (*c.f.* Iversen and Stephens 2008, Iversen 2005, Hall and Soskice 2001). Even without additional gains from cooperation with labor, firms whose product market strategies revolve around quality may still be willing to invest in training, as it may lead to higher returns tomorrow. It is worth noting, however, that this literature does not generate strong predictions over *how* firms train skilled workers based on their individual, micro-level characteristics, *ceteris paribus*, only *which* firms do so. Predictions about cooperation require a deeper understanding of macro-level, institutional factors, which we shall return to below.

Rather than product market strategies, choices over whether to outsource training and to whom are instead a function of the degree of control firms exercise over training, which shapes expectations about future returns, and the costs (Anderson and Hassel 2013).[5] On the one hand, firms have strong incentives to tailor training narrowly to the needs of the firm. This reduces adaptation and training times, while avoiding creating over-qualified workers. Narrowly tailoring

[5] Similar concerns arise in the literature on the welfare state, where social policy can be considered a tool to incentivize skill formation, mitigate risk, and help firms retain highly skilled labor, *c.f.* Mares 2003.

training to firm-specific skills also complicates poaching, forcing rivals to make additional investments in re-training poached workers to successfully adapt them to their new firm. On the other hand, firms also have strong incentives to minimize training costs to bolster profitability. Training requires large, fixed costs. Regardless of how many workers are needed or will eventually be trained, firms must expend resources to develop training programs, hire or appoint teachers and trainers, recruit students, track and evaluate their progress, and to administer the entire system. The long lag between start and finish of training for skilled workers means that firms must also continue paying these costs even during downturns to avoid long-term future shortages when demand picks up.

Navigating the trade-off between costs and controls can be quite difficult for most firms. Firms can lower the costs of training by cooperating with other actors in order to shift the fixed costs of skill development, but doing so requires firms to give up some control over the content of training to their partners. Such arrangements are unlikely to impart firm-specific skills and will therefore require additional investments into adaptation time for newly trained employees. How do firms navigate this trade-off? Typically, firms with low sensitivity to cost and the ability to achieve economies of scale – due to their size or profitability – can forgo partners altogether and can train workers themselves. Work on VET in political science suggests, alternatively, that conditional on the desire for skilled labor, smaller firms or those with limited resources instead prefer to seek cooperative arrangements (Busemeyer and Trampusch 2012; Culpepper and Thelen 2008, Culpepper 2007). This spreads the costs amongst a group of firms and can help them achieve economies of scale in training, thus making skill development more attractive. This suggests:

H_1: Smaller and/or less profitable firms are more likely to cooperate with third parties (other firms or state institutions) when investing in skill development. Larger or more profitable firms are more likely to train workers on their own, in-plant.

Unfortunately, trade-offs between the cost of and control over training do not fully explain *which* types of partners firms cooperate with. Theoretically, the literature provides few priors over whether public or private partners will be more costly or offer greater flexibility for firms' seeking to modify curricula. In large part, this is due to the literature's focus on contrasting segmental, firm-centric forms of training (i.e. in-plant training) and cooperative arrangements formed between business associations, labor unions, and the state. As such, little

attention has been paid to prior choices between public and private providers, particularly where labor unions and business associations are weak.

To the extent that work on VET in political science provides leverage over *which* partners firms prefer, it does so by emphasizing the conditions that facilitate cooperation between businesses and other actors. Fundamentally, skill development involves a series of commitment problems between firms, on the one hand, and other firms, workers, education providers, and the state (*c.f.* Martin and Swank 2012; Thelen 2003; Culpepper 2003). With respect to rival firms and workers, firms must feel secure that their investments in skill will not be rendered moot via poaching (Acemoglu and Pischke 1998, Stevens 1996). With respect to education providers, both public and private, firms need reassurances that graduates will have the skills required by firms and not require lengthy adaptation periods or expensive retraining (Busemeyer and Trampusch 2012). Finally, from the state, firms require credible commitment that it will enforce agreements between it and its counterparties impartially, preventing breaches of contracts and punishing defection (Culpepper 2000, Finegold and Soskice 1988). The greater the investment firms must make into cooperative arrangements, the stronger commitments need to be to justify them.

Work on VET has traditionally highlighted two different types of institutional arrangements that provide solutions to the problem of credible commitment inherent in skill development. In the first, Liberal Market Economies, credible commitment stems from free-market institutions that provide firms, workers, and education providers with clear signals about the costs and returns of training. So long as property rights are strong and contacts enforced, market mechanisms allow actors to generate credible commitments. Such settings lend themselves to segmental, in-plant training or bilateral arrangements (*c.f.* Estevez-Abe et al. 2001). In the second, Coordinated Market Economies, credible commitments stem from a set of institutions that facilitate cooperation, monitoring, and negotiation between business associations, labor, and the state within and across sectors of the economy. Both business associations and labor aggregate the preferences of their membership, negotiate on their behalf, and monitor the compliance of both members and counterparty peak organizations to agreements on subject ranging from employment practices to wages (Busemyer 2015; Busemeyer and Trampusch 2012; Swensen 2002). The state serves as both arbiter of these agreements and the institutions that underpin them. The state, in turn, is held accountable by the collective action capacity of both business associations and labor unions, which can mobilize their memberships if

the state fails to serve as an impartial arbiter (Culpepper 2000, Finegold and Soskice 1988). Taken together, these overlapping, complimentary institutions provide firms with highly credible commitments from their partners to honor training agreements (among other labor market arrangements).

Both Liberal and Coordinated Market Economies have several important prerequisites, however. The former requires efficient, transparent markets. The latter requires *both* business and labor be represented by strong peak organizations and a host of complimentary institutions involving the welfare state, electoral systems, shareholder structures, etc. None of these conditions are particularly prevalent in the non-Western, non-OECD countries of the world, rendering both models unsuitable for explaining cooperation across much of the world. This said, both models do suggest the fundamental importance of the state in providing credible commitments that can enable firms to cooperate with others, even absent other institutional features. In both models, the state's monopoly on violence over its own territory enables it to enforce agreements between different actors and act as a final arbiter in disputes. Thus, even in the absence of peak organizations and free-markets, firms may be willing to invest in cooperative training so long as the state can credibly commit to enforcing agreements.

For the state to provide credible commitments to firms interested in cooperating in the absence of civil society and strong markets, however, two things are required. First, firms must be able to hold the state accountable. Traditionally, the most important way of insuring that the state will honor commitments has been through institutions that promote political competition, particularly in the form of elections (North et al. 2009; North and Weingast 1989). Where state officials fear for their continued hold on power, they are more likely to listen to the needs of their constituents, enforce property rights in an impartial manner, and police lower level officials to ensure that they are not abusing their positions.

H_2: Firms in areas with greater political competition are more likely to pursue cooperative arrangements for skill development with state-based third parties.

Political competition is not the only means by which firms can elicit credible commitments from the state, however. An emerging literature on investment in authoritarian settings has highlighted the importance of collective action on the part of firms as a useful bargaining tool vis-à-vis the authorities (Gehlbach and Keefer 2011, 2012; Haber et al. 2003). Where employers can band together to threaten the state, they create incentives for the state to

honor its commitments. Particularly in contexts where key state actors are not top-level officials, but rather lower level bureaucrats, this means that an individual firms' access to tools that facilitate collective action may be sufficient to generate credible commitments. One such tool that has been highlighted are business associations, which can serve as a forum for firms to communicate with each other, generate shared expectations about the state's commitments, and to mobilize when and if the state breaches of the rights of any given member (Duvanovna 2014). The threat of mobilization, in turn, helps to keep state official honest and creates the conditions for credible commitment. This suggests:

H_3: Firms with membership in business associations are more likely to pursue cooperative arrangements for skill development with third parties, both public and private.

While political accountability and collective action may be critical to insuring that top-level government officials hold to their commitments, these mechanisms may be less effective against lower-level officials in charge of day-to-day monitoring and enforcement of cooperative agreements between firms and third-parties (public or private). A large literature on bureaucratic incentives has identified a principle-agent problem between top-level representatives of the state and lower-level bureaucrats. The later can take advantage of information asymmetries and monitoring difficulties in order to minimize effort and subvert enforcement and implementation of programs that they do not like (McNollGast 1987; Weingast and Moran 1983). The more complex the program and the more effort it requires, the less likely lower-level officials are to faithfully implement and enforce it (Huber and Shipan 2002; McCubbins and Schwartz 1984; Gehlbach 2008) with important, and negative, consequences for general investment (Beazer 2012). With respect to cooperative education programs, cooperative arrangements between firms and state-based providers often require the latter to implement sweeping changes to curricula, update the skills of instructors or hire new ones, and track student performance, all of which require costly effort (Remington and Marques 2017). Similarly, enforcing agreements between firms and third-party private providers requires significant investigative resources in the event the state is required to mediate a dispute and enforce a contract. As a consequence, studies of bureaucratic politics would emphasize that enforcing cooperative agreements in the field of skill development should be especially hard.

For firms, an important means of putting pressure on lower level bureaucrats is access to top-level government officials, who can be pressured to monitor lower-level officials more

closely (McNollGast 1987; McCubbins and Schwartz 1984). A potentially important tool to enable such access is membership in consultative bodies that directly involve representatives of the state. Such bodies provide firms with access to other actors with an interest in skill development, a ready-made platform for communicating the failure of counterparties to live up to agreements, and a forum for mobilizing to punish counterparties that violate their agreements to provide skill. As their pressure is greatest against state-run providers, which are by definition composed of lower level bureaucrats, one would expect that membership on a governmental council should primarily increase the probability of working with state-run institutions. This suggests:

H_{4a}: Firms with membership in governmental consultative councils are more likely to pursue cooperative arrangements for skill development with state-based third parties.

Firms may not need to be members of governmental consultative councils directly in order to reap the benefits of their presence for monitoring of local, lower level officials. Areas where the authorities are more open to complaints and suggestions from firms are also likely to be those who are most interested in forming consultative bodies and inviting large numbers of firms to participate in them. In this sense, such bodies may serve as a signaling device of the importance of the business community to the state and its willingness to enforce commitments. Where a large proportion of a regions' firms sit on governmental consultative councils, therefore, even non-member firms may be more willing to engage in cooperative training strategies, particularly those that involve state-based partners. This suggests a regional-level parallel to the previous hypothesis:

H_{4b}: Firms in regions where a higher percentage of firms participate in governmental consultative councils are more likely to pursue cooperative arrangements for skill development with state-based third parties.

Accountability is not necessarily the only requirement for the state to be able to credibly commit to firms and encourage cooperation, however. Second, the state must also have sufficiently strong capacity that it can properly monitor and enforce cooperative agreements to the satisfaction of firms. In coordinated market economies, one of the most important roles of business associations is to take on a monitoring function among their membership and its counterparties. Should any of the member firms defect by poaching or otherwise free riding, the association is responsible for catching the violation and punishing them (Busemeyer 2015,

Thelen and Busemyere 2012, Busemeyer and Trampusch 2012; Culpepper 2000, Streeck 1992). Similarly, if firms' counterparties defect, the association is responsible for detecting such violations of cooperative arrangements and sanctioning the counterparty on behalf of wronged member (Finegold and Soskice 1988). Where business associations are weak and unable to take on these functions, the state can promote credible commitment and encourage cooperation by taking upon itself the responsibility for monitoring and compliance of cooperative skill development agreements. Doing so requires that the state have sufficiently high bureaucratic capacity to investigate and punish agreement violations, such as educational providers (public or private) that teach the wrong or inferior skills, students that fail to work in the firm as a condition for financial aid, rampant poaching, or local officials that block approvals for partnerships with local schools or modifications to curricula required by firms (Remington and Marques 2017, Marques and Remington 2017).

State capacity is particularly important for cooperation between firms and the state. Whereas private education providers are vulnerable to market forces and face the possibility of folding if they violate too many agreements with firms, state-based providers are usually subject only to budget constraints imposed by top level officials. Even where high level officials support cooperation between state-based providers and firms, however, they face the principle-agent problem discussed above vis-a-vis lower level officials (McNollgast 1987; Weingast and Moran 1983). Consequently, in order for firms to be willing to engage in cooperative agreements with the state, it must demonstrate the ability to monitor the compliance of lower level officials and a willingness to sanction them. At the same time, the mere presence of state capacity may not be enough to generate credible commitment on the part of the state. Because of its monopoly over the tools of violence on its own territory, the state is in a unique position to use its state capacity to seek rents at the expense of firms or predate on them. Consequently, the state must also demonstrate to the satisfaction of firms that its capacity will not be used for rent-seeking purposes and will be deployed to enforce agreements between firms and their partners, whether public or private. Only under these circumstances does state capacity generate credible commitments on the part of the state and increase the likelihood that firms will turn to third-parties to develop skill. This is particularly important with respect to the likelihood that firms will cooperate with state-based actors. Taken together, this suggests:

H_5: Where state capacity is high and firms believe it will not be used for rent-seeking purposes, they are more to pursue cooperative arrangements for skill development. This effect should be strongest for cooperation with state-based third parties.

Empirical Strategy

In order to test the hypotheses noted above, we exploit an original survey of 690 firms in the manufacturing, construction, and transportation sectors in 12 Russian regions carried out between June and October of 2017. The survey focused heavily on firms' skill development strategies and their relationships with state-run, regional vocational education institutions. Because of this focus, the survey primarily focused on medium (100 – 249 employees) and large firms (>250 employees), which prior research suggests are the most likely to pursue skill development and to work with state.[6] Interviews were conducted in-person with the chief executive, financial, or legal officer of each firm, although these executives were encouraged to have their human resources directors answer specific questions about training methods by mail if they were unfamiliar with such details.

Six of the regions selected for the firm survey were selected due to their inclusion in a set of competitions held by the Russian Agency for Strategic Initiatives between 2007 and 2013. The grant programs were designed to highlight regions at the forefront of vocational education reforms and to develop best practices for encouraging public-private partnerships to disseminate to other regions.[7] We then matched these regions to a set of regions that were similar along a large number of socio-economic criteria but that did not win ASI competitions. The goal of this design was to contrast regions in which vocational education was known to be well-developed with a similar set of regions that were not recognized for their reforms. Within regions, researchers used data on the regional population of firms from the Russian State Statistical Service and other sources to stratify firms by size and sector. Within each stratum, firms were randomly selected. The resulting regional samples are roughly representative of their respective regional population, although weighted a bit more heavily towards large firms (>250 employees) due to concerns about non-response from this group.

[6] Note that for a small set of regions with a small population of firms, we relaxed the definition of medium-sized firms to include those with slightly fewer than 100 employees.

[7] For a more in-depth description of this program, *c.f.* Remington 2017. A discussion of how ASI winners differed from other regions in terms of Public-Private Partnerships can be found in Remington and Marques 2017.

The main dependent variable for our analysis consists of a question that asks respondents how they go about hiring skilled workers, which takes the following form:

Which of the following strategies does your firm (organization) use in order to hire and train qualified workers? (Please select one answer)

a) On the job training on new employees, carried out in-plant
b) Training of new employees by third party firms (outsourcing)
c) Training of new employees provided by state educational institutions
d) Targeted recruitment of new staff, in conjunction with state educational Institutions
e) Training of new employees prior to hiring provided by third party firms
f) Training of new employees prior to hiring provided by state educational institutions
g) *Hard to Say*

Because the main goal of this paper is to understand choices between in-plant training, outsourcing to private educational providers, and cooperation with state-run institutions, we collapsed the answer categories above to reflect these choices.[8] In all three cases, outsourcing was the rarest strategy, ranging from 7 to 10% of firms. Cooperation with state institutions was the most popular training strategy for developing the skills of engineers and specialists (~48 and ~44% respectively), while skilled workers tended to be trained in-plant (~52%). It is also worth noting that ~7% of firms did not provide an answer to this question, instead opting for "hard to say". Analysis of this category suggests no clear predictors of why firms answered hard to say and it is difficult to interpret this variable as a clear indication of use of multiple strategies or no training. In this iteration of the paper, we therefore treat this data as missing.[9]

Main Variables of Interest

We begin our analysis with the simple multinomial logit model, which is appropriate for categorical choice data such as our first dependent variable. Although multinomial models most accurately model the choices firms face between different types of training, they are extremely

[8] The collapsed categories are: *On the job training on new employees, carried out in-plant* (in-plant training)*; Training of new employees by third party firms, Training of new employees prior to hiring provided by third party firms* (outsourcing)*;* and *Training of new employees provided by state educational institutions, Targeted recruitment of new staff, in conjunction with state educational institutions, Training of new employees prior to hiring provided by state educational institutions* (state-based training). The results reported below are mostly robust to using the full categorization, although there are some problems due to the small number of responses for some categories (specifically targeted recruitment and outsourcing prior to hiring). Results are available upon request.

[9] Results are qualitatively similar if "hard to say" is included as an answer category. Results available upon request. Future iterations of this paper will attempt further explore which firms availed themselves of this answer category using other data on training collected on the survey.

demanding on the data and do not perform well in a multilevel setting involving smaller units nested in large ones. As such, we can only use them to test hypotheses related to firm-level characteristics. Our first hypothesis of this type (H_1) suggests that firms that have an abundance of resources and can reach economies of scale are more likely to cooperate with third-parties in order to invest in skill development. To measure firms' resources, we deploy three survey instruments. The first is the log of the number of employees at the firm reported by respondents, which directly captures the notion of size. The second asks firms to estimate changes in their volume of sales over the previous year, with answer categories ranging from large reductions in sales to large increases in sales (11% or more in each case). This captures the resources available to devote to training and other pursuits. The final instrument is a dummy variable equal to one if firms report having engaged in any of several different forms of investment in the previous year: new production lines, new equipment, major renovations, or construction of new plants. Again, firms that are able to invest are more likely to have the strong financial positions that are conducive to segmentalist training. In all cases, we expect smaller and less resource rich firms are more likely to cooperate with third parties in order to provide skill.

The second hypothesis that we can test at the individual level is that firms with membership in business association are more likely to cooperate with third-parties (H_3). We test this using a straightforward instrument that asks firms if they are members of a business association and expect that association members will be more likely to cooperate with third parties (both public and private). The second individual level hypothesis that we test is whether membership in government consultative councils makes firms more likely to participate in state-based arrangements. Here we make use of a set of dummy variables equal to one if firms report being a member of a federal, a regional, or municipal consultative council under the auspices of the government. Firms on a governmental council should be more likely to work with state-based third parties, although it is not clear whether which level firms participate at matters (H_{4a}).

Our final hypothesis involves firms' evaluations of state capacity (H_5). Here our measure is more complex. Inherent in the concept of state capacity is the notion that the greater the state's capacity, the more closely it can monitor conditions across its territory in order to enforce laws. A naive measure of firms' evaluation of local state capacity would therefore be the extent to which firms have experienced inspections from local authorities. As noted above, however, for the state to provide the credible commitment necessary to convince firms to cooperate with other

actors, firms must believe that this state capacity will be used to enforce agreements and not to predate. In other words, even if inspections indicate state capacity, firms must believe they will not be used to further corrupt aims. To measure firms' evaluation of state capacity, therefore, we interact a measure of the log of inspections that firms report having experienced in the previous year with an index of the quality of governance. This index is an average of seven questions about the extent to which various problems associated with abusive government – corruption, high taxes, changes to the legal framework, government interference with firms, rackets, poor infrastructure, and lack of governmental support – hinder firms' development. As our measure is an interaction, we also include the direct effects in our specification.

The remainder of the hypotheses laid out in the previous section involve regional level variation and require a multi-level hierarchical model that takes into account the fact that firms are nested within regions. Because multi-level hierarchical models are particularly taxing on data such as ours, with a relatively low number of observations at both the firm and regional levels, we instead opt to examine the more narrow choice of whether firms partner with the state in order to use a less taxing logit model. The first hypothesis that we test is the regional level parallel of our individual level hypothesis relating firms' membership on consultative bodies to their propensity to cooperate with the state. Firms in regions where a greater percentage of firms are involved in consultative bodies with the government are more likely to partner with the state, as widespread use of these bodies signals a willingness of the state to work closely with firms (H_{4b}). To test this, we construct three variables that indicate the percentage of firms in each region that participate in consultative councils under the purview of the federal, regional, and municipal governments. Again, it is not theoretically clear if different levels of government should behave differently.

The next set of regional-level hypothesis examines the role of state capacity in increasing the willingness of firms to cooperate with state actors to train their workers and parallels our hypotheses (H_5). Whereas our multinomial logit specifications test whether individual level perceptions of local state capacity matter for firms' strategies, here we also test whether regions with objectively higher state capacity are better able to forge credible commitments. Because state capacity is a complex, multi-faceted concept, we take advantage of the ability to be able to measure it in various ways at the regional level. Following our previous work, we use two objective proxy measures of state capacity that capture slightly different concepts. The first

measure is the share of federal transfers (of all types) in regional GRP, which draws on the fact that the structure of tax receipts and the sources of state finance are highly correlated with state capacity. Where the state relies on revenue sources that require a great deal of monitoring and effort to collect, it also tends to build a stronger, more intrusive bureaucratic apparatus (Easter 2002; Gehlbach 2008). Because federal transfers require no effort to receive, regions which are more dependent on them are likely to have weaker state capacity.

The second measure of state capacity takes into account the importance of monitoring to our argument on credible commitment and is simply the number of educational employees per capita in a given region. Straightforwardly, the larger the relative number of educational employees per capita in a region, the more difficult it will be for the regional authorities to monitor their performance and to make sure that they comply with local agreements with firms. In both the case of share of transfers and number of educational employees per capita, therefore, one would expect that higher values are associated with weaker state capacity and should therefore lead to a smaller probability that firms engage in PPP.

Our last measure of state capacity is more subjective and arises from the survey itself. As in our individual level tests, we argue that a regions ability to carry out inspections is a strong indicator of state capacity. This said, this capacity it can only generate credible commitments where firms believe it will be deployed to enhance rule-of-law and enforce agreements, rather than serve as a tool of expropriation. We therefore take the regional average of the number of inspections experienced by firms (logged) and interact it with the regional average of the index of the quality of governance described above. To remind, the index of the quality of governance is an average of seven questions about the extent to which various problems associated with abusive government – corruption, high taxes, changes to the legal framework, government interference with firms, rackets, poor infrastructure, and lack of governmental support – hinder firms' development. Because this variable is an interaction, we also include the main effects of the regional average of inspections and our quality index in the specifications involving this variable.

Our final regional level hypothesis explores whether traditional political competition (H_2) makes firms more likely to engage in public-private partnerships and cooperate with state-based actors to develop skill. We proxy for political competition using a simple measure: the vote margin between the first and second place parties in the regional legislative election closest to

2016. Although Russia is a competitive authoritarian regime at the federal level, the degree of political competition across its regions varies widely. The vote margin in regional elections captures this by proxying for United Russia's ability to monopolize regional politics. Where the margin is lower, there are more serious political counterweights to the dominant party and we would expect firms to be more likely to work with state institutions.

Controls

In addition to the main independent variables of interest discussed above, we also make use of a number of control variables in all specifications. In all specifications, we deploy a survey instrument that captures the extent to which firms believe a deficit of qualified workers impedes the development of their businesses. This variable both captures local labor market conditions and firms' demand for skilled labor. We also included controls for ownership structure using two dummy variables indicating whether a firm majority owned by foreign investors or the government. To account for firms' labor costs, we included a count variable identifying the number of social benefits firms offer their workers, which should proxy for labor costs.[10]

Because firms' product market strategy shapes their demand for skilled labor, we also make use of two sets of proxies that should be highly correlated with it. The first includes a dummy variable indicating that the firm reported that they face strong foreign competition in their markets. The second, which has received little attention in the literature, is the receipt of government procurement orders. While many government procurement orders are for mundane, commodity products (sugar, fuel, cleaning supplies, computers), governments also regularly make orders tied to national security. The nature of international competition, particularly in defense, prioritizes high-quality, technologically sophisticated products that often require a high level of customization to achieve objectives. Although we cannot directly distinguish between firms involved in national security from others, we proxy for this type of intense government pressure for quality products using a dummy variable equal to one if firms report making sales to the government and the firm is in a heavy industry (heavy manufacture, machine tools, metallurgy and chemistry, or energy). The latter are particularly likely to be engaged in producing highly complex, quality dependent products vital to the government. Finally, although

[10] Although crude, we rely on this measure to preserve the greatest number of data points. Our results are robust to using a measure of the extent to which firms offer bonuses to their workers, although the latter variable has a large number of firms who responded "hard to say" and therefore must be treated as missing.

we cannot include a full set of sectoral fixed effects in our multinomial specifications, due to the inherent limits of the model, we include a dummy variable indicating whether firms are involved in the construction and transport sectors, leaving manufacturing as our omitted category.

Because our methods are very demanding of the data, we are unable to include a full set of regional dummies in our individual level specifications. We therefore make use of cluster corrected standard errors to account for serial correlation within regions. In our regional level tests, we make use of the fact that multi-level models allow us to include varying intercepts at the regional level, which can be interpreted must as traditional fixed effects (Gelman and Hill 2007). We also explicitly include controls for the log of regional grp per capita and the level of unemployment in all of our specifications. Although we prefer a more sparse specification for our main results, our results are also robust to the inclusion of the percentage of individuals with tertiary education in the workforce and the share of the population below the federal subsistence minimum.

Results

Table 1 in the Appendix presents the results of our individual firm-level analysis of decisions about how to train workers. Each model takes the choice to train workers in-plant as the baseline category and compares the probability that a firm chooses to outsource training to private third parties or to the state to it. Model 1.1 begins by examining how economies of scale and resource abundance shape firms' training strategies (H_1). Firm size is a negative, statistically significant predictor of outsourcing to private third-parties but does not reach conventional levels of significance for predicting cooperation with state actors. This suggests that as firms are better able to achieve economies of scale, they are indeed more likely to train in-plant. Crucially, however, there is no statistically distinguishable difference between the propensity of large firms to train workers in-plant versus working with state-based partners, although the later variable is negative. With respect to our two measures of profitability, firms' sales dynamics and investment activity, we also see mixed results. A positive sales dynamic is associated with a higher probability of working with private, third parties and state-based actors, but does not reach conventional levels of significance. Firms that report investment activities, however, are less likely to work with state-based actors than they are to simply train in-plant at statistically significant levels for skilled workers only. Here, though, there is no statistically distinguishable

difference between firms' probability of training in-plant and outsourcing to private third-parties for any of the categories of workers. Taken together, these results provide weak support for the notion that firms with greater resources and economies of scale are more likely to train in-plant.

With respect to the individual-level control variables included in our specifications, only a small number appear to be useful predictors of training behavior. In our baseline specification, only the dummy variable denoting heavy industry firms that sell to the government reaches conventional levels of significance. Such firms are less likely to outsource to private, third-parties, although this is not a statistically significant predictor of working with state-based actors. In addition, the dummy variable for the transportation sector is a negative and significant predictor of outsourcing training to private, third parties, suggesting that such firms are less likely to do so than to train their workers themselves. The transportation dummy is and insignificant predictor of cooperation with state-based actors, however, indicating that there is no statistical difference between the choice to train in-plant and to cooperate with the state, however. Finally, it is worth noting that although the dummy variable indicating intense foreign competition is not significant in our baseline model (1.1), it does reach conventional levels of significance in our other specifications. That is, controlling for association membership and evaluations of local authorities, firms that face more intense foreign competition are less likely to outsource training to private third parties than to train them in-plant. This variable does not appear to shape the decision between in plant training and cooperation with state-based actors, however. Finally, with respect to the choice to cooperate with state-based actors, the only significant predictor turns out to be the number of social benefits firms offer to their employees. The more benefits offered, the more likely firms are to work with the state to train their workers. This suggests that firms with higher labor costs are likely to be more willing to use the public sector to assist their skill development efforts.

Moving to our next two individual level hypotheses, Models 1.2 and 1.3 show the effects of belonging to a business association (H_3) and participating on consultative councils at various levels of government (H_{4a}). Business association membership is not a statistically significant predictor of any type of training strategy in Model 1.2, providing evidence against the notion that the simple fact of group membership facilitates credible commitments from education providers. Model 1.3 suggests that the effects of membership in government-run consultative bodies are more complex than our hypotheses suggested. Participation in consultative bodies under the

auspices of the municipal government makes firms more likely to cooperate at conventional levels of significance, with the effect being stronger for decisions to outsource to private, third-parties than for decisions to work with state-based actors. Membership in federal or regional consultative bodies, conversely, has no statistically significant effect on firms' choice of training strategies. While odd, we speculate that this result may be due to the fact that municipal consultative councils are closest to the lower level bureaucrats necessary to monitor and enforce agreements between firms and their counter-parties. That is, on such bodies firms can normally meet directly with officials supervising local low-level bureaucrats. Federal and regional officials, although more powerful than local officials, operate at a larger remove and are less likely to have time for local issues, making them less useful for holding counterparties accountable. More research is required to tease out the logic of this effect and see if it conforms to the framework of credible commitment advanced in this paper.

Model 1.4 evaluates our final individual level test, examining how firms' individual experiences with state capacity shape their training strategies (H_5). As expected, firms that were inspected at higher rates were more likely to cooperate with state-based actors to develop skill at statistically significant levels, indicating that state's monitoring capacity was important for firms' willingness to cooperate with the state. Theoretically, however, firms should only cooperate with the state where its capacity is not abused to predate on firms and further corruption and rent-seeking. The extent to which firms view such activities as prevalent should also matter. Model 1.5 bears out this intuition, indicating that the quality of governance is a positive, significant predictor of working with the state. The higher firms rated the government at curtailing rent-seeking and preventing a number of potentially damaging obstacles to firms' development, the more likely they were to work with state-based actors. Finally, the interaction between the log inspections variable and the quality of governance index was unexpectedly negative, albeit statistically significant. Simulating the effect of increases in the quality of governance and inspections on the probability of cooperating with the state suggests, however, that the negative effect of the interaction is outweighed by the positive effect of increases in its component variables. In other words, the effect increases everywhere positively in a non-linear fashion as the quality of governance and/or the number of inspections increases. Taken together, this suggests that firms' individual experiences with state capacity in a setting of high quality governance indeed increases the probability that firms cooperate with the state.

Moving to our examination of the regional level determinants of training strategies, Table 2 in the Appendix shows how various regional level variables shape the probability that firms cooperate with state-actors. Model 2.1 present our baseline model, without any of the independent variables of interest. It suggests that the level of regional development, as measured by the log of GRP per capita, and the share of the regional population that is employed are not significant predictors of cooperation with state-based actors to develop skills.[11] Model 2.2 begins to test the first of the regional level parallels to the individual level hypotheses presented in Table 1, examining how the share of firms participating in consultative councils under the auspices of federal, regional, and municipal authorities shapes the probability that firms work with state-based actors to develop skill (H_{4b}). As expected, the percentage of firms in a region that participate in municipal consultative councils is a positive and significant predictor of working with state-based actors. This suggests that where firms are better able to communicate with lower level officials, they are more likely to work with the state. Secondly, the percentage of firms in a region participating in federal councils is also a significant predictor of working with the state, albeit unexpectedly negative. Firms in regions with greater firm participation in federal councils are less likely to work with state-based partners to develop skill. This is a puzzling result and one that bears further, future exploration. Finally, the percentage of firms that participate in regional councils is insignificant at conventional levels. Taken together, therefore, Model 2.2 mostly parallels the individual results and suggests that access to government authorities at the local level helps build commitment and strengthen partnerships. The federal results are counterintuitive but not fatal to our theory, as federal consultative councils are likely too far removed from the everyday practicalities of skill development to be useful commitment devices. Nonetheless, this result requires further study.

Models 2.3 and 2.4 introduce our non-survey measures of state capacity. Both the share of federal transfers in GRP and the number of regional educational workers per 1000 residents are negative, significant predictors of working with state-based actors. Recall that high values of both of these measures are theoretically associated with low degrees of state capacity. As such, these models suggest that firms in regions with lower state capacity are less likely to work with the state in line with our theoretical expectations (H_5). Model 2.7 introduces our survey based

[11] While the region's level of employment is not a significant predictor in our baseline model (1.1) it does reach conventional levels of significance in some (but not all) of our subsequent specification. This lack of robustness suggests it is not actually a useful predictor of cooperation with state-based actors.

measures of state capacity and quality of regional governance. Both the regional average of inspections experienced by firms in the last calendar year and our index of governance quality are positive, statistically significant predictors of cooperating with state-based actors to provide skill. This suggests that in firms in regions characterized by greater inspections and greater confidence by firms that government authorities will not engage in rent-seeking activities are more likely to cooperate with state-based actors for their skill development needs. Paralleling the individual-level results, the interaction between the regionally averaged log inspections and quality index is statistically significant but negative. As with the individual level results, however, this does not mean that firms in regions with high levels of both inspections and quality of governance are less likely to work with state actors. Increases in the components of the interaction (log inspections and quality of governance) still outweigh the negative effect of the interaction. Rather, the overall effect is positive, if non-linear, suggesting that firms in regions with a high degree of state capacity (i.e. inspections) and where the state can be counted on to not rent seek are more likely to work with state-based actors.

Conclusion

This paper has explored the conditions under which firms choose to pursue three separate training strategies: in-plant training, outsourcing to private providers, and working with state-based actors. We proposed that firms' choice of partners is a function of both individual level characteristics that have received a lot of attention in the economics literature – the ability to achieve economies of scale and resource abundance – and of broader institutional conditions. Specifically, we argue that one of the observable implications of the credible commitment paradigm central to much of the literature on VET is that firms must be able to form credible commitments with other actors in order to be willing to train outside of the firm. We argue that where business associations, property rights, contract enforcement, and market institutions are all weak, the state can step in to provide such commitments so long as there are mechanisms to hold it accountable, it has sufficiently strong state capacity to monitor firms' partners, and firms are convinced that state capacity will not be used for rent-seeking purposes.

Deriving testable hypotheses from our framework, we show that firms with membership in consultative bodies and those with both more exposure to the state's monitoring organs and a higher belief that the state is not using state capacity to seek rents are more likely to outsource,

particularly to state-based actors. We also show that firms in regions that are characterized by a higher percentage of firms in municipal level consultative bodies and higher state capacity are also more likely to work together with the state. Interestingly, state capacity is conditioned by the degree to which the state is believed to engage in rent-seeking. Firms are more likely to outsource to state partners in regions where state capacity is high and where firms generally do not regard rent-seeking as an obstacle to development. Taken together, this paper suggests that credible commitment is indeed an important determinant of firms' training strategies. Crucially, however, we show that the accountability mechanisms such as consultative councils are only part of the story, the state must also have the capacity to convince firms it can enforce agreements.

While this paper has explored the training strategies of firms as a window into how the commitment problem can be solved in settings with weak markets and civil society, it has done so by focusing on short term behavior. The training strategies highlighted here most likely reflect short-term, one-off relationships created bilaterally between firms and schools or private third-party providers. It sheds less light, however, on the important problem of how and when firms are willing to cooperate – with each other or with the state – in order to meet their skill provision needs. While understanding the conditions under which the firm is willing to outsource to the state are important, it is not clear if these conditions are equally important for establishing long-term relationships with state institutions that involve co-investment by both sides. Seeing if the conditions highlighted in this paper apply to such conditions is an important step for further research, as such cooperative arrangements are central to the literature and to recent efforts by the Russian government to reform vocational education.

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Appendix

Table 1: Individual Level Determinants of Training Strategy

	(1) Training Choices	(2) Training Choices	(3) Training Choices	(4) Training Choices
Outsourcing to Private, Third Parties				
Number of Employees	-0.301**	-0.392***	-0.349**	-0.256*
	(0.143)	(0.150)	(0.155)	(0.133)
Deficit of Skilled Workers	-0.043	-0.042	-0.038	-0.093
	(0.103)	(0.106)	(0.104)	(0.102)
Sales Dynamic	0.140	0.128	0.107	0.144
	(0.098)	(0.111)	(0.108)	(0.103)
Investment Activity	0.425	0.461	0.461	0.558
	(0.698)	(0.693)	(0.703)	(0.666)
Foreign Ownership	0.001	-0.028	0.113	0.114
	(0.960)	(0.933)	(1.039)	(1.111)
State Ownership	1.001	0.969	0.842	0.821
	(0.899)	(1.006)	(0.922)	(0.901)
Social Benefits Offered	0.021	-0.010	-0.027	0.055
	(0.083)	(0.101)	(0.084)	(0.080)
Government Sales by	-0.992**	-1.051**	-0.993***	-1.009***
Heavy Industry	(0.403)	(0.433)	(0.384)	(0.371)
Intense Foreign Competition	-0.806	-0.813*	-0.899*	-0.764
	(0.502)	(0.488)	(0.507)	(0.498)
Construction	0.078	0.117	0.083	0.041
	(0.349)	(0.383)	(0.341)	(0.311)
Transport	-1.232*	-1.150*	-1.219*	-1.313*
	(0.698)	(0.636)	(0.707)	(0.715)
Association Membership		-0.682		
		(0.731)		
Member of Federal Consultative			0.008	
Council			(0.421)	
Member of Regional Consultative			0.267	
Council			(0.540)	
Member of Municipal Consultative			0.901***	
Council			(0.293)	
Quality of Governance				-0.657
				(0.737)
Log Inspections				-0.449
				(2.415)
Quality of Governance x				0.050
Inspections				(0.721)
Constant	-0.796	0.085	-0.490	1.331
	(1.354)	(1.863)	(1.441)	(2.955)
Outsourcing to State Partners				

Number of Employees	-0.071	-0.060	-0.107	-0.058
	(0.137)	(0.124)	(0.145)	(0.136)
Deficit of Skilled Workers	-0.151	-0.149	-0.151	-0.163*
	(0.110)	(0.112)	(0.112)	(0.086)
Sales Dynamic	0.043	0.043	0.028	0.031
	(0.152)	(0.152)	(0.150)	(0.145)
Investment Activity	-0.416*	-0.417*	-0.388*	-0.427*
	(0.233)	(0.230)	(0.233)	(0.240)
Foreign Ownership	-0.676	-0.675	-0.641	-0.507
	(0.802)	(0.797)	(0.786)	(0.761)
State Ownership	0.499	0.510	0.450	0.574
	(0.546)	(0.524)	(0.508)	(0.591)
Social Benefits Offered	0.142***	0.146***	0.121***	0.120**
	(0.049)	(0.056)	(0.045)	(0.049)
Government Sales by	-0.012	-0.010	-0.036	-0.086
Heavy Industry	(0.219)	(0.215)	(0.223)	(0.206)
Intense Foreign Competition	-0.054	-0.054	-0.093	0.056
	(0.544)	(0.546)	(0.556)	(0.517)
Construction	0.204	0.198	0.206	0.226
	(0.223)	(0.238)	(0.222)	(0.231)
Transport	0.259	0.244	0.275	0.275
	(0.283)	(0.276)	(0.287)	(0.282)
Association Membership		0.091		
		(0.348)		
Member of Federal Consultative			0.210	
Council			(0.403)	
Member of Regional Consultative			-0.191	
Council			(0.368)	
Member of Municipal Consultative			0.608**	
Council			(0.254)	
Quality of Governance				0.888**
				(0.373)
Log Inspections				3.574***
				(1.381)
Quality of Governance x				-1.059***
Inspections				(0.372)
Constant	-0.076	-0.196	0.135	-3.074**
	(0.728)	(0.785)	(0.769)	(1.398)
Observations	616	616	616	616
Log Likelihood	-532.8	-530.1	-528.8	-520.9
Pseudo-R2	0.0332	0.0381	0.0406	0.0549

Multinomial logit model with in-plant training as the base category. Cluster robust standard errors (by region) in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table 2: Regional Level Determinants of Training Strategy (Partnering with the State)

	(1) State Training	(2) State Training	(3) State Training	(4) State Training	(5) State Training	(6) State Training
Number of Employees	-0.040	-0.039	-0.046	-0.050	-0.044	-0.040
	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)
Deficit of Skilled Workers	-0.158**	-0.172**	-0.164**	-0.149**	-0.167**	-0.155**
	(0.073)	(0.073)	(0.073)	(0.072)	(0.073)	(0.073)
Sales Dynamic	0.043	0.048	0.039	0.041	0.042	0.042
	(0.077)	(0.077)	(0.077)	(0.076)	(0.077)	(0.077)
Investment Activity	-0.395	-0.395	-0.376	-0.414	-0.371	-0.399
	(0.284)	(0.285)	(0.283)	(0.283)	(0.283)	(0.284)
Foreign Ownership	-0.698	-0.705	-0.704	-0.719	-0.639	-0.697
	(0.872)	(0.872)	(0.874)	(0.864)	(0.876)	(0.871)
State Ownership	0.109	0.103	0.117	0.149	0.146	0.108
	(0.387)	(0.386)	(0.387)	(0.388)	(0.386)	(0.387)
Social Benefits Offered	0.143**	0.138**	0.136**	0.146***	0.134**	0.145***
	(0.056)	(0.056)	(0.056)	(0.055)	(0.055)	(0.056)
Government Sales by Heavy Industry	0.138	0.121	0.119	0.111	0.153	0.129
	(0.211)	(0.210)	(0.211)	(0.210)	(0.209)	(0.211)
Intense Foreign Competition	0.030	0.045	0.026	0.031	0.039	0.023
	(0.260)	(0.260)	(0.260)	(0.259)	(0.260)	(0.261)
Construction	0.210	0.194	0.194	0.212	0.204	0.209
	(0.223)	(0.223)	(0.223)	(0.223)	(0.222)	(0.223)
Transport	0.496*	0.482	0.487*	0.515*	0.474	0.496*
	(0.295)	(0.295)	(0.295)	(0.296)	(0.294)	(0.295)
Log GRP (per capita)	-0.377	2.444	-1.974	-1.662*	-1.245	-0.072
	(0.949)	(1.561)	(1.217)	(0.967)	(1.042)	(1.088)
Share of Employed	0.164	0.503***	0.069	0.083	0.045	0.178*
	(0.107)	(0.184)	(0.108)	(0.095)	(0.115)	(0.108)
Share of Firms on Federal Consultative Councils		-29.924**				
		(13.550)				
Share of Firms on Regional Consultative Councils		-3.670				
		(6.115)				
Share of Firms on Municipal Consultative Councils		8.930*				
		(5.244)				
Share of Transfers in GRP			-26.144*			
			(14.554)			
Number of Education Workers (per 1000)				-0.245**		
				(0.109)		
Log Inspections (Average)					5.081*	
					(2.840)	
Quality of Governance					2.134*	

(Average)					(1.107)	
Quality of Governance x Inspections					-2.396** (1.045)	
UR Vote Margin in Most Recent Regional Election						0.010 (0.018)
Constant	-6.389	-63.222**	21.417	16.248	7.786	-11.477
	(13.388)	(29.224)	(19.185)	(14.735)	(19.296)	(16.173)
Observations	616	616	616	616	616	616
Number of groups	12	12	12	12	12	12
Chi2	18.42	24.32	21.80	24.05	26.96	18.77
Log Likelihood	-369.2	-366.8	-367.7	-367.1	-365.6	-369.1

Multi-level Logit Model with Varying Intercepts. Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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