APPENDIX FOR
"BUREAUCRATIC DISCRETION, BUSINESS INVESTMENT, AND UNCERTAINTY"

This appendix contains the additional analyses that space considerations prevent from reporting in full in the main document.

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Table 1: **World Bank Enterprise Surveys Used to Create Figure 1**

Sub-Saharan Africa	OECD	Latin America	Middle East & North Africa	South & East Asia	Eastern Europe & Central Asia
Angola 2006	Germany 2005	Brazil 2003	Algeria 2002	Bangladesh 2002	Albania 2005
Benin 2004	Greece 2005	Argentina 2006	Egypt, Arab Rep. 2004	Cambodia 2003	Armenia 2005
Botswana 2006	Ireland 2005	Bolivia 2006	Jordan 2006	China 2002	Azerbaijan 2005
Burkina Faso 2006	Portugal 2005	Chile 2006	Lebanon 2006	India 2006	Belarus 2005
Burundi 2006	Spain 2005	Colombia 2006	Morocco 2004	Indonesia 2003	Bulgaria 2005
Cameroon 2006		Costa Rica 2005	Oman 2003	Laos 2006	Croatia 2005
Cape Verde 2006		Dominican Republic 2005	Syrian Arab Republic 2003	Malaysia 2002	Czech Republic 2005
Congo, Dem. Rep. 2006		Ecuador 2006	Turkey 2005	Mongolia 2004	Estonia 2005
Eritrea 2002		El Salvador 2006	West Bank / Gaza 2006	Pakistan 2002	Georgia 2005
Ethiopia 2002		Guatemala 2006		Philippines 2003	Hungary 2005
Gambia 2006		Guyana 2004		South Korea 2005	Kazakhstan 2005
Guinea 2006		Honduras 2006		Sri Lanka 2004	Kyrgyz Republic 2005
Kenya 2003		Jamaica 2005		Thailand 2004	Latvia 2005
Lesotho 2003		Mexico 2006		Vietnam 2005	Lithuania 2005
Madagascar 2005		Nicaragua 2006			Macedonia 2005
Malawi 2005		Panama 2006			Moldova 2005
Mali 2003		Paraguay 2006			Poland 2005
Mauritania 2006		Peru 2006			Romania 2005
Mauritius 2005		Uruguay 2006			Russian Federation 2005
Namibia 2006		Venezuela 2006			Slovak Republic 2005
Niger 2006					Slovenia 2005
Rwanda 2006					Spain 2005
Senegal 2003					Tajikistan 2005
South Africa 2003					Turkey 2005
Swaziland 2006					Ukraine 2005
Tanzania 2003					Uzbekistan 2005
Tanzania 2006					
Uganda 2003					
Uganda 2006					
Zambia 2002					

Data from World Bank Business Environment Surveys, various years between 2002–2006. In the case that multiple surveys were conducted during that period in any country, the most recent survey of the two was used.

Table 2: **Descriptive Statistics of Frye (2006) Survey Sample**

Firm Characteristics	Responses
Average number of employees	727
Median number of employee	125
Industrial firms	58%
Retail and wholesale trading firms	15%
Construction/transport/communications firms	29%
Members of business organization	37%
Average age of the manager (yrs)	47
Managers with college degree	90%
Privatized firm	59%
State-owned firm	12%
Denovo private firm	29%
No competitors	7%
Competition from foreign firms	7%
Member of production association, trust, holding	24%
Profit in preceding year	69%

Note: Table recreated from Frye (2006).

Table 3: **Summary Statistics for Variables from Frye (2006) Data**

Variable	N	Median	Mean	Std. Dev.	Min/Max
Firm Investment	645	0	0.40	0.49	0/1
Bureaucratic Discretion	576	2	1.96	0.89	1/4
Changes to Laws	656	4	4.01	1.15	1/5
High Tax Rates	663	4	4.09	1.10	1/5
Regional Administration	601	3	3.00	0.92	1/5
Regional Courts	565	3	3.22	0.83	1/5
Regional Governor	604	3	3.12	1.02	1/5
Access to Finance	629	4	3.43	1.49	1/5
Labor Shortages	662	4	3.71	1.35	1/5
Competitive Pressures	657	3	3.38	1.35	1/5
Privatized Firms	666	1	0.59	0.49	0/1
Annual Sales	609	1	0.65	0.63	-1/1
Firm Size	666	4.84	4.99	1.53	1.39/11.16
Private firms	666	1	0.88	0.33	0/1
Bureaucratic Corruption	523	1	0.55	0.50	0/1
Past Investment	660	1	0.55	0.49	0/1

Note: Survey data from Frye (2006).

Survey Item Wording (Frye 2006):

Investment Question (DV)

"Do you plan to make any large investment in the next twelve months for the development of your firm (i.e., construction, reconstruction, capital renovation of the building or surroundings, equipment updates, etc.)?"

- 4 = "yes"

- 3 = "likely yes"

- 2 = "likely no"

- 1 = "no"

Bureaucratic Discretion Question (IV)

"To what degree is independent decision-making, separate from other government bodies, characteristic of bureaucrats, administrators, and various inspectors in your region [territory, republic, city]?"

- 4 = "to a high degree"

- 3 = "most likely to a high degree"

- 2 = "most likely to a lesser degree"

- 1 = "completely uncharacteristic"

Table 4: **Perceived Bureaucratic Discretion Associated with Less Investment**

Does firm have plans to invest in the next 12 months?	Do regional bureaucrats make decisions independent of other gov't bodies?		
	No	Yes	Total
Yes	193 (43.96%)	39 (31.71%)	232 (41.28%)
No	246 (56.04%)	84 (68.29%)	330 (58.72%)
Total	439 (100%)	123 (100%)	562 (100%)

Note: Survey data from Frye (2006). Column percentages in parentheses. Pearson chi-squared statistic is $\chi^2 = 5.954$, $p = 0.015$.

Table 5: **Firm-Level Analyses: Robustness Check (Ordinal DV)**

	Plans to Invest 1 = no, 4 = yes	
Bureaucratic Discretion *1 = no discretion, 4 = high discretion*	-0.37*** (0.12)	-0.22*** (0.07)
Policy Volatility *1 = no obstacle, 5 = very serious obstacle*	0.12 (0.10)	0.07 (0.05)
High Tax Rates *1 = no obstacle, 5 = very serious obstacle*	-0.35*** (0.10)	-0.22*** (0.06)
Regional Administration *1 = poor job, 5 = excellent job*	0.26** (0.12)	0.14** (0.07)
Regional Courts *1 = poor job, 5 = excellent job*	-0.09 (0.12)	-0.05 (0.07)
Competitive Pressures *1 = no obstacle, 5 = very serious obstacle*	0.15** (0.08)	0.08* (0.04)
Labor Shortages *1 = no obstacle, 5 = very serious obstacle*	-0.08 (0.08)	-0.04 (0.04)
Privatized Firm *dummy, 1 = privatized, former SOE*	-0.22 (0.23)	-0.15 (0.14)
Annual Sales *-1 = decreasing, 1 = increasing*	0.35** (0.17)	0.20** (0.09)
Firm Size *number of employees (logged)*	0.21*** (0.07)	0.13*** (0.04)
Private Firm *dummy, 1 = private ownership*	0.29 (0.37)	0.21 (0.22)
Constant		1.48*** (0.49)
No. of Cases	418	418
Model	Ord. Logit	OLS

Note: Survey data from Frye (2006). Coefficient estimates from ordered logit and ordinary least squares regression as indicated. Robust standard errors in parentheses. Estimates for sector-level dummies suppressed out of space constraints, as are cutpoints in the ordered logit model. *p<0.10, ** p<0.05,*** p<0.01

Table 6: **Firm-Level Analyses: Robustness Check (Alternate Model Specifications)**

Firm Investment *dummy, 1 = firm plans to invest during coming year*	Robust Std. Errors	Clustered Std. Errors	Dichotomous Discretion	Extra Controls
Bureaucratic Discretion *1 = no discretion, 4 = high discretion*	-0.653***	-0.653***		-0.594***
	(0.148)	(0.194)		(0.175)
Bureaucratic Discretion *dummy, 1 = high discretion*			-0.843**	
			(0.409)	
Frequent Changes to Laws *1 = no obstacle, 5 = very serious obstacle*	0.115	0.115	0.108	0.019
	(0.116)	(0.120)	(0.111)	(0.122)
High Tax Rates *1 = no obstacle, 5 = very serious obstacle*	-0.387***	-0.387***	-0.379***	-0.389***
	(0.121)	(0.137)	(0.121)	(0.138)
Regional Administration *1 = poor job, 5 = excellent job*	0.506***	0.506***	0.423**	0.478**
	(0.186)	(0.092)	(0.192)	(0.225)
Regional Courts *1 = poor job, 5 = excellent job*	-0.162	-0.162	-0.178	0.039
	(0.142)	(0.151)	(0.145)	(0.168)
Regional Governor *1 = poor job, 5 = excellent job*	-0.323*	-0.323***	-0.289	-0.343**
	(0.169)	(0.114)	(0.182)	(0.208)
Access to Finance *1 = no obstacle, 5 = very serious obstacle*	-0.048	-0.048	-0.021	0.023
	(0.084)	(0.084)	(0.081)	(0.090)
Labor Shortages *1 = no obstacle, 5 = very serious obstacle*	-0.004	-0.004	-0.044	-0.003
	(0.085)	(0.071)	(0.085)	(0.096)
Competitive Pressures *1 = no obstacle, 5 = very serious obstacle*	0.101	0.101**	0.101	0.109
	(0.085)	(0.051)	(0.084)	(0.093)
Privatized Firm *dummy, 1 = privatized, former SOE*	0.096	0.096	0.011	0.089
	(0.269)	(0.284)	(0.270)	(0.295)
Annual Sales *-1 = decreasing, 1 = increasing*	0.449**	0.449**	0.445**	0.390*
	(0.194)	(0.194)	(0.181)	(0.200)
Firm Size *number of employees (logged)*	0.301***	0.301***	0.294***	0.313***
	(0.083)	(0.083)	(0.083)	(0.093)
Private Firm *dummy, 1 = private ownership*	0.714	0.714*	0.769*	0.451
	(0.454)	(0.380)	(0.434)	(0.468)
Bureaucratic Corruption *dummy, 1 = perceived as corrupt*				0.143
				(0.278)
Tax Agency Assessment *1 = poor job, 5 = excellent job*				-0.155
				(0.153)
Bribes for Inspectors *1 = do not occur, 5 = severe problem*				-0.066
				(0.096)
Constant	-0.619	-0.619	-1.422	-0.22
	(1.070)	(0.929)	(0.990)	(1.252)
Log-likelihood	-241.154	-241.154	-244.312	-200.606
AIC	510.308	502.308	522.624	441.213
No. of Cases	403	403	403	331

Note: Survey data from Frye (2006). Model 1: Coefficient estimates from logistic regression; robust standard errors in parentheses. Model 2: Coefficient estimates from logistic regression; standard errors clustered by region in parentheses. Models 3-4: Coefficients from multilevel logistic regression with random coefficient for the discretion variable and random intercepts at the region level. Unit-specific estimates suppressed out of space constraints. * $p<0.10$, ** $p<0.05$, *** $p<0.01$

Table 7: **Summary Statistics for Region-Level Variables**

Variable	N	Median	Mean	Std. Dev.	Min/Max
Openness *score for openness of political arena*	11	3.00	3.27	0.91	2/5
Elections *score for free and fair elections*	11	3.00	3.00	0.89	2/5
Pluralism *score for presence of stable, competitive parties*	11	3.00	3.18	0.09	2/5
Political Competitiveness *additive index*	11	9.00	9.46	2.5	6/14
Gross Regional Product *regional GDP per capita (logged)*	11	3.63	3.68	0.46	3.25/4.92
Civil *score for strength of civil society*	11	3.00	3.00	0.89	2/5
Proportional Representation *presence of PR rule for legislative seats*	11	1.00	0.55	0.52	0/1
Regional Bureaucracy Size *number of employees per capita (logged)*	11	4.36	4.36	0.78	2.18/6.24
Population *in thousands (logged)*	11	7.76	7.82	0.78	3.53/9.25
Transportation Infrastructure *km. of railways per km^2 (logged)*	11	5.21	5.08	0.86	3.3/6.35

Note: Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita, the number of regional bureaucrats per capita, population, and railway density come from annual *Rosstat* publications. These measures represent the average values for regions across the three years (2002-2004) immediately preceding respondents' participation in the survey. Regions are those sampled in the Frye (2006) data: Sverdlovsk, Khabarovsk Krai, Moscow, Nizhniy Novgorod, Novgorod, Omsk, Smolensk, Tula, Voronezh, Rostov, and the Republic of Bashkortostan.

Table 8: **Institutional Context Affects Discretion's Relationship with Investment**

In regions with *high restrictions* on political competition.

Does firm have plans to invest in the next 12 months?	Do regional bureaucrats make decisions independent of other gov't bodies?		
	Yes	No	Total
Yes	**24** **(25.81%)**	**109** **(42.75%)**	133 (38.22%)
No	69 (74.19%)	146 (57.25%)	215 (61.78%)
Total	93 (100%)	255 (100%)	348 (100%)

In regions with *low restrictions* on political competition.

Does firm have plans to invest in the next 12 months?	Do regional bureaucrats make decisions independent of other gov't bodies?		
	Yes	No	Total
Yes	15 (50.00%)	84 (45.65%)	99 (46.26%)
No	15 (50.00%)	100 (54.35%)	115 (53.74%)
Total	30 (100%)	184 (100%)	214 (100%)

Note: Survey data from Frye (2006). Column percentages in parentheses. High versus low restrictions on political competition are relative to the mean of regional score. For upper table, the Pearson chi-squared statistic for the paired observation is $\chi^2 = 8.281, p = 0.004$. For lower table: $\chi^2 = 0.192, p = 0.658$.

Explanation of Multilevel Models

I estimate a multilevel logit model of the dichotomous dependent variable: firm investment. The multilevel model with varying intercepts for regions and varying slope for one variable of interest can be written generally as follows:

$$Pr(y_i = 1) = logit^{-1}(\beta_0 + \beta_{j[i]}x_{1i} + +\beta_2 x_{2i} + ... + \alpha_{j[i]}) \tag{1}$$

$$\alpha_j = \delta_1 z_{j1} + \delta_2 z_{j2} + \varepsilon_j^\alpha \tag{2}$$

$$\beta_j = \gamma_1 z_{j1} + \varepsilon_j^\beta \tag{3}$$

where i denotes the firm-level variation, and j denotes the region-level variation. Lower-level predictors are survey responses that vary across individual firms, indicated by x, while z represents predictors that vary across region.

As a robustness check, I use Bayesian analysis as a check against the conventional multilevel models having difficulty estimating between-group variation as the number of groups gets small. For Bayesian estimation in `WinBUGS`, the parameter coefficients from this varying intercept model use diffuse priors to allow parameter estimates to be dictated by the data. I also model the region-level variances indirectly, using inverse-variances as suggested by Gelman & Hill (2007).

The posterior distribution of coefficient estimates from this varying intercept model use diffuse priors to allow parameter estimates to be dictated by the data:

$$\begin{aligned}
\beta_k &\sim N(0, 1 \times 10^5), \quad k = 0, ..., 7 \\
\delta_l &\sim N(0, 1 \times 10^5), \quad l = 1, 2 \\
\tau_{region} &\sim pow(\sigma_{region}, -2) \\
\sigma_{region} &\sim U(0, 100)
\end{aligned}$$

Table 9: **Robustness Check: Bayesian Hierarchical Analysis with Diffuse Priors**

Firm Investment
dummy, 1 = firm plans to invest during coming year

	Mean	Std. Dev	Lower	Upper
Bureaucratic Discretion *1 = no discretion, 4 = high discretion*	-1.324	0.536	-2.267	-0.501
Policy Volatility *1 = no obstacle, 5 = very serious obstacle*	0.107	0.111	-0.067	0.296
High Tax Rates *1 = no obstacle, 5 = very serious obstacle*	-0.383	0.111	-0.558	-0.198
Regional Administration *1 = poor job, 5 = excellent job*	0.259	0.150	0.013	0.509
Regional Courts *1 = poor job, 5 = excellent job*	-0.196	0.140	-0.424	0.038
Competitive Pressures *1 = no obstacle, 5 = very serious obstacle*	0.106	0.083	-0.032	0.240
Labor Shortages *1 = no obstacle, 5 = very serious obstacle*	-0.044	0.093	-0.188	0.112
Privatized Firm *dummy, 1 = privatized, former SOE*	-0.056	0.273	-0.504	0.404
Annual Sales *-1 = decreasing, 1 = increasing*	0.412	0.179	0.124	0.705
Firm Size *number of employees (logged)*	0.269	0.079	0.133	0.399
Private Firm *dummy, 1 = private ownership*	0.829	0.456	0.098	1.613
Constant	-1.346	1.181	-3.112	0.637
GDP per capita *in constant 2000 rubles per 1000 persons (logged)*	0.221	0.352	-0.406	0.721
Political Competitiveness Index *index, 6 = low pol. competition, 14 = high pol. competition*	-0.031	0.114	-0.211	0.146
Political Competitiveness × Bureaucratic Discretion *interaction*	0.079	0.053	-0.002	0.173
Observations		418		

Note: Firm-level survey data from Frye (2006). Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita from annual *Rosstat* publications. Coefficient estimates from hierarchical Bayesian logistic regression. Lower and Upper indicate 90% Bayesian credible intervals for each estimate. Analysis using two MCMC chains at 20,000 iterations in `WinBUGS` through `R`. From the initial 40,000 samples, 6,000 samples remain after throwing out the first 5,000 of each chain and "thinning" to keep every fifth sample.

Table 10: **Robustness Check: (Alternate Model Specifications)**

Firm Investment *dummy, 1 = firm plans to invest during coming year*	No Random Effects	Extra Controls
Bureaucratic Discretion *1 = no discretion, 4 = high discretion*	-0.645***	-0.647***
	(0.161)	(0.160)
Frequent Changes to Laws *1 = no obstacle, 5 = very serious obstacle*	0.115	0.093
	(0.116)	(0.112)
High Tax Rates *1 = no obstacle, 5 = very serious obstacle*	-0.385***	-0.396***
	(0.121)	(0.123)
Regional Administration *1 = poor job, 5 = excellent job*	0.508***	0.534***
	(0.190)	(0.200)
Regional Courts *1 = poor job, 5 = excellent job*	-0.149	-0.174
	(0.147)	(0.149)
Regional Governor *1 = poor job, 5 = excellent job*	-0.372**	-0.385**
	(0.174)	(0.192)
Access to Finance *1 = no obstacle, 5 = very serious obstacle*	-0.027	-0.021
	(0.086)	(0.083)
Labor Shortages *1 = no obstacle, 5 = very serious obstacle*	-0.046	-0.042
	(0.087)	(0.088)
Competitive Pressures *1 = no obstacle, 5 = very serious obstacle*	0.089	0.108
	(0.086)	(0.086)
Privatized Firm *dummy, 1 = privatized, former SOE*	0.078	0.059
	(0.276)	(0.276)
Annual Sales *-1 = decreasing, 1 = increasing*	0.459**	0.446**
	(0.190)	(0.183)
Firm Size *number of employees (logged)*	0.306***	0.324***
	(0.082)	(0.084)
Private Firm *dummy, 1 = private ownership*	0.774	0.783*
	(0.474)	(0.444)
Constant	-2.149	10.782
	(1.475)	(10.425)
Regional Bureaucracy Size *number of employees per capita (logged)*		-2.480
		(2.242)
Population *in thousands (logged)*		-1.101
		(0.693)
Transportation Infrastructure *km. of railways per km^2 (logged)*		-0.166
		(0.237)
GDP per capita *in constant 2000 rubles per 1000 persons (logged)*	0.440*	0.449
	(0.262)	(0.403)
Political Political Competition *index, 6 = low pol. competition, 14 = high pol. competition*	-0.185	-0.089
	(0.121)	(0.142)
Political Competition × Bureaucratic Discretion *interaction*	0.144**	0.132*
	(0.066)	(0.068)
Log-likelihood	-235.432	-233.068
AIC	504.864	512.136
No. of Cases	403	403

Note: Survey data from Frye (2006). Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita from annual *Rosstat* publications. Column 1: Coefficients from logistic regression with robust standard errors in parentheses. Column 2: Coefficients from multilevel logistic regression with random coefficient for the discretion variable and random intercepts at the region level; standard errors in parentheses. Additional region-level data taken from *Rosstat*. Out of space concerns, unit-specific effects not reported. * p<0.10, ** p<0.05, *** p<0.01

Table 11: **Robustness Check: Alternate Measures of Independent Variables**

Firm Investment *dummy, 1 = firm plans to invest during coming year*	Dichotomous Discretion Measure	Dichotomous Political Competition	Civil Society (Competition)	Proportional Representation (Competition)
Bureaucratic Discretion *1 = no discretion, 4 = high discretion*		-0.773***	-0.577***	-0.863***
		(0.187)	(0.152)	(0.238)
Bureaucratic Discretion *dummy, 1 = high discretion*	-1.006***			
	(0.333)			
Frequent Changes to Laws *1 = no obstacle, 5 = very serious obstacle*	0.109	0.118	0.108	0.096
	(0.110)	(0.113)	(0.112)	(0.113)
High Tax Rates *1 = no obstacle, 5 = very serious obstacle*	-0.347***	-0.394***	-0.385***	-0.394***
	(0.119)	(0.122)	(0.121)	(0.123)
Regional Administration *1 = poor job, 5 = excellent job*	0.431**	0.508***	0.522***	0.564***
	(0.194)	(0.193)	(0.195)	(0.195)
Regional Courts *1 = poor job, 5 = excellent job*	-0.18	-0.128	-0.152	-0.151
	(0.147)	(0.148)	(0.148)	(0.149)
Regional Governor *1 = poor job, 5 = excellent job*	-0.328**	-0.387**	-0.374**	-0.387**
	(0.184)	(0.182)	(0.183)	(0.181)
Access to Finance *1 = no obstacle, 5 = very serious obstacle*	-0.013	-0.041	-0.033	-0.031
	(0.082)	(0.083)	(0.083)	(0.083)
Labor Shortages *1 = no obstacle, 5 = very serious obstacle*	-0.046	-0.035	-0.032	-0.015
	(0.085)	(0.086)	(0.085)	(0.085)
Competitive Pressures *1 = no obstacle, 5 = very serious obstacle*	0.088	0.094	0.085	0.089
	(0.084)	(0.085)	(0.085)	(0.085)
Privatized Firm *dummy, 1 = privatized, former SOE*	0.051	0.078	0.086	0.094
	(0.272)	(0.274)	(0.274)	(0.273)
Annual Sales *-1 = decreasing, 1 = increasing*	0.466*	0.471**	0.459**	0.465**
	(0.182)	(0.183)	(0.182)	(0.182)
Firm Size *number of employees (logged)*	0.312***	0.305***	0.301***	0.295***
	(0.083)	(0.083)	(0.083)	(0.085)
Private Firm *dummy, 1 = private ownership*	0.829*	0.778*	0.786*	0.719
	(0.434)	(0.440)	(0.441)	(0.439)
Constant	-3.409**	-1.712	-2.365*	-1.999
	(1.363)	(1.514)	(1.431)	(1.470)
GDP per capita *in constant 2000 rubles per 1000 persons (logged)*	0.484**	0.365	0.472*	0.489*
	(0.246)	(0.289)	(0.246)	(0.251)
Political Competition *various measures*	0.032	-0.688	-0.402	-0.671
	(0.052)	(0.627)	(0.333)	(0.607)
Political Competition × Bureaucratic Discretion *interaction*	0.398**	0.558* 0.304*	0.451	
	(0.155)	(0.312)	(0.172)	(0.302)
Log-likelihood	-238.531	-236.822	-236.893	-237.745
AIC	517.063	513.643	513.786	515.49
No. of Cases	403	403	403	403

Note: Survey data from Frye (2006). Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita from annual *Rosstat* publications. Coefficients from multilevel logistic regression with random coefficient for the discretion variable and random intercepts at the region level; standard errors in parentheses. Out of space concerns, unit-specific effects not reported. * p<0.10, ** p<0.05, *** p<0.01

Table 12: **Robustness Check: Dropping Outlying Region**

Firm Investment
dummy, 1 = firm plans to invest during coming year

Bureaucratic Discretion *1 = no discretion, 4 = high discretion*	-0.404*** (0.135)	-0.693*** (0.172)	-0.707*** (0.183)	-0.605*** (0.165)
Frequent Changes to Laws *1 = no obstacle, 5 = very serious obstacle*		0.044 (0.116)	0.081 (0.112)	0.082 (0.112)
High Tax Rates *1 = no obstacle, 5 = very serious obstacle*		-0.385*** (0.132)	-0.410*** (0.124)	-0.410*** (0.123)
Regional Administration *1 = poor job, 5 = excellent job*		0.571*** (0.217)	0.546*** (0.205)	0.558*** (0.207)
Regional Courts *1 = poor job, 5 = excellent job*		-0.126 (0.159)	-0.177 (0.149)	-0.172 (0.149)
Regional Governor *1 = poor job, 5 = excellent job*	0.008 (0.103)	-0.439** (0.207)	-0.398** (0.194)	-0.400** (0.195)
Access to Finance *1 = no obstacle, 5 = very serious obstacle*	-0.086 (0.067)	0.009 (0.087)	-0.01 (0.083)	-0.011 (0.083)
Labor Shortages *1 = no obstacle, 5 = very serious obstacle*		-0.022 (0.093)	-0.047 (0.087)	-0.041 (0.086)
Competitive Pressures *1 = no obstacle, 5 = very serious obstacle*		0.071 (0.092)	0.113 (0.085)	0.113 (0.085)
Privatized Firm *dummy, 1 = privatized, former SOE*		0.156 (0.324)	-0.055 (0.281)	-0.013 (0.280)
Annual Sales *-1 = decreasing, 1 = increasing*	0.478*** (0.165)	0.580*** (0.195)	0.474*** (0.183)	0.461** (0.183)
Firm Size *number of employees (logged)*	0.332*** (0.072)	0.427*** (0.108)	0.305*** (0.085)	0.305*** (0.084)
Private Firm *dummy, 1 = private ownership*	0.670* (0.342)		0.655 (0.456)	0.64 (0.456)
Constant	-3.177*** (1.111)	-3.637* (1.937)	-1.734 (1.561)	-1.957 (1.471)
GDP per capita *in constant 2000 rubles per 1000 persons (logged)*	0.371 (0.228)	0.574** (0.274)	0.486 (0.308)	0.477* (0.258)
Political Competition – Index *mean-centered index, -3 = uncompetitive, 5 = highly competitive*	-0.111 (0.115)	-0.217 (0.142)		
Political Competition – Dichotomous Coding *dummy, 0 = uncompetitive, 1 = highly competitive*			-1.236* (0.679)	
Political Competition – Pluralism *-1 = no pluralism, 2 = high pluralism*				-0.576 (0.377)
Political Competition × Bureaucratic Discretion *interaction*	0.081 (0.062)	0.144* (0.077)	0.739* (0.339)	0.346* (0.200)
Sector & Legal Form Dummies	No	Yes	No	No
Log-likelihood	-280.397	-218.121	-227.462	-228.376
AIC	586.795	510.243	494.924	496.752
No. of Cases	447	380	380	380

Note: Survey data from Frye (2006). Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita from annual *Rosstat* publications. Coefficients from multilevel logistic regression with random coefficient for the discretion variable and random intercepts at the region level; standard errors in parentheses. Out of space concerns, unit-specific effects not reported. * $p<0.10$, ** $p<0.05$, *** $p<0.01$

Explanation: The Rep. of Bashkortostan is a clear outlier in terms of high restrictions on political competition, widespread perceptions of high bureaucratic discretion, and low investment. This table shows that, even under a variety of specifications, the key findings of the conditional theory continue to hold after dropping Bashkortostan from the analyses.

Table 13: **Robustness Check: Alternative Interpretations to Discretion Question**

Firm Investment *dummy, 1 = firm plans to invest during coming year*	Regional Autonomy	Extralegal Behavior
Bureaucratic Discretion *1 = no discretion, 4 = high discretion*	-0.742***	-0.608***
	(0.232)	(0.159)
Frequent Changes to Laws *1 = no obstacle, 5 = very serious obstacle*	0.145	0.113
	(0.163)	(0.113)
High Tax Rates *1 = no obstacle, 5 = very serious obstacle*	-0.414**	-0.371**
	(0.171)	(0.121)
Regional Administration *1 = poor job, 5 = excellent job*	0.767**	0.545**
	(0.308)	(0.200)
Regional Courts *1 = poor job, 5 = excellent job*	-0.319	-0.130
	(0.211)	(0.149)
Regional Governor *1 = poor job, 5 = excellent job*	-0.565**	-0.362*
	(0.278)	(0.186)
Access to Finance *1 = no obstacle, 5 = very serious obstacle*	-0.137	-0.037
	(0.115)	(0.083)
Labor Shortages *1 = no obstacle, 5 = very serious obstacle*	0.051	-0.046
	(0.122)	(0.087)
Competitive Pressures *1 = no obstacle, 5 = very serious obstacle*	0.170	0.092
	(0.116)	(0.085)
Privatized Firm *dummy, 1 = privatized, former SOE*	0.023	0.078
	(0.358)	(0.275)
Annual Sales *-1 = decreasing, 1 = increasing*	0.692***	0.480**
	(0.255)	(0.185)
Firm Size *number of employees (logged)*	0.421***	0.305***
	(0.113)	(0.084)
Private Firm *dummy, 1 = private ownership*	0.477	0.731*
	(0.558)	(0.441)
Difference: Executive Acts in Society's Interests *dummy, 1 = perceived difference between federal and regional gov.*	-0.189	
	(0.385)	
Difference: Executive Supports Economic Competition *dummy, 1 = perceived difference between federal and regional gov.*	0.600	
	(0.491)	
Difference: Executive Supports Competitive Party System *dummy, 1 = perceived difference between federal and regional gov.*	-0.287	
	(0.457)	
Difference: Executive Supports Cooperation with USA *dummy, 1 = perceived difference between federal and regional gov.*	0.795*	
	(0.448)	
Difference: Rating of Executive *dummy, 1 = perceived difference between federal and regional gov.*	0.231	
	(0.428)	
Bureaucratic Professionalism *1 = unprofessional, 4 = highly professional*		0.189
		(0.171)
Constant	-2.836	-2.720*
	(2.054)	(1.557)
GDP per capita *in constant 2000 rubles per 1000 persons (logged)*	0.576*	0.390
	(0.347)	(0.255)
Regional Political Competition *mean-centered index, -3 = uncompetitive, 5 = highly competitive*	-0.350*	-0.193
	(0.184)	(0.128)
Political Competition × Bureaucratic Discretion *interaction*	0.170*	0.150*
	(0.091)	(0.066)
No. of Cases	246	400

Note: Survey data from Frye (2006). Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita from annual *Rosstat* publications. Coefficients from multilevel logistic regression with random coefficient for the discretion variable and random intercepts at the region level; standard errors in parentheses. Out of space concerns, unit-specific effects not reported. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 14: **Robustness Check: Controlling for Respondents' Political Knowledge**

Firm Investment *dummy, 1 = firm plans to invest during coming year*	No. Missed Political Questions	*Any* Skipped Questions	Skipped *All* Questions	Dropping Low Knowledge
Bureaucratic Discretion	-0.654***	-0.644***	-0.659***	-0.801***
1 = no discretion, 4 = high discretion	(0.158)	(0.157)	(0.158)	(0.194)
Frequent Changes to Laws	0.116	0.117	0.111	0.227*
1 = no obstacle, 5 = very serious obstacle	(0.112)	(0.112)	(0.112)	(0.137)
High Tax Rates	-0.383***	-0.385***	-0.383***	-0.571***
1 = no obstacle, 5 = very serious obstacle	(0.122)	(0.121)	(0.122)	(0.151)
Regional Administration	0.510***	0.508***	0.522***	0.436*
1 = poor job, 5 = excellent job	(0.197)	(0.196)	(0.197)	(0.264)
Regional Courts	-0.161	-0.151	-0.165	-0.245
1 = poor job, 5 = excellent job	(0.148)	(0.148)	(0.149)	(0.180)
Regional Governor	-0.378**	-0.373**	-0.377**	-0.389
1 = poor job, 5 = excellent job	(0.187)	(0.186)	(0.186)	(0.248)
Access to Finance	-0.023	-0.028	-0.02	-0.051
1 = no obstacle, 5 = very serious obstacle	(0.083)	(0.083)	(0.083)	(0.099)
Labor Shortages	-0.056	-0.048	-0.057	-0.108
1 = no obstacle, 5 = very serious obstacle	(0.087)	(0.087)	(0.087)	(0.108)
Competitive Pressures	0.104	0.092	0.103	0.158
1 = no obstacle, 5 = very serious obstacle	(0.086)	(0.085)	(0.086)	(0.104)
Privatized Firm	0.12	0.093	0.113	0.07
dummy, 1 = privatized, former SOE	(0.277)	(0.279)	(0.276)	(0.320)
Annual Sales	0.469**	0.460**	0.472**	0.766***
-1 = decreasing, 1 = increasing	(0.184)	(0.183)	(0.184)	(0.231)
Firm Size	0.311***	0.307***	0.310***	0.325***
number of employees (logged)	(0.083)	(0.083)	(0.084)	(0.098)
Private Firm	0.719	0.759	0.726*	0.639
dummy, 1 = private ownership	(0.442)	(0.443)	(0.441)	(0.516)
Lack of Political Knowledge	-0.071	-0.079	-0.503	
non-response to political questions	(0.055)	(0.245)	(0.351)	
Constant	-2.046	-2.126	-2.052	-1.295
	(1.440)	(1.438)	(1.438)	(1.736)
GDP per capita	0.441*	0.441*	0.437*	0.527*
in constant 2000 rubles per 1000 persons (logged)	(0.253)	(0.252)	(0.253)	(0.303)
Regional Political Competition	-0.181	-0.183	-0.178	-0.251
index, -3 = uncompetitive, 5 = highly competitive	(0.128)	(0.128)	(0.128)	(0.154)
Political Competition × Bureaucratic Discretion	0.140**	0.142**	0.139**	0.142*
interaction	(0.066)	(0.066)	(0.066)	(0.078)
Log-likelihood	-234.612	-235.38	-234.383	-166.558
AIC	511.224	512.759	510.765	373.117
No. of Cases	403	403	403	297

Note: Survey data from Frye (2006). Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita from annual *Rosstat* publications. Lack of political knowledge measured by non-response to six questions about the political views of regional executive: Column 1 the variable is a count of the number of non-responses (0-6), Columns 2-3 are dichotomous indicators, Column 4 drops any respondent missing more than one political question. Coefficients from multilevel logistic regression with random coefficient for the discretion variable and random intercepts at the region level; standard errors in parentheses. Out of space concerns, unit-specific effects not reported. * p<0.10, ** p<0.05, *** p<0.01

Table 15: **Robustness Check: Controlling for Experience with Government & Job**

Firm Investment *dummy, 1 = firm plans to invest during coming year*	Experience w/ Government	Experience w/ Job & Location
Bureaucratic Discretion *1 = no discretion, 4 = high discretion*	-0.636*** (0.164)	-0.633*** (0.161)
.	.	.
.	.	.
control variables suppressed		
.	.	.
.	.	.
Lobbying Experience *dummy, 1 = lobbied at any level of government*	0.354 (0.240)	
Chances of Receiving Government Bailout *1 = never, 4 = definitely*	0.037 (0.147)	
Past Court Dispute with Government *dummy, 1 = has used courts*	0.367 (0.255)	
Years in City *years lived in firm's city (logged)*		-0.049 (0.172)
Years In Position *years in current position (logged)*		-0.218 (0.184)
Education *1 = secondary, 4 = PhD*		0.392 (0.260)
Age *age of respondent*		-0.005 (0.015)
Outside Experience *dummy, 1 = experience in another sector*		0.291 (0.245)
Past Experience at State-Owned Enterprise *dummy, 1 = management worked for SOE*		0.318 (0.287)
Constant	-1.904 (1.482)	-2.643 (1.733)
GDP per capita *in constant 2000 rubles per 1000 persons (logged)*	0.430* (0.258)	0.467* (0.256)
Regional Political Competition *mean-centered index, -3 = uncompetitive, 5 = highly competitive*	-0.179 (0.130)	-0.223* (0.134)
Political Competition × Bureaucratic Discretion *interaction*	0.139** (0.067)	0.167** (0.070)
Log-likelihood	-229.86	-231.017
AIC	505.721	514.034
No. of Cases	397	403

Note: Survey data from Frye (2006). Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita from annual *Rosstat* publications. Coefficients from multilevel logistic regression with random coefficient for the discretion variable and random intercepts at the region level; standard errors in parentheses. The model also includes additional control variables contained (for specification, see Model 6 in the body of the paper), but they, along with unit-specific effects, are not reported to conserve space. * $p<0.10$, ** $p<0.05$, *** $p<0.01$

Table 16: **Robustness Check: Controlling for Experience Outside the Region**

Firm Investment *dummy, 1 = firm plans to invest during coming year*	Experience Outside Region	Dropping Firms w/o External Sales
Bureaucratic Discretion	-0.692***	-0.804**
1 = no discretion, 4 = high discretion	(0.164)	(0.346)
Frequent Changes to Laws	0.127	-0.208
1 = no obstacle, 5 = very serious obstacle	(0.115)	(0.228)
High Tax Rates	-0.335***	-0.238
1 = no obstacle, 5 = very serious obstacle	(0.128)	(0.244)
Regional Administration	0.546***	1.187***
1 = poor job, 5 = excellent job	(0.201)	(0.412)
Regional Courts	-0.108	0.169
1 = poor job, 5 = excellent job	(0.153)	(0.303)
Regional Governor	-0.405**	-0.883**
1 = poor job, 5 = excellent job	(0.191)	(0.366)
Access to Finance	0.006	-0.097
1 = no obstacle, 5 = very serious obstacle	(0.086)	(0.155)
Labor Shortages	-0.087	-0.046
1 = no obstacle, 5 = very serious obstacle	(0.091)	(0.164)
Competitive Pressures	0.096	-0.171
1 = no obstacle, 5 = very serious obstacle	(0.088)	(0.158)
Privatized Firm	0.069	-0.721
dummy, 1 = privatized, former SOE	(0.284)	(0.586)
Annual Sales	0.550***	0.724**
-1 = decreasing, 1 = increasing	(0.192)	(0.367)
Firm Size	0.265***	0.286
number of employees (logged)	(0.096)	(0.171)
Private Firm	0.606	1.814
dummy, 1 = private ownership	(0.449)	(0.936)
Exporting Experience	-0.387	-1.581***
dummy, 1 = exporter	(0.315)	(0.509)
In-Region Sales	0.240**	
1 = no in-region sales, 4 = 100% of sales in-region	(0.114)	
Business Association	0.389	
dummy, 1 = membership in business association	(0.245)	
Recent Move-In	-0.002	
dummy, 1 = lived in city < 10 yrs.	(0.482)	
Constant	-1.949	-3.833
	(1.546)	(3.417)
GDP per capita	0.331	1.509**
in constant 2000 rubles per 1000 persons (logged)	(0.267)	(0.602)
Regional Political Competition	-0.169	-0.430
mean-centered index, -3 = uncompetitive, 5 = highly competitive	(0.131)	(0.322)
Political Competition × Bureaucratic Discretion	0.130*	0.326*
interaction	(0.067)	(0.180)
Log-likelihood	-221.744	-73.133
AIC	491.488	188.265
No. of Cases	383	153

Note: Survey data from Frye (2006). Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita from annual *Rosstat* publications. Coefficients from multilevel logistic regression with random coefficient for the discretion variable and random intercepts at the region level; standard errors in parentheses. Out of space concerns, unit-specific effects not reported. Column 2 drops all firms with more than 50% of sales originating in home region. * $p<0.10$, ** $p<0.05$, *** $p<0.01$

Table 17: **Robustness Check: Controlling for Respondent Optimism**

| Firm Investment *dummy, 1 = firm plans to invest during coming year*	Optimism About Economy	Optimism About Own Firm
Bureaucratic Discretion *1 = no discretion, 4 = high discretion*	-0.662*** (0.171)	-0.641*** (0.173)
Frequent Changes to Laws *1 = no obstacle, 5 = very serious obstacle*	0.132 (0.117)	0.079 (0.120)
High Tax Rates *1 = no obstacle, 5 = very serious obstacle*	-0.373*** (0.130)	-0.392*** (0.132)
Regional Administration *1 = poor job, 5 = excellent job*	0.538** (0.213)	0.577*** (0.216)
Regional Courts *1 = poor job, 5 = excellent job*	-0.176 (0.156)	-0.214 (0.164)
Regional Governor *1 = poor job, 5 = excellent job*	-0.378* (0.204)	-0.410** (0.203)
Access to Finance *1 = no obstacle, 5 = very serious obstacle*	-0.036 (0.088)	-0.032 (0.092)
Labor Shortages *1 = no obstacle, 5 = very serious obstacle*	-0.037 (0.093)	-0.053 (0.095)
Competitive Pressures *1 = no obstacle, 5 = very serious obstacle*	0.105 (0.092)	0.068 (0.093)
Privatized Firm *dummy, 1 = privatized, former SOE*	0.02 (0.299)	-0.044 (0.304)
Annual Sales *-1 = decreasing, 1 = increasing*	0.496** (0.196)	0.410* (0.229)
Firm Size *number of employees (logged)*	0.313*** (0.087)	0.313*** (0.087)
Private Firm *dummy, 1 = private ownership*	0.708 (0.464)	0.708 (0.467)
Economy's Past Performance (last 2 yrs.) *1 = improved greatly, 4 = deteriorated greatly*	0.317 (0.255)	
Economy's Future Performance (next 2 yrs.) *1 = will improve greatly, 4 = will deteriorate greatly*	-0.100 (0.296)	
Firm's Past Financial Position (last 2 yrs.) *1 = improved greatly, 4 = deteriorated greatly*		-0.050 (0.258)
Firm's Future Financial Position (next 2 yrs.) *1 = will improve greatly, 4 = will deteriorate greatly*		0.357 (0.287)
Constant	-2.703* (1.578)	-2.299 (1.754)
GDP per capita *in constant 2000 rubles per 1000 persons (logged)*	0.419 (0.274)	0.387 (0.269)
Regional Political Competition *mean-centered index, -3 = uncompetitive, 5 = highly competitive*	-0.229* (0.135)	-0.212 (0.135)
Political Competition × Bureaucratic Discretion *interaction*	0.153** (0.069)	0.149** (0.068)
Log-likelihood	-205.828	-201.983
AIC	455.657	447.965
No. of Cases	352	346

Note: Survey data from Frye (2006). Region-level political variables come from the Moscow Carnegie Center's Regional Monitoring Project. Data on GDP per capita from annual *Rosstat* publications. Coefficients from multilevel logistic regression with random coefficient for the discretion variable and random intercepts at the region level; standard errors in parentheses. Out of space concerns, unit-specific effects not reported. * p<0.10, ** p<0.05, *** p<0.01

Table 18: **Multilevel Analyses: Disaggregating Political Competition Index**

Firm Investment
dummy, 1 = firm plans to invest during coming year

|	Pluralism	Openness	Elections
Bureaucratic Discretion	-0.679***	-0.687***	-0.580***
1 = no discretion, 4 = high discretion	(0.161)	(0.164)	(0.151)
Frequent Changes to Laws	0.121	0.119	0.104
1 = no obstacle, 5 = very serious obstacle	(0.112)	(0.112)	(0.111)
High Tax Rates	-0.389***	-0.395***	-0.375***
1 = no obstacle, 5 = very serious obstacle	(0.122)	(0.122)	(0.122)
Regional Administration	0.520***	0.508***	0.509***
1 = poor job, 5 = excellent job	(0.197)	(0.196)	(0.194)
Regional Courts	-0.156	-0.144	-0.141
1 = poor job, 5 = excellent job	(0.148)	(0.148)	(0.148)
Regional Governor	-0.390**	-0.381*	-0.351*
1 = poor job, 5 = excellent job	(0.185)	(0.184)	(0.185)
Access to Finance	-0.026	-0.035	-0.024
1 = no obstacle, 5 = very serious obstacle	(0.083)	(0.083)	(0.083)
Labor Shortages	-0.053	-0.043	-0.03
1 = no obstacle, 5 = very serious obstacle	(0.087)	(0.086)	(0.086)
Competitive Pressures	0.09	0.091	0.093
1 = no obstacle, 5 = very serious obstacle	(0.085)	(0.085)	(0.085)
Privatized Firm	0.093	0.088	0.075
dummy, 1 = privatized, former SOE	(0.275)	(0.275)	(0.273)
Annual Sales	0.462**	0.452**	0.467*
-1 = decreasing, 1 = increasing	(0.183)	(0.183)	(0.182)
Firm Size	0.308***	0.307***	0.303***
number of employees (logged)	(0.083)	(0.083)	(0.083)
Private Firm	0.762	0.773*	0.768*
dummy, 1 = private ownership	(0.442)	(0.442)	(0.439)
Constant	-2.044	-1.982	-2.540*
	(1.451)	(1.451)	(1.422)
GDP per capita	0.443*	0.422*	0.479
in constant 2000 rubles per 1000 persons (logged)	(0.258)	(0.255)	(0.247)
Index Component	-0.674*	-0.494	-0.293
mean-centered index, -3 = uncompetitive, 5 = highly competitive	(0.364)	(0.352)	(0.351)
Index Component × Bureaucratic Discretion	0.479**	0.390**	0.274
interaction	(0.189)	(0.181)	(0.180)
Log-likelihood	-234.822	-235.514	-236.901
AIC	509.643	511.027	513.802
No. of Cases	403	403	403

Note: Survey data from Frye (2006). Region-level political data from the Moscow Carnegie Center and economic data from *Rosstat*; multilevel logistic regression with standard errors in parentheses. Out of space concerns, unit-specific effects not reported. * p<0.10, ** p<0.05, *** p<0.01

Figure 1:   Discretion Associated with Large Decreases in Probability of Investment (Estimated Effects)

Percent Change in Probability of Firm Investment
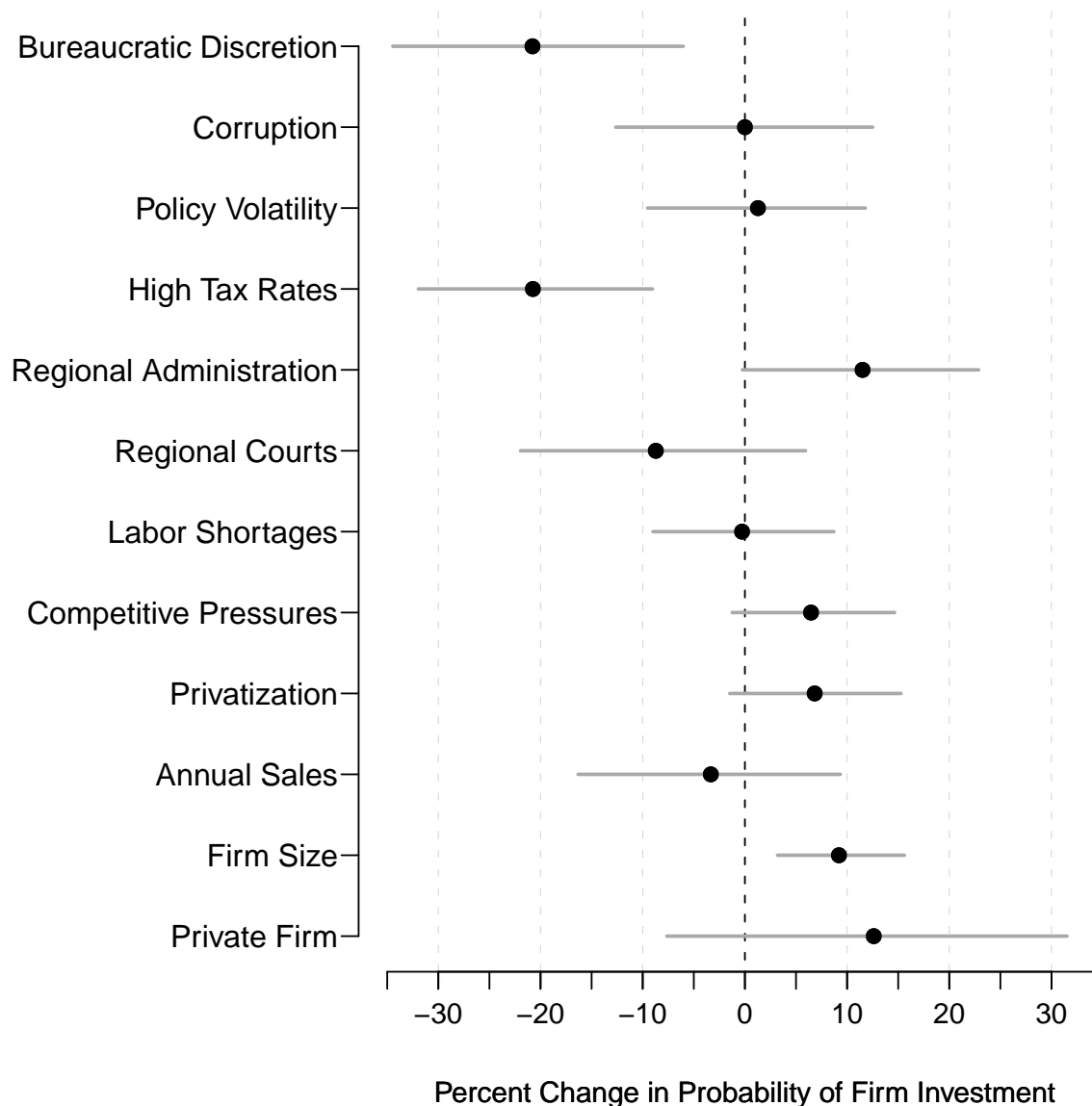
Firm investment model using survey data from Frye (2006). Dots represent first differences in predicted probabilities from manipulating the indicated variable while all other variables held at median values. Bureaucratic discretion moves its median ("2 = low degree of independence") to the maximum (4 ="completely independent"). The trichotomous sales variable moves from "no change" to "increasing sales," and the logged measure of firm size increases from the median (4.84) by one standard deviation to 6.37. By necessity, dummy variables (corruption, privatization, private ownership) move from 0 to 1. All other variables are five-point ordinal measures that move from their middle category ("moderate obstacle" or "neutral assessment") to their maximum values. Lines represent 95% confidence intervals calculated via simulation in R.

Figure 2: **External Validity Check: Perceptions of Discretion vs Regulatory Executive Directives**
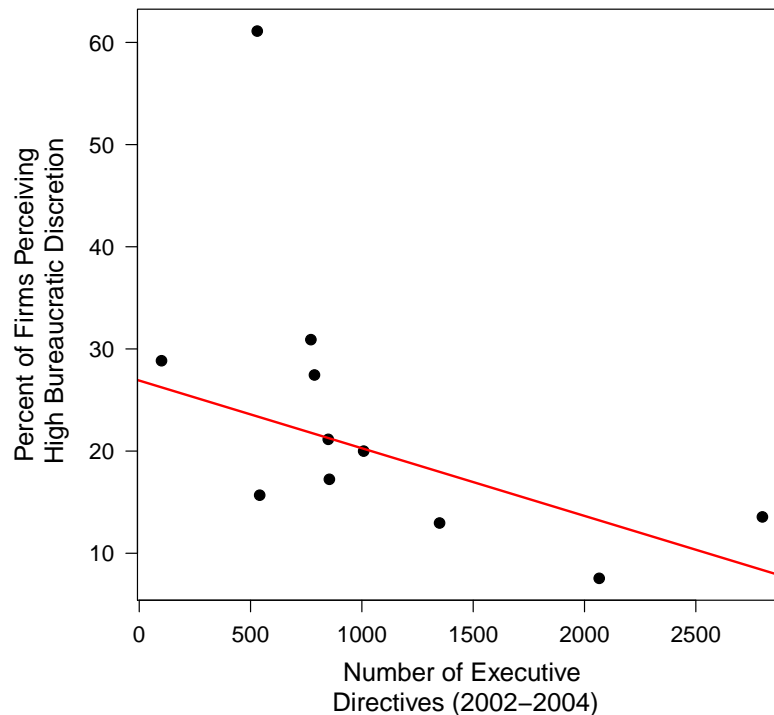
Note: Survey data from Frye (2006); data on volume of legal documents by regional executive collected by author from *Konsultant-Plus.* Regression line drops the Bashkortostan, the influential outlier at the very top of the graph. Including Bashkortostan only strengthens the correlation.

Explanation: The counted documents are legally-binding documents entitled *postanovleniya*; while I have translated this as 'directive,' alternate translations might also include 'resolution' or 'statement.' They cover a wide range of issues, including important economic policies such as taxes and safety standards. The expectation is that bureaucrats' discretion in regulating economic activity should relate inversely to the extensiveness with which the body of legal code specifies procedural behavior and decision-making rules. While prominent research has used a similar argument for focusing on the specificity of individual pieces of legislation (Huber & Shipan 2002), a similar dynamic holds for the completeness of the body of law within a particular policy environment: given extensive and oft-updated guidelines, the parameters for individual interpretation or arbitrary application are narrower; in contrast, policy application is likely to remain much more open to interpretation in regions characterized by little law-making activity. Thus, as the number of directives from regional executives grows, the increasing body of detailed guidelines should, on average, place greater constraints regulatory bureaucrats' ability to make decisions in interpreting and applying laws that are independent of other government bodies. The results of this analysis show that,in regions with a high volume of executive directives, average perceptions of bureaucratic discretion are indeed lower. Thus, comparing the survey measure against a defensible and completely exogenous measure of bureaucratic discretion, I find evidence supporting the survey question's external validity.

Figure 3: **External Validity Check: Perceptions of Discretion vs Regional Private Investment**
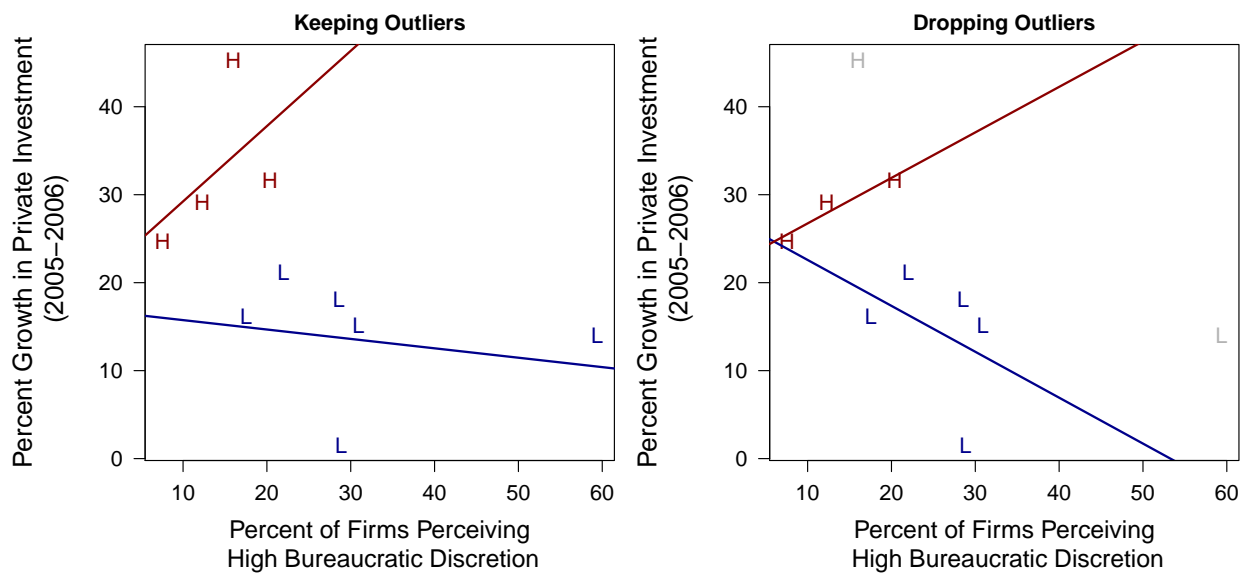
Note: Survey data from Frye (2006); percent growth in private investment taken from *Rosstat*. Red lines and the letter "H" refer to high-competition regions; blue lines and "L" refer to low-competition regions. Note that the plot drops Khabarovsk Krai from both plots out of comparability concerns – due to a very large and idiosyncratic investment boom in 2005, this region's growth in 2006 is -40%.
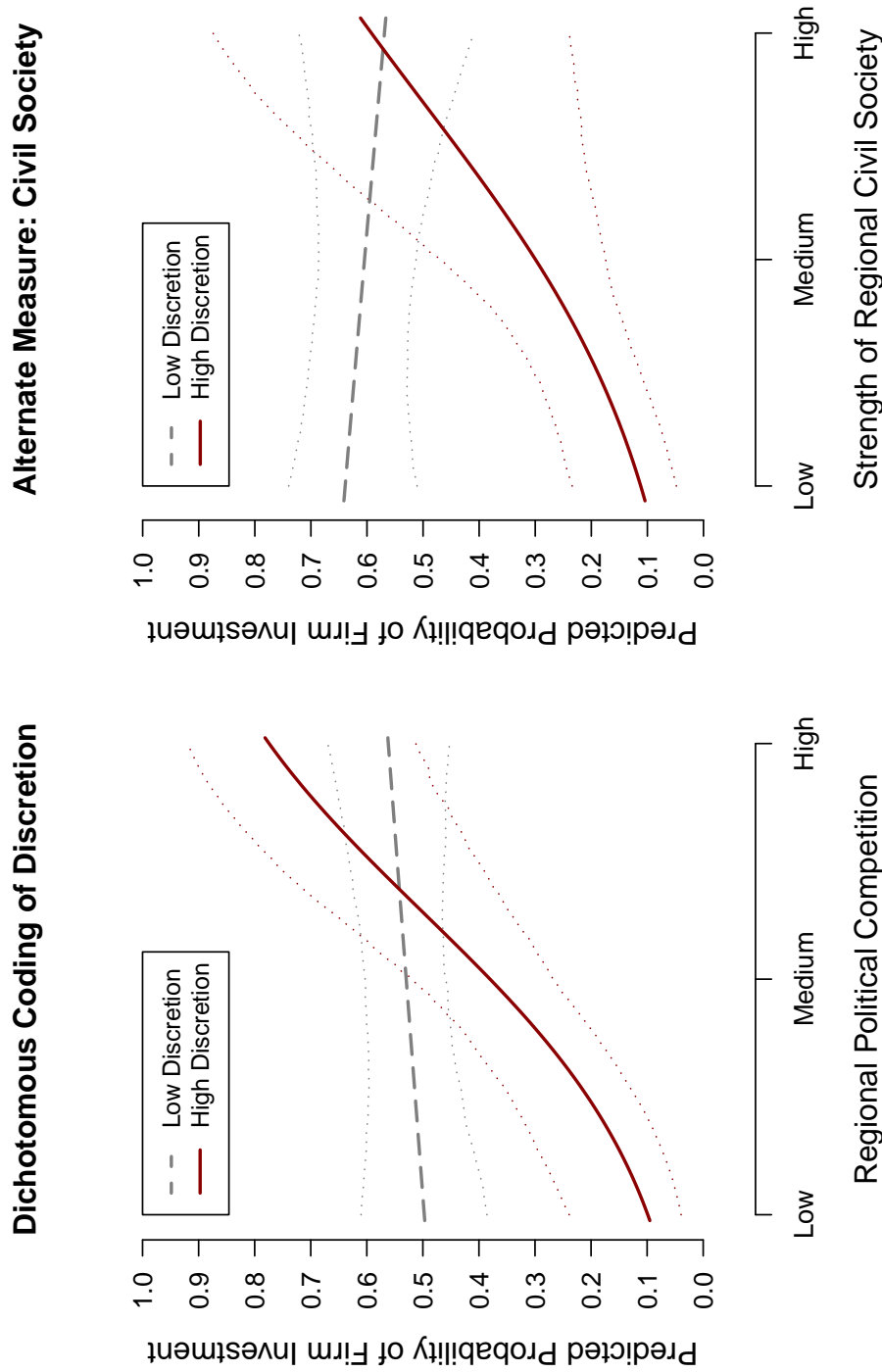
Figure 4: **Predicted Prob. Plots: Political Competition Index Components**
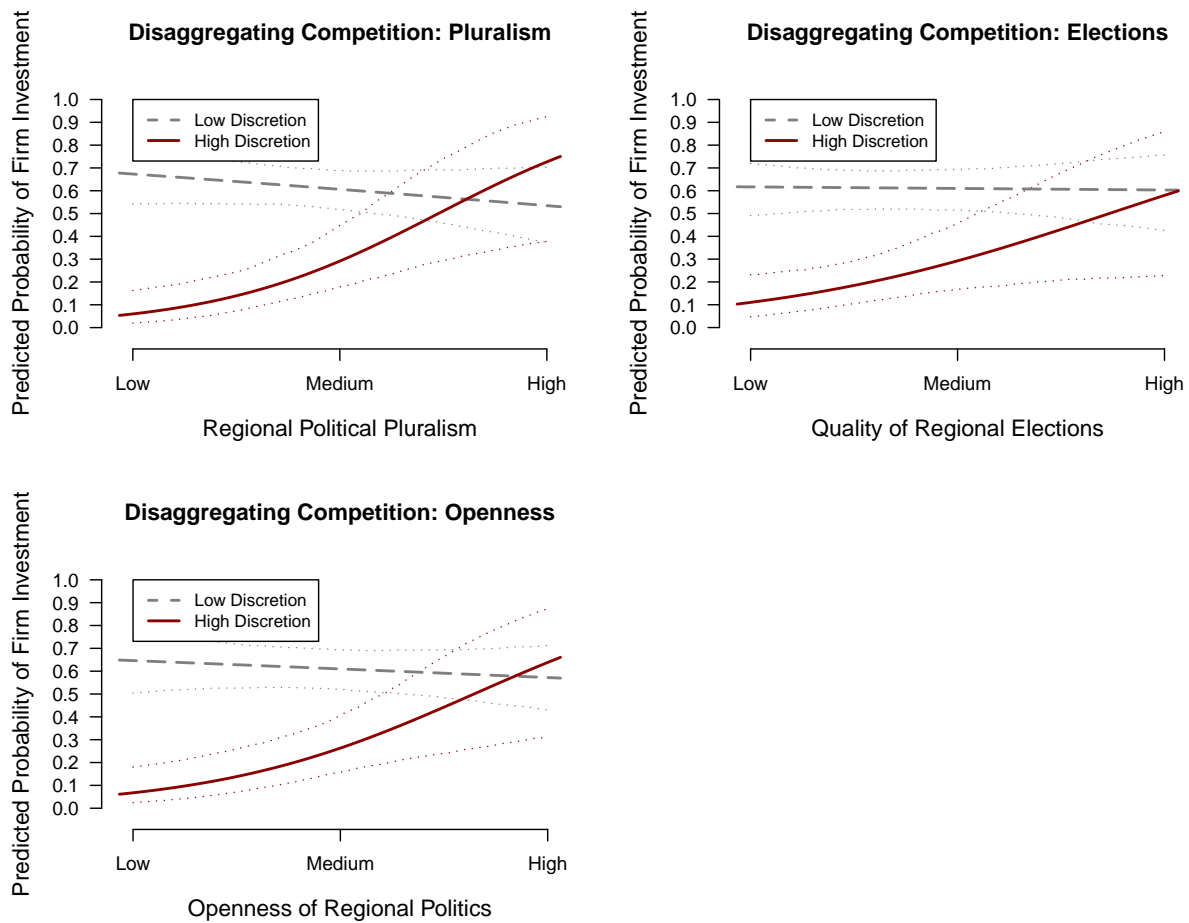
Note: Firm-level survey data from Frye (2006), region-level democracy scores for the eleven sampled regions come from the Moscow Carnegie Center and economic data from *Rosstat*. Bold lines represent the predicted probability that a hypothetical firm would invest, given the level of regional political competition; discretion is manipulated from minimum (1) to maximum (4) while holding all variables at their median value. Small dashed lines represent 90% confidence intervals obtained via simulation in R.

Figure 5: **Predicted Prob. Plots: Alternate Measures of Competition & Discretion, Part 1**

Figure 6: **Predicted Prob. Plots: Alternate Measures of Competition & Discretion, Part 2**