

OUT OF THE GRAY:
The Impact of Provincial Institutions on Business Formalization in Vietnam

WEB APPENDICES

Note: These items are not intended for publication. They are simply meant to provide reviewers with sufficient information on the data used in the analysis. If this article is fortunate enough to be accepted for publication, these will be posted online.

Appendix 1: Descriptive Statistics and Source Information

Appendix 2: Results by Industrial Sector

Appendix 3: Provincial-Level Analysis of Formalization and Governance

Appendix 1: Descriptive Statistics and Sources					
Variables Used in Analysis	Mean	SD	Min	Max	Source
Dependent Variables					
Informal Investment/Total Private Sector Investment	15.72	17.69	0.50	112.07	GSO 1/GSO2
Firm began operations as informal	0.61	0.49	0.00	1.00	PCI Survey 2007
Gap in months between registration and establishment	13.40	54.53	0.00	180.00	PCI Survey 2007
Key Causal Variables					
Unweighted Economic Governance Index	59.34	6.37	43.93	76.02	PCI Index 2007
Sub-Index 2: Land Access	6.24	0.65	4.32	7.71	PCI Index 2007
Sub-Index 10: Legal Institutions	4.29	1.01	2.25	6.57	PCI Index 2007
Percentage of land with formal title (LURC)	60.48	20.91	13.28	97.46	MONRE 2007
Percentage of cases filed in Provincial Economic Court	63.63	33.64	0.00	150.00	PSC 2007
Instruments					
Distance from the 17th Parallel	702.14	314.48	80.00	1447.00	Author's Coding
Percentage of Special-Use Land for Military	4.46	6.14	0.30	35.62	MONRE 2007
Firm-Level Controls					
Years since firm establishment	7.18	6.06	1.00	70.00	PCI Survey 2007
Years since establishment squared	88.24	234.68	1.00	4900.00	PCI Survey 2007
Enterprise Law	0.80	0.40	0.00	1.00	Author's Coding
Equity capital at time of establishment	1.96	0.99	1.00	8.00	PCI Survey 2007
Exporting firm	0.10	0.30	0.00	1.00	PCI Survey 2007
Firm operates on household land	0.62	0.49	0.00	1.00	PCI Survey 2007
Owner is a former government official or SOE manager	0.05	0.21	0.00	1.00	PCI Survey 2007
Owner is a former SOE employee	0.03	0.17	0.00	1.00	PCI Survey 2007
Province-Level Controls					
Telephones per Capita 1995	0.09	0.09	0.01	0.57	GSO 3
Secondary School Graduates	92.29	6.24	74.74	99.87	GSO 3
Percentage of minorities in province	1.71	1.14	1.00	5.00	GSO 3
Province located south of 17th parallel	0.57	0.50	0.00	1.00	Author's Coding
Province is a national-level city	0.11	0.31	0.00	1.00	Author's Coding
GDP per capita (ln)	8.77	0.86	6.52	11.51	GSO 3

Notes on Sources: PCI Survey 2007: Data is from the Provincial Competitiveness Survey available at www.pcvietnam.org; PCI Index 2007: Composite indices created from survey data. Available at www.pcvietnam.org. (See Vietnam Competitiveness Initiative (2007). The Vietnam Provincial Competitiveness Index 2007: Measuring Economic Governance for Private Sector Development, US-AID: Hanoi, Vietnam) for more details on construction. GSO 1: General Statistical Office. 1995-2007. The Real Situation of Enterprises Through the Results of Surveys Conducted. Hanoi: Statistics Publishing House; GSO 2: General Statistical Office. 1995-2007. The Real Situation of Household Enterprises Through the Results of Surveys Conducted; Hanoi: Statistics Publishing House; GSO 3: General Statistical Office. 1995-2006. Statistical Handbook. Hanoi: Statistical Publishing House; MONRE: Ministry of Natural Resources and the Environment (MONRE). 2005. Total Available Land and Land with Land Use Rights Certificate. Hanoi, Vietnam (Data provided directly to authors); PSC: People's Supreme Court. 2005, 2006 & 2007 Cases Held in Provincial Economic Courts. Hanoi, Vietnam. (Data provided directly to authors).

Table A2: Formalization by Industrial Sector

ISIC 1-Digit	Establishments beginnng operations as Informal (%)	Gap between Establishment and Registration (Months)
Primary Products	58.20%	10.04
Manufacturing (low value added)	61.77%	15.58
Manufacturing (high value added)	62.71%	17.50
Manufacture of Transport/Utilities	64.10%	9.04
Construction	63.60%	5.10
Transportation Services	62.45%	5.42
Communication Services	42.05%	1.33
Professional, Science, Technical Activities	43.97%	5.71
Administrative Activities	60.00%	0.57
Arts, Entertainment, Recreation	52.17%	8.35

Appendix 3: Percentage of Private Sector Investment that is Informal

Because our data only includes formal firms, we cannot directly analyze firms that chose to enter as household business and have remained indefinitely in that sector. This information must be assessed in aggregate by the percentage of the private sector investment produced by the informal sector. We begin by briefly summarizing these aggregate results.

[Table A3 about Here]

Table A3 augments the scatter plot shown in Figure 2, by controlling for province-level structural characteristics described above. Model 3, the fully-specified model, shows that each ten-point improvement in governance institutions leads to a 9% reduction in the size of the informal sector. Subsequent models show that this relationship is robust to a Tobit specification (Model 4), dropping Vietnam's five metropolitan centers (Model 5), and alternative methods of formality such as the total number of formally registered firms (Model 6) and the household enterprise registration rate (Model 7), which is an estimation of the percentage of household firms that declared their operations to the district tax authority. The latter measure is particularly interesting, because it shows that institutions of governance are not only associated with moving out of the gray economy (i.e. registering at the province-level Department of Planning and Investment), but also with the decision to move from the black economy to the gray economy. A ten-point improvement in the PCI is associated with a 6.4% increase in household registration.

Table A3: Impact of Provincial Governance on the Level of Informal Investment in a Province

<i>Dependent Variable:</i> Household Investment/Formal Private Investment	Informal Share of Private Investment			Robust to Specification		Robust to Dependent Variable	
	OLS (1)	OLS (2)	OLS (3)	TOBIT (4)	OLS (w/o Cities) (5)	Registered Firms (#) OLS (6)	HH Registration Rate OLS (7)
Provincial Economic Governance	-1.415*** (0.469)	-1.216** (0.459)	-0.862** (0.347)	-0.822*** (0.299)	-0.860*** (0.320)	0.00552* (0.00322)	0.644** (0.285)
Telephones per Capita 1995		-12.96 (20.77)	-25.31 (24.18)	-65.89 (46.19)	-199.5** (80.98)	2.816*** (0.326)	49.94*** (14.30)
Secondary School Graduates		-0.760** (0.344)	-0.118 (0.244)	0.0320 (0.239)	0.183 (0.290)	0.00210 (0.00377)	-0.0279 (0.443)
GDP per capita (natural log)		0.991 (5.343)	2.626 (4.646)	3.954 (4.845)	6.963 (5.273)	0.0868 (0.0656)	-0.859 (2.370)
Population		-0.00548** (0.00223)	-0.00325** (0.00148)	-0.00271 (0.00191)	-0.00724*** (0.00155)	-0.00000643 (0.0000320)	-0.00143 (0.00140)
Percentage of minorities in province			6.652*** (1.970)	7.248*** (2.017)	6.441*** (1.846)	-0.0127 (0.0176)	7.245*** (1.274)
Province located south of 17th parallel			8.389* (4.666)	11.41** (5.611)	14.76** (6.506)	-0.00181 (0.0492)	3.202 (4.630)
Constant	98.84*** (28.91)	163.4*** (50.34)	61.86** (28.01)	42.98* (24.84)	40.07 (28.96)	-0.278 (0.429)	-12.68 (45.41)
Observations	64	64	64	64	59	64	64
R-squared	0.287	0.491	0.614	-239.3	0.692	0.856	0.445
Root Mean Squared Error	15.05	13.15	11.66		10.63	0.124	10.23
Log Likelihood				-271.7***			-254.2

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Dependent Variable is defined as the Share of Assets held by the Household Sector of the Share of Assets held by Formal Private Sector in the provincial economy.

Model 1 is a bivariate regression using the key causal variable of economic governance, measured by the Provincial Competitiveness Index 2007. Model 2 adds controls for provincial endowments. Model 3 controls for political factors such as minorities in the province and geographic location. Model 4 replicates Model 3 with a Tobit Specification. Model 5 drops national-level cities. Model 6 replaces the dependent variable with natural log of registered private firms per 1000 citizens. Model 7 replaces the dependent variable with the percentage of household firms registered as such at the district level.