CLOSING THE INSTITUTIONAL GAP:
Protecting Technology in Foreign Direct Investment

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Pfizer in China

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- Pfizer appealed the decision in local courts
- US Chamber of Commerce: a step backward for IPR protection
- US Trade Representative discussed issue
- Beijing High People's Court reversed the decision in 2006

This paper

How do MNCs protect their technology and intangible assets in countries with relatively weak rule of law?

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Argument:

MNCs protect their technology through host country institutions instead of bypassing them. By doing so, MNCs close the institutional gap between IP protection levels in their home and host state.

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Contribution:

FDI $\rightarrow$ Domestic governance standards in developing countries

- "Climb to the top"

  (Mosley and Uno 2007, Malesky 2009, and Wang 2015)

- Firm strategies of property protection

  (Moran 1973, Wellhausen 2014, Johns & Wellhausen 2016)

Existing explanation

International forums protect against state infringement

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Available avenues:

- WTO Trade-Related Aspects of Intellectual Property Rights (TRIPS)
- International investment agreements, eg. bilateral investment treaties

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Coverage is inadequate for intangible assets protected as intellectual property

Table: Intellectual property disputes in international forums

International Institutions	Number of IP cases	Percentage of total
WTO disputes	42	7%
ICSID administered cases	6	0.6%

MNC bargaining for intellectual property protection

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Host countries:

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- Trade-offs to expropriating over the short term and absorbing over the long term

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This calculation is unclear ex ante $\Rightarrow$ Host government can adjust its judgment based on the behaviors of the multinational firms in the local economy

Two-level bargaining framework

MNCs seek changes to host country institutions through political strategies:

- Firm - host state level $\rightarrow$ de facto changes
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  - Countries change their laws to avoid economic repercussions (Sell 1995, Shadlen, Schrank, and Kurtz 2005, Jandhyala 2015)

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▷ I expect MNC activity to lead to institutional changes in the host country

▷ Home country engagement leads more to de jure institutional changes

Hypotheses

FDI's effect on rule of law

Data: Home-host dyad panel data

- DV: The International Property Rights Index (IPRI) (2007-2019)
- Institutional distance $IPRI_{j,t} - IPRI_{i,t}$
- Independent variable: Technological investments from home to host
- Model: Fixed effects model with year and dyad fixed effects
- Independent variables are lagged

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Instrumental variable method:

- ▷ Shift-share instrument that predicts R&D investment from home country j to host country i

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Controls: WTO TRIPS, bilateral agreements, trade dependency, GDP, GDP per capita

Details

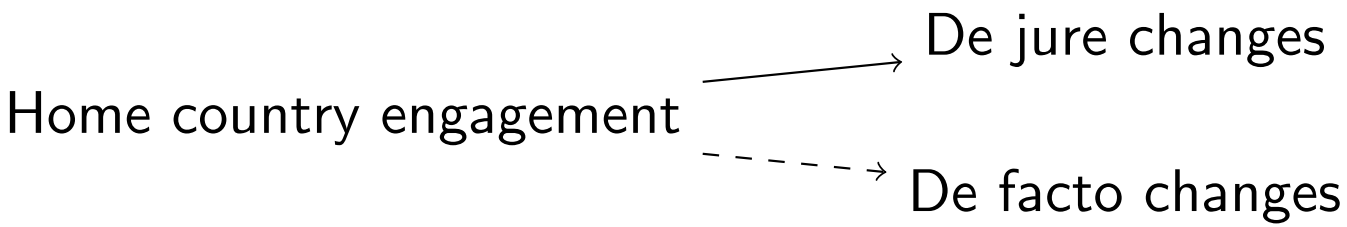
Main effects table

Table: Closing the institutional gap

	(1) IP distance OLS	(2) IP distance OLS	(3) IP distance 2SLS	(4) IP distance 2SLS
R&D FDI (standardized)	-0.016*	-0.016***	-0.031**	-0.033**
	(0.008)	(0.005)	(0.014)	(0.014)
Number of PTAs		0.129*		0.134**
		(0.063)		(0.062)
TRIPS Complaint		0.035		0.036
		(0.155)		(0.168)
Trade Dependency (log)		0.011		0.024
		(0.058)		(0.061)
GDP (log)		1.991		2.151
		(2.158)		(2.290)
GDP per capita (log)		-2.363		-2.534
		(2.038)		(2.167)
BIT (dummy)		-0.011		-0.001
		(0.132)		(0.138)
Constant	2.399***	-37.357		
	(0.000)	(40.564)		
Observations	2,236	2,227	2,118	2,109
R-squared	0.904	0.911		
Kleibergen-Paap F-statistic			21.26	21.46
Year FE	✓	✓	✓	✓
Dyad FE	✓	✓	✓	✓

First stage regression | Host country change | Sector level weighted analysis

Assessing the home government channel



Assessing the home government channel

The United States Trade Representative's Special 301 annual review

- Targets intellectual property practices in foreign countries
- Businesses have direct input in the process
- 99 countries listed on watch list at least once since 1989 (e.g. Australia, Canada, China, Argentina)

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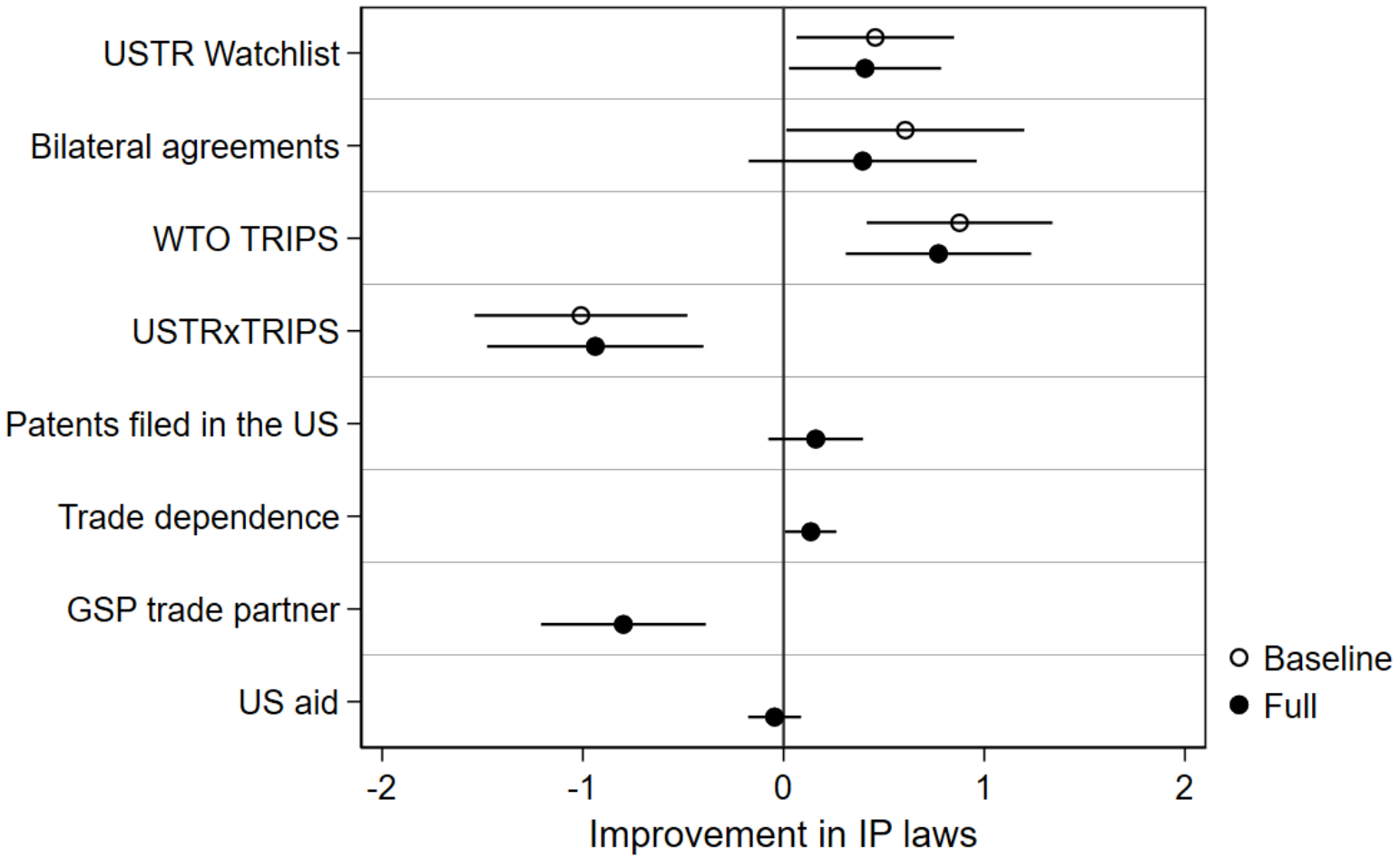
Model: Panel fixed effect model with country FE and year FE

Details

The effect of home country engagement on IP laws



90% confidence intervals displayed. 59 developing countries in the sample.

Table | Original WIPO measure | WEF measure

Conclusion

Does foreign direct investment influence how host countries' domestic institutions develop, and if yes, how?

FDI contributes to better rule of law in their countries of destination

A two-level strategy:

- Political strategies in the host country: GE case study
- Home government leverage: USTR annual review

Implications:

- Role of state and non-state actors in shaping governance regimes
- Importance of international firms in shaping domestic institutions
- Limitations of international forums in rules making & enforcement

Thank you

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Hypotheses

Closing the gap hypothesis

Host country institutions for intellectual property protection improve with increasing investment from a home country, where the home country has higher institutional quality than the host country.

Home country engagement hypothesis:

Engagement by the home country in terms of changing IP practices in host countries results in improvement of de jure protection of intellectual property, but less improvement in de facto enforcement.

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Instrumental variable method:

- Shift-share instrument that predicts R&D investment from home country j to host country i:
  $\hat{TechFDI}_{i,j,t} = TechFDI_{j,t} \times \phi_{i,j}$
  - "Shift" $TechFDI_{j,t}$ is total FDI in R&D that originates from home country j each year
  - "Share" $\phi_{i,j}$ is the average share of R&D investment that flowed from country j to country i over 2005, 2006, 2007

- Controls: WTO TRIPS, bilateral agreements, trade dependency, GDP, GDP per capita

- Used to study food aid & conflict (Nunn & Qian 2014), migration & voting (Calderon, Fouka, Tabellini 2021)

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First stage results

Table: First stage results for 2SLS estimation

	(1) R&D investment
Shift-share instrument L.instrument_sd	0.820***
	(0.177)
Number of PTAs	-0.0206
	(0.0424)
TRIPS Compliant	0.0278
	(0.0266)
Trade Dependency	-0.0164
	(0.0208)
GDP	0.398
	(0.445)
GDP per capita	-0.362
	(0.503)
BIT	0.154
	(0.147)
Constant	-7.481
	(8.764)
Observations	2,109
Kleibergen-Paap F-statistic	21.46
Year FE	✓
Dyad FE	✓

Robust standard errors clustered by host country in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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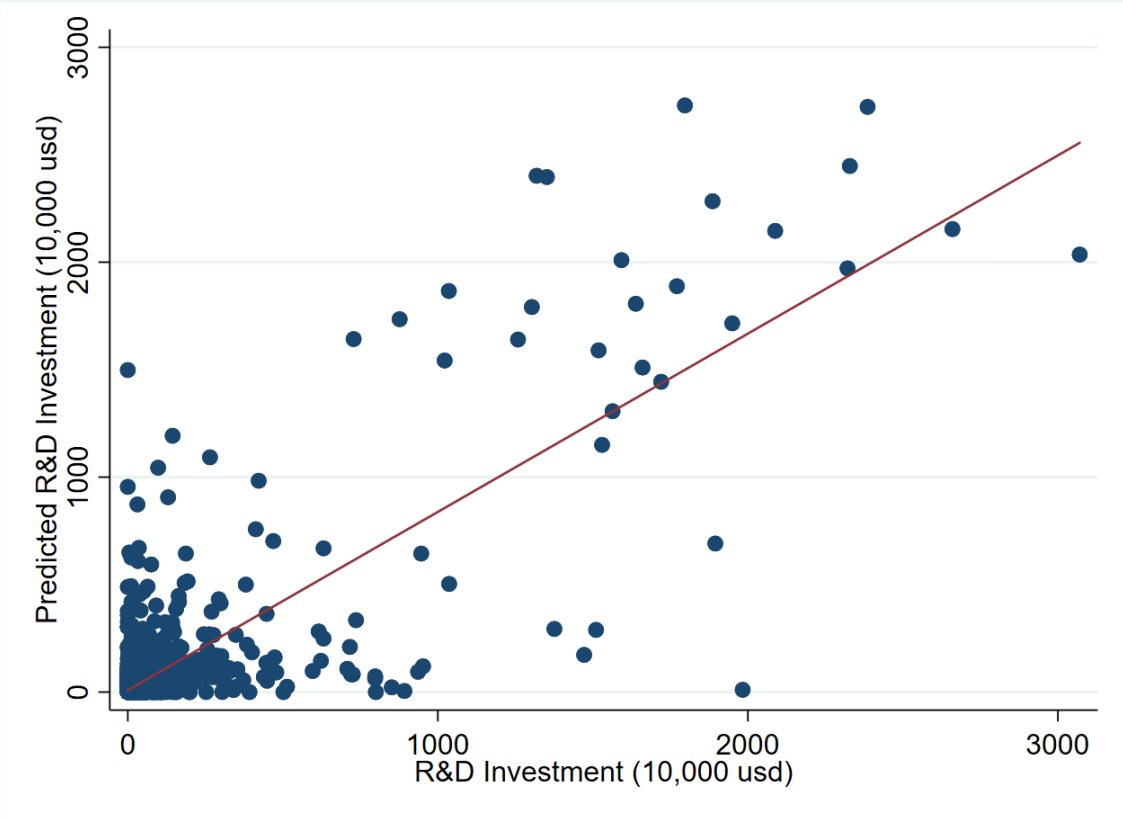
Fit of predicted investment flows

Figure: Comparison of predicted technology investment flows with actual flows



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Alternative DV: Change in host country IP levels

Table: Effect of tech FDI on host country institutions

	(1) Change in DV	(2) Change in DV
R&D FDI (standardized)	0.012***	0.012***
	(0.004)	(0.003)
Total of PTAs		-0.034
		(0.037)
TRIPS Compliant		-0.011
		(0.068)
Trade Dependency (log)		0.015
		(0.023)
GDP (log)		-0.012
		(0.652)
GDP per capita (log)		0.213
		(0.615)
BIT (dummy)		-0.055
		(0.078)
Constant	0.075***	1.439
	(0.000)	(12.239)
Observations	2,236	2,227
R-squared	0.346	0.364
Dyad FE	✓	✓
Year FE	✓	✓

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Sector-dyad level analysis

- Construct weight to account for collective action problem
- For a given amount of investment in a sector, the more firms there are from one country, the more likely there will collective action problems
- Weight: Number of firms from home to host country as a proportion of total firms in a host country in a given sector and given year

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Sector-dyad level results

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Table: Closing the institutional gap through tech FDI (weighted)

	(1) IP distance	(2) IP distance	(3) IP distance	(4) IP distance
R&D FDI (weighted)	-0.004**	-0.004	-0.004**	-0.004**
	(0.001)	(0.002)	(0.002)	(0.002)
Number of PTAs			0.145***	0.145**
			(0.036)	(0.059)
TRIPS Complaint			0.110	0.110
			(0.191)	(0.097)
Trade dependency (log)			0.104*	0.104**
			(0.058)	(0.042)
GDP (log)			3.672	3.672***
			(2.838)	(1.181)
GDP per capita (log)			-3.929	-3.929***
			(2.668)	(1.126)
BIT (dummy)			-0.010	-0.010
			(0.109)	(0.092)
Constant	2.412***	2.412***	-70.558	-70.558***
	(0.001)	(0.002)	(54.878)	(22.914)
Observations	10,147	10,147	10,122	10,122
R-squared	0.887	0.887	0.905	0.905
Dyad FE	✓	✓	✓	✓
Sector FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Clustered SE	Host	Dyad	Host	Dyad

Institutional effects of home country engagement

- Panel data based on USTR Special 301 annual review (1989-2019)
- Additional measure of home country engagement: IP commitments negotiated with the US bilaterally
- De jure measure: Morin and Gold index
  - Measures the adoption of IP rules that are specific to US demands for increased IP protection (1995-2011)
- De facto measure: IMD World Competitiveness Yearbook
  - Executive Opinion Survey: "Intellectual property rights are adequately enforced" (1995-2019)

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Table: Effect of USTR targeting on IP institutions

	De jure (0-9)			*De facto* (1-10)		
Targeted	0.46*	0.40*	0.15	-0.00	0.06	0.08
	(0.23)	(0.23)	(0.18)	(0.17)	(0.18)	(0.17)
Bilateral agreement	0.61*	0.39	0.61*	-0.24	-0.27	-0.19
	(0.35)	(0.34)	(0.34)	(0.17)	(0.18)	(0.18)
TRIPS	0.88***	0.76***	0.53*	0.03	0.06	0.06
	(0.28)	(0.27)	(0.31)	(0.18)	(0.20)	(0.19)
Target × TRIPS	-1.01***	-0.93***	-0.41	-0.23	-0.28	-0.26
	(0.32)	(0.32)	(0.35)	(0.18)	(0.18)	(0.17)
USPTO patents (log)		0.16	0.08		0.06	0.08
		(0.14)	(0.13)		(0.11)	(0.11)
Trade dependence (log)		0.14*	0.05		-0.06	0.01
		(0.08)	(0.06)		(0.13)	(0.13)
GSP country		-0.79***	-0.65***		-0.18	-0.08
		(0.24)	(0.23)		(0.15)	(0.14)
Foreign aid (log)		-0.04	0.02		0.00	0.01
		(0.04)	(0.03)		(0.01)	(0.01)
IP law diffusion			-0.09			-0.06
			(0.09)			(0.05)
GDP (log)			-5.32***			-0.99*
			(1.90)			(0.51)
GDP per capita (log)			5.86***			1.22**
			(1.76)			(0.56)
Polity score			0.04			0.04
			(0.04)			(0.03)
Alliances (dummy)			-0.30			-0.10
			(0.43)			(0.25)
Observations	980	959	948	1,230	1,196	1,171
R-squared	0.57	0.61	0.66	0.28	0.30	0.33

Original de jure (WIPO) measure

Figure: Number of countries that pass main IP laws in a given year (1985-2018)

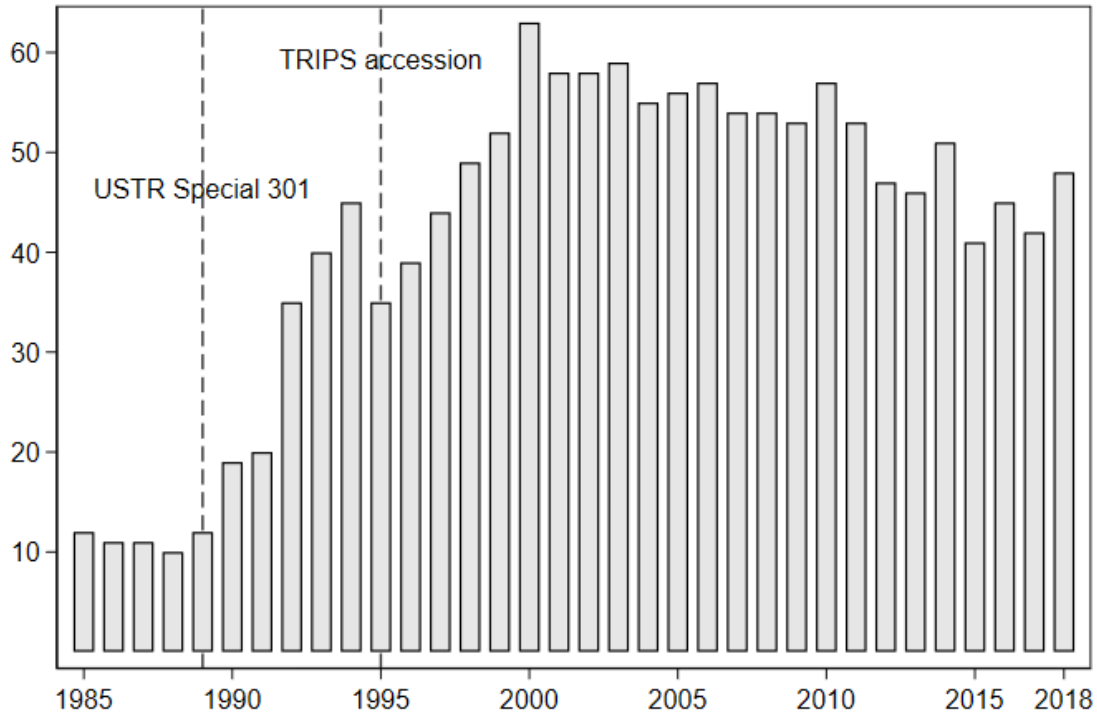

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Table: Effect of US engagement on IP laws: WIPO measure

	(1)	(2)	(3)
Targeted	0.40***	0.43**	0.37*
	(0.15)	(0.19)	(0.19)
Bilateral agreement	0.62***	0.40	0.37
	(0.23)	(0.32)	(0.32)
TRIPS	-0.44	-0.34	-0.35
	(0.27)	(0.32)	(0.28)
Target × TRIPS	-0.38**	-0.37*	-0.32
	(0.19)	(0.22)	(0.20)
USPTO patents (log)		0.13	0.10
		(0.10)	(0.11)
Trade dependence (log)		0.07	0.06
		(0.08)	(0.07)
GSP country		0.02	-0.05
		(0.21)	(0.21)
Foreign aid (log)		0.03*	0.04**
		(0.02)	(0.02)
IP law diffusion			0.00
			(0.13)
GDP (log)			-0.10
			(0.51)
GDP per capita			0.28
			(0.56)
Polity score			0.04
			(0.03)
Alliances (dummy)			-0.01
			(0.36)
Observations	2,910	2,714	2,477
Number of iso3n	97	94	86
Year FE	✓	✓	✓