

# Institutions and comparative advantage in service trade

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# Motivation

- **Goods trade:** Good institutions and high human capital important for exporting complex goods.
- **Comparative advantage:** Countries with strong domestic institutions specialize in production of complex, high value-added goods.
- **Channel:** Production of complex goods requires specialized, relationship-specific capital investment.
- **Service trade:** Are services just like goods?
- **Institutions and services:** Services provision often might rely less on public infrastructure, availability of large variety of inputs, property rights and capital investments.

# What we do

- Study the role of institutions in determining services exports
- Focus on ICT sector: large goods and services sector, human capital intensive, allows to isolate the differences between goods and services.
- Preview of findings
  - Countries with weak institutions rely more on services exports (conditional on high human capital availability).
  - Take-away: services can provide a cushioning effects to negative growth and development effects of weak institutions, increase returns to education.

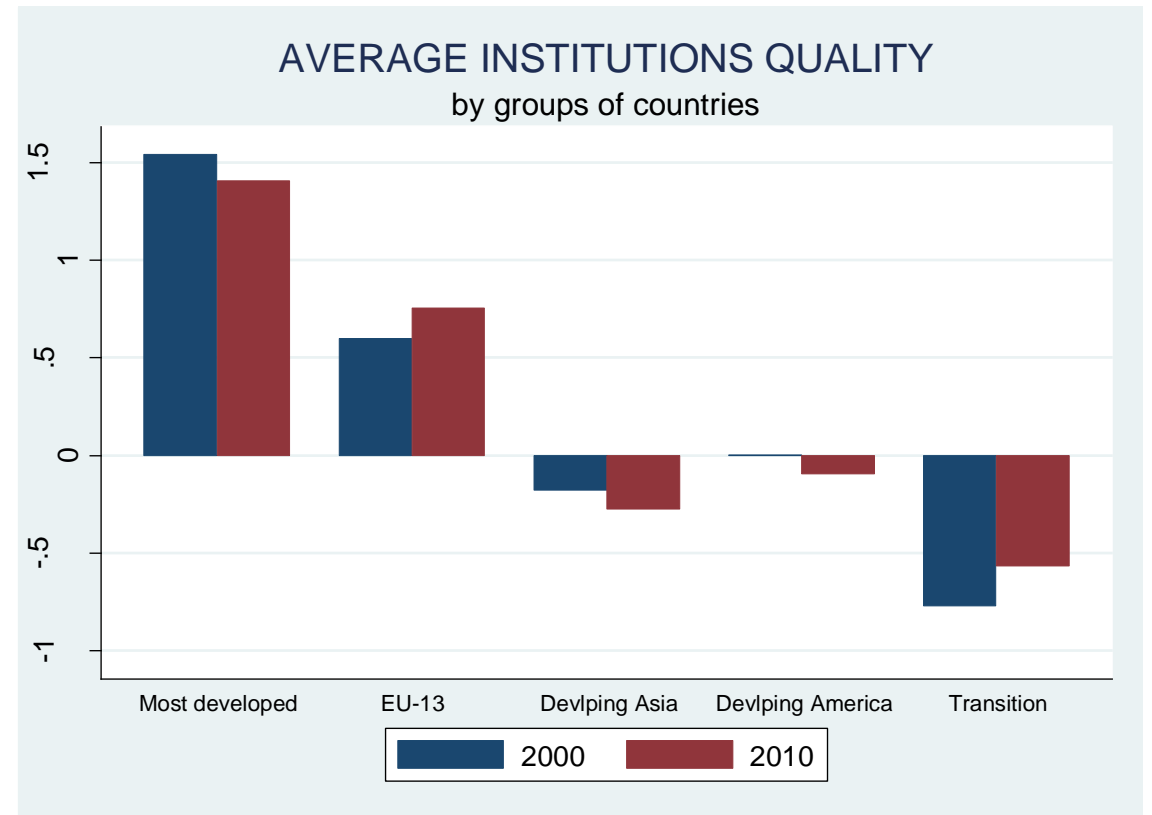
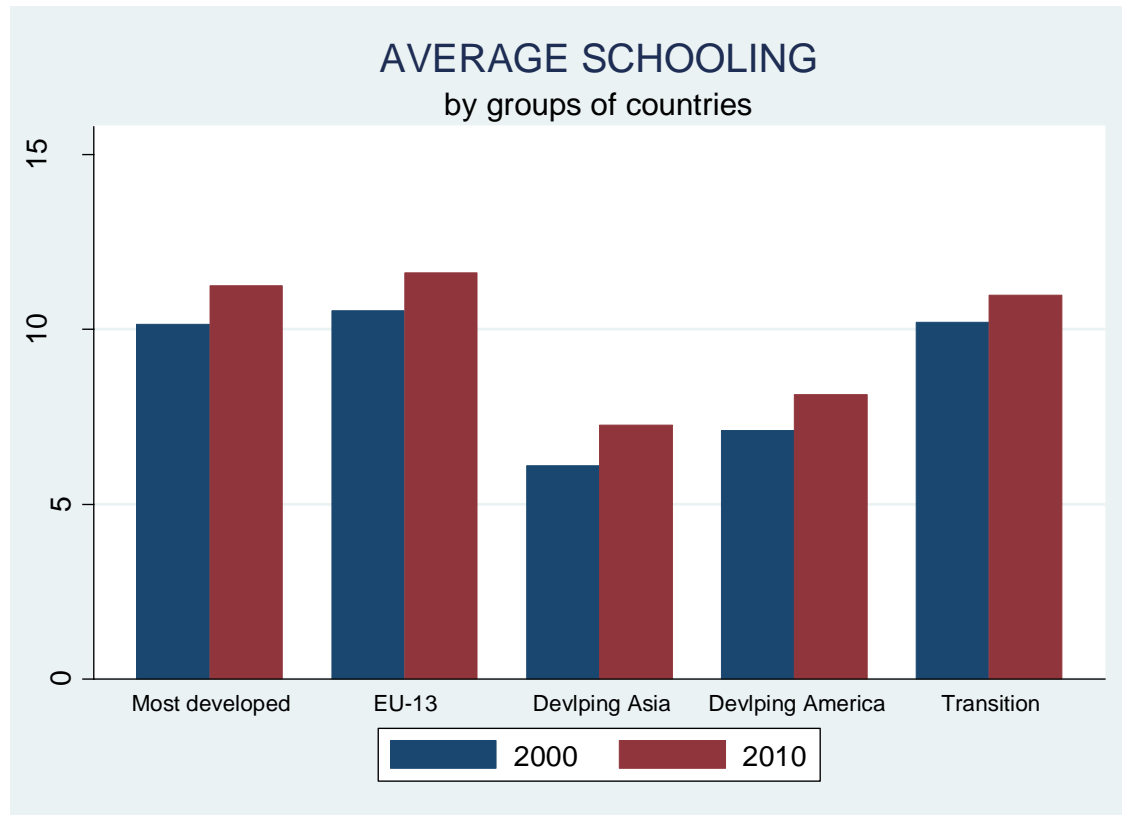
# Data

- **Service export** data from **Trademap dataset**. Data is available for all countries for years from 2000 to 2016
- **Goods export** from **World Development Indicators** dataset
- For **schooling data** (years of schooling) we use **Barro – Lee dataset**
- All **institutional data** from **World Governance Indicators Dataset**.
  - Voice and Accountability
  - Political Stability
  - Government Effectiveness
  - Regulatory Quality
  - Rule of Law
  - Control of Corruption
- Alternative source of institutional data: Heritage Foundations (property rights)

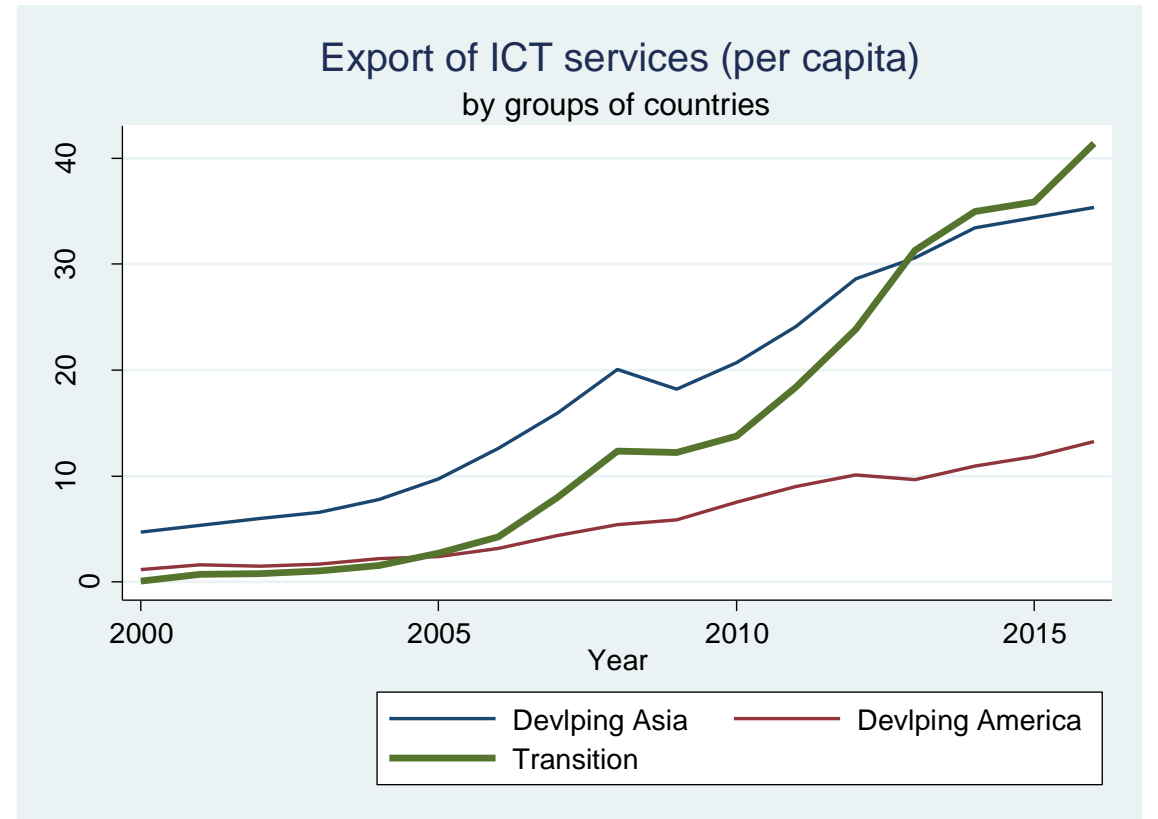
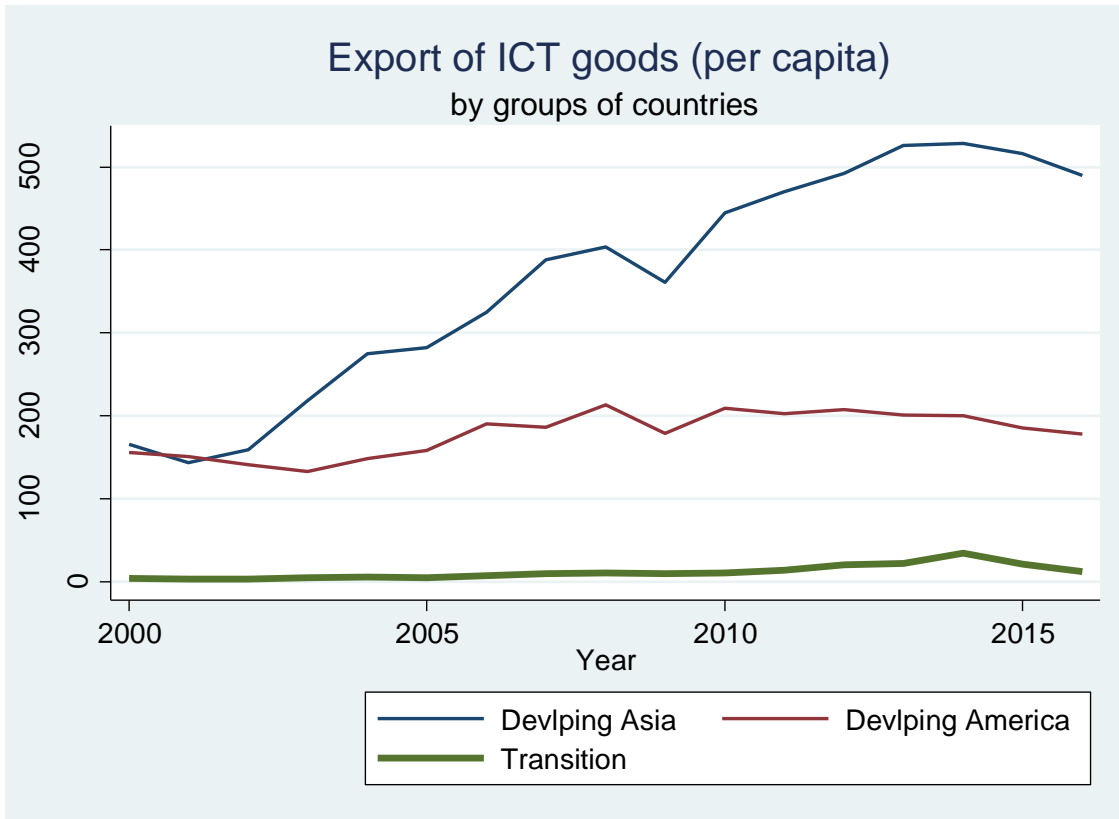
# Institutions

- **Control of corruption** captures perceptions of the extent to which public power is exercised for private gain
- **Rule of law** captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights
- **Voice and accountability** captures perceptions of the extent to which a country's citizens are able to participate in selecting their government

# Institutions and schooling



# Institutions and schooling



# Case example: Belarus

- Fundamental education in Belarus is at a level of the most advanced countries
  - There are about 7,000 graduates in IT industry in a year
- Services vs goods:
  - ICT service export in Belarus is thriving: 150 millions USD was in 2008, 1.2 billion USD in 2017.
  - Compare to ICT goods export: 105 millions USD in 2008 and 150 million USD in 2017
- Belarus is one of the leading exporters of ICT services in the world (per capita)
- High Technology Park in Minsk (<http://www.park.by/>) offers the most competitive IT jobs in the region



# Share of services in IT and Revealed Comparative Advantage index

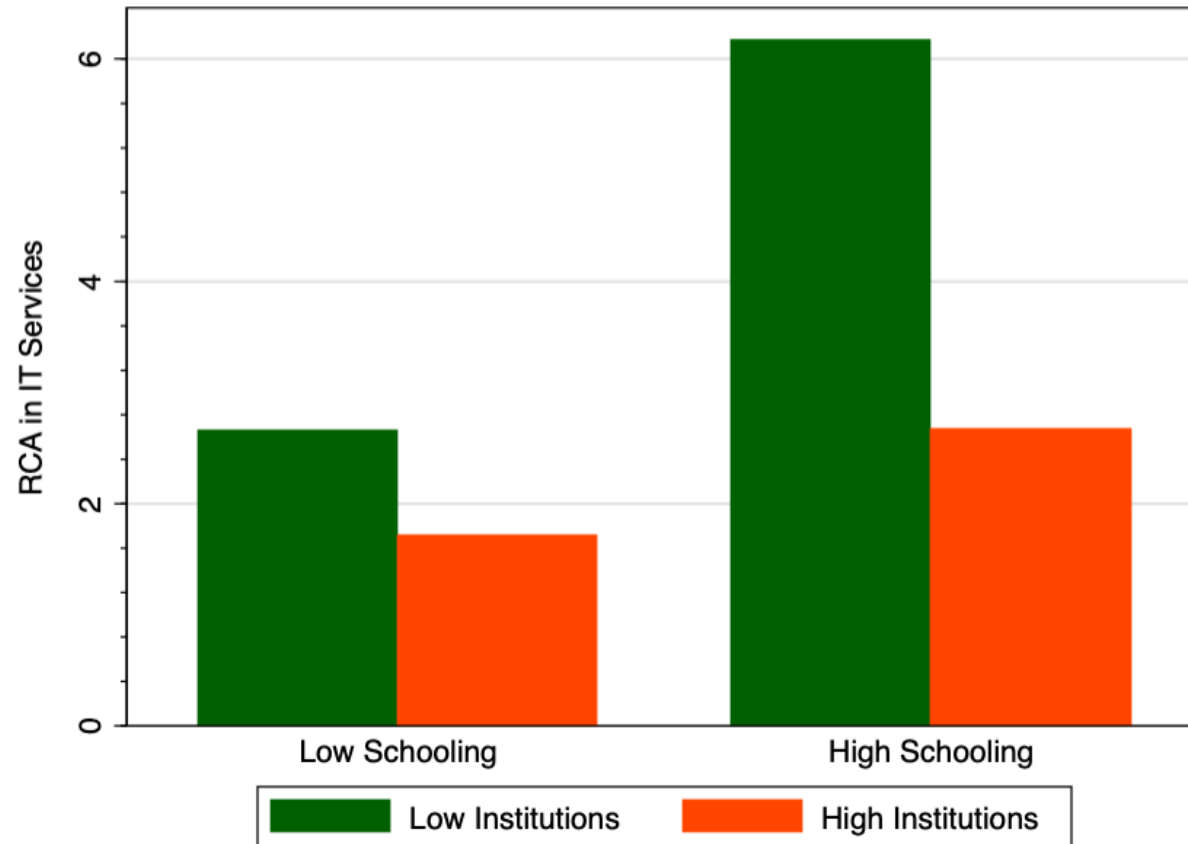
- Share of services in IT sector

$$ICTSERV_{sh,t}^i = \frac{ICT\ serv\ Export_t^i}{Total\ ICT\ export_t^i}$$

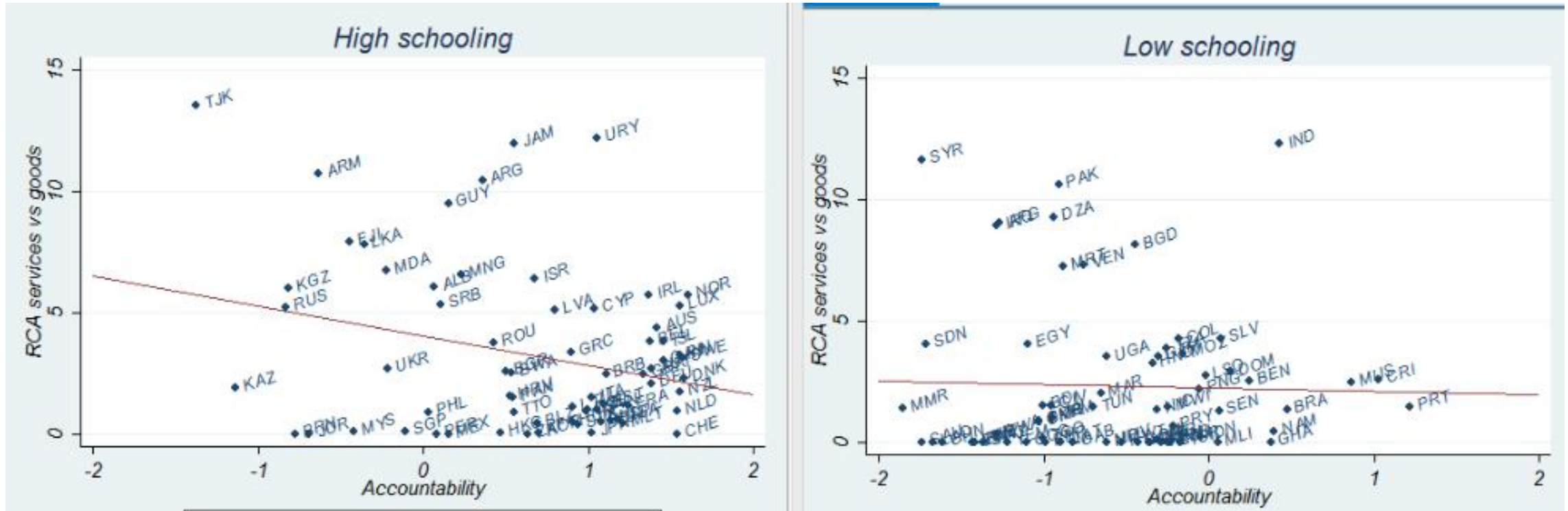
- Revealed Comparative Advantage index (for country  $i$ )

$$RCA_{ITserv,t}^i = \frac{\frac{ICT\ serv\ Export_t^i}{Total\ ICT\ export_t^i}}{\frac{\sum_i ICT\ serv\ Exp_t^i}{\sum_i Total\ ICT\ export_t^i}}$$

# RCA index, schooling, and institutions



# Institutions: Accountability



# Regression analysis

- A country  $i$  has a revealed comparative advantage in services exports of ICT in year  $t$  if RCA index is greater than one
- We rely on a Probit model to assess the impact of institutional quality on the probability of having a revealed comparative advantage in services.

$$Y^*_{it} = \alpha I_{it} + \beta X_{it} + \lambda \bar{I}_{it} + \theta \bar{X}_{it} + \gamma_t + \epsilon_{it}$$

- $Y^*_{it}$  - whether country  $i$  has RCA in year  $t$
- $I_{it}$  - institutions,  $X_{it}$  - controls

Alternative: we use log of RCA index instead of binary RCA variable

# Table 1: overall institutions effect

	(1)	(2)	(3)	(4)	(5)	(6)
	Pr RCA	Pr RCA	Pr RCA	Pr RCA	Pr RCA	Pr RCA
Pr RCA						
Institutions	-0.16** (0.055)	-0.21*** (0.062)	-0.19** (0.070)	-0.17* (0.067)	-0.023 (0.056)	-0.14+ (0.074)
Log GDP		-0.19 (0.15)	-0.41* (0.16)	-0.39** (0.15)	-0.25* (0.12)	-0.54** (0.18)
Log GDP PC		0.25 (0.16)	0.37* (0.17)	0.37* (0.16)	0.18 (0.12)	0.50** (0.19)
Schooling						0.012 (0.027)
Year FEs	Yes	No	Yes	Yes	Yes	Yes
Min USD 1mln	Yes	Yes	Yes	No	No	Yes
Min USD 1	Yes	Yes	Yes	Yes	No	Yes
Observations	1095	1092	1092	1289	2197	1019
$R^2$						
Adjusted $R^2$						

Standard errors in parentheses

+  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# Table 2: specific channels (specification 3)

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Pr RCA						
Corruption	-0.11*					
	(0.047)					
Gov eff		-0.00015				
		(0.047)				
Pol stab			-0.0088			
			(0.027)			
Reg quality				-0.15**		
				(0.052)		
Rule of law					-0.11 <sup>+</sup>	
					(0.055)	
Accontb						-0.12**
						(0.040)
Log GDP	-0.41*	-0.30 <sup>+</sup>	-0.31 <sup>+</sup>	-0.39*	-0.39*	-0.32*
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
Log GDP PC	0.35*	0.21	0.22	0.34*	0.33 <sup>+</sup>	0.24
	(0.17)	(0.17)	(0.16)	(0.17)	(0.17)	(0.16)

# Table 3: Log of RCA, overall institutions

	(1)	(2)	(3)	(4)	(5)	(6)
	Log RCA	Log RCA	Log RCA	Log RCA	Log RCA	Log RCA
Institutions	-0.64* (0.28)	-0.77** (0.27)	-0.62* (0.29)	-0.57+ (0.34)	-0.66* (0.33)	-0.53 (0.32)
Log GDP		-0.85 (1.00)	-0.98 (1.22)	-1.56 (1.08)	-1.55+ (0.93)	-1.12 (1.33)
Log GDP PC		0.91 (1.06)	0.86 (1.24)	1.33 (1.10)	1.40 (0.96)	0.93 (1.36)
Schooling						0.056 (0.11)
Year FEs	Yes	No	Yes	Yes	Yes	Yes
Min USD 1mln	Yes	Yes	Yes	No	No	Yes
Min USD 1	Yes	Yes	Yes	Yes	No	Yes
Observations	1095	1092	1092	1286	1375	1019
$R^2$	0.057	0.021	0.063	0.059	0.050	0.068
Adjusted $R^2$	0.043	0.018	0.047	0.045	0.038	0.050

Standard errors in parentheses

+  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

# Table 4: Log of RCA, specific channels

Corruption	-0.46*					
	(0.20)					
Gov eff		-0.27				
		(0.30)				
Pol stab			-0.12			
			(0.14)			
Reg quality				-0.20		
				(0.23)		
Rule of law					-0.17	
					(0.23)	
Accountb						-0.33 <sup>+</sup>
						(0.18)
Log GDP	-1.04	-1.02	-0.78	-0.94	-0.92	-0.77
	(1.21)	(1.26)	(1.24)	(1.24)	(1.21)	(1.23)
Log GDP PC	0.87	0.82	0.57	0.74	0.69	0.54
	(1.23)	(1.29)	(1.26)	(1.28)	(1.22)	(1.25)



# Conclusion

- We believe that rational agents reallocate most resources to the production of services that are less sensitive to the institutional quality
- We show low quality institutions create comparative advantage in ICT services export as they act as an implicit tax on the production of complex goods
- Our results suggest that the main robust channels are corruption and accountability
- We think that services exports can be a novel development channel for countries with weak institutional, capital investments and infrastructure

# Groups

- **Developed economies:** Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States
- **EU-13 group:** Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia
- **Developing Asia:** Afghanistan, Bahrain, Bangladesh, Bhutan, Brunei, Darussalam, Cambodia, China, Fiji, Hong Kong SARc, India, Indonesia, Iran, Islamic Rep., Iraq, Israel, Jordan, Kiribati, Kuwait, Lao People's Democratic Republic, Lebanon, Malaysia, Maldives, Mongolia, Nepal, Pakistan, Papua New Guinea, Philippines, Qatar, Republic of Korea, Samoa, Saudi Arabia, Singapore, Solomon Islands, Sri Lanka, Syrian Arab Republic, Thailand, Timor-Leste, United Arab Emirates, Vanuatu, Vietnam, Yemen
- **Developing America:** Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay, Venezuela
- **Economies in transition:** Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kazakhstan, Kyrgyz Republic, Macedonia, Moldova, Montenegro, Russia, Serbia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan