Pillars of Prosperity

The Political Economics of Development Clusters

A TEN YEAR UPDATE

Chapter 2: Fiscal Capacity

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Outline

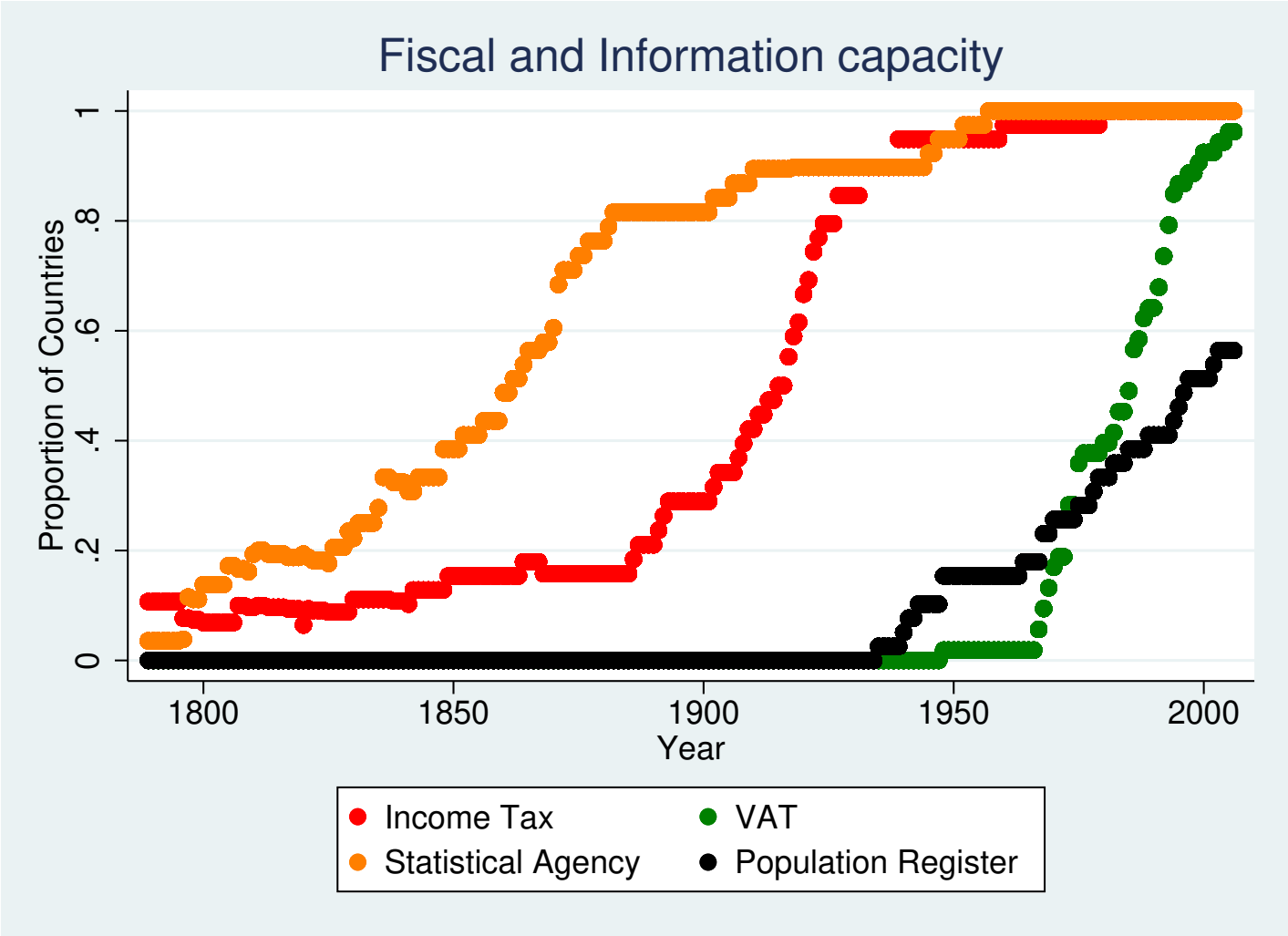
1. Introduction
2. Figures
3. Old Tables
4. New Tables
5. Basic Robustness Checks
6. Extensions

Introduction

- Here we reassemble the charts and tables from Chapter 2 of Pillars, comparing the main correlations with our new *Pillars 2.dta*.
  - We place these side-by-side with the old charts (where space permits).
  - All original figures are placed on the left, and new figures on the right.
  - The only figure we do not update from Pillars is Figure 2.1, as we keep the old data from the original *Pillars.dta* for the relevant variables (historical income tax and VAT dummies).
- We provide three sets of tables:
  1. Original tables from the book.
  2. New tables replicating the originals, but using new data for a cross-section ten years later.
  3. Robustness checks.
- Finally, in the 'Extensions' section, we provide new charts and tables exploring attitudinal variables and miscellaneous material based on other work we've carried out on fiscal capacity.

Fiscal and Information Capacity

- The following chart replicates figure 2.1 from Pillars but includes data from Lund University's 'Information Capacity Dataset' on when countries introduced statistical agencies and population registers.
- Due to the limited sample size for information capacity, we also restrict the VAT and income tax series to only those 39 countries with non-missing data from Lund University's dataset.
- As shown on the next slide, although fiscal capacity is more of a 20th century phenomenon, information capacity, at least with regards to statistical agencies, was a popular state feature from the mid-19th century onwards.
- Notwithstanding this, population registers, similar to VAT, are a relatively new bureaucratic state function, mainly adopted by Northern European countries for "programme planning, budgeting and taxation" (UNSD, n.d., para. 4).



Fiscal and Information Capacity in a sample of 39 countries

New Data, Same Cross-Section

- In the next two slides, we use new tax data from the International Centre for Taxation and Development (ICTD).
- We replicate the old versions of figures 2.2 and 2.3 in Pillars for the same 1999 cross-section conditional on income and total tax intake.
  - The old data used on taxes was from Baunsgaard and Keen (2005), which was only available for 1999 as a cross-section.

Figure: Original Figure

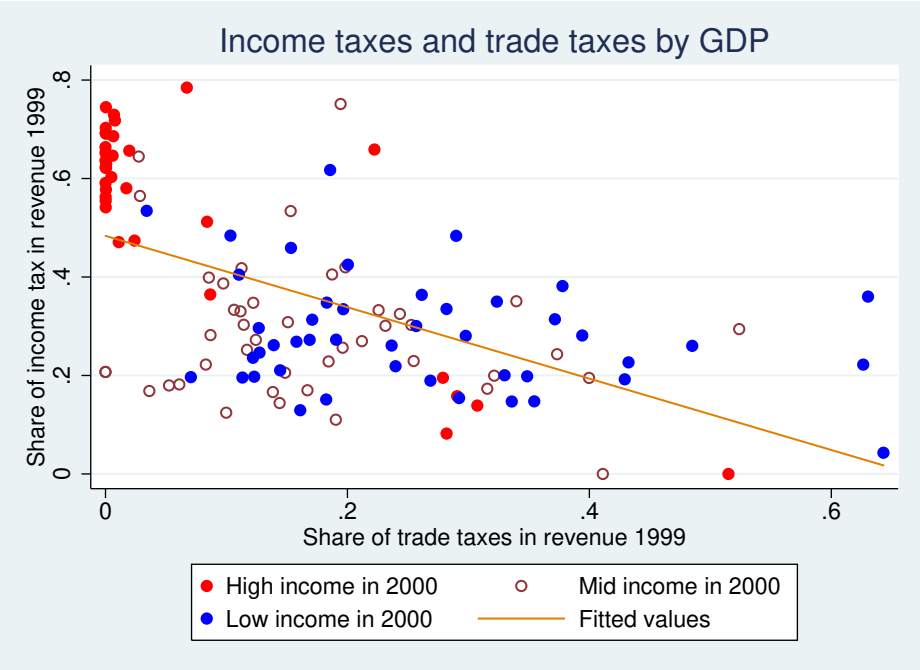


Figure: Original Cross-Section, New Data

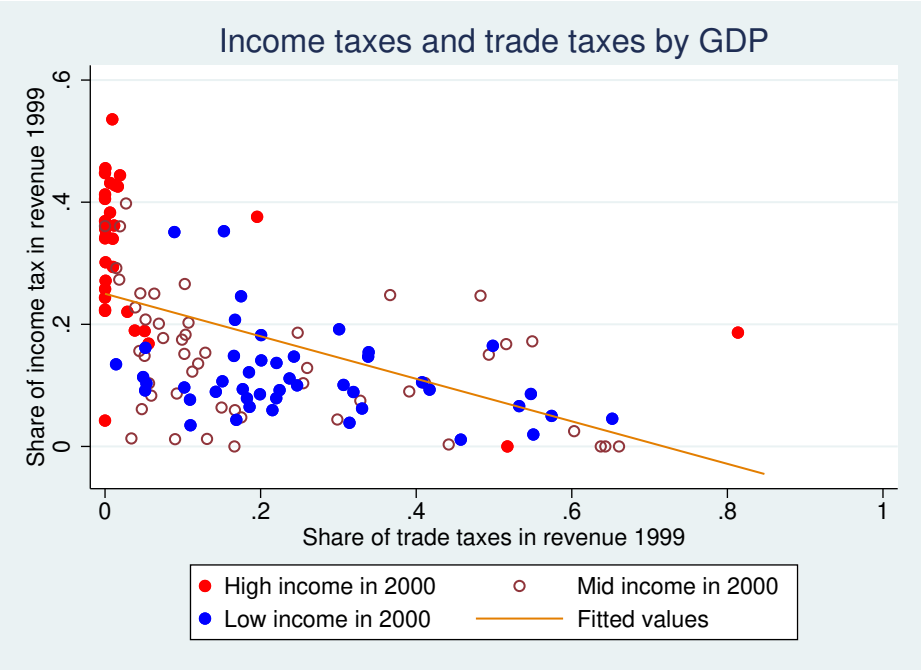


Figure 2.2 Income taxes and trade taxes conditional on income

Figure: Original Figure

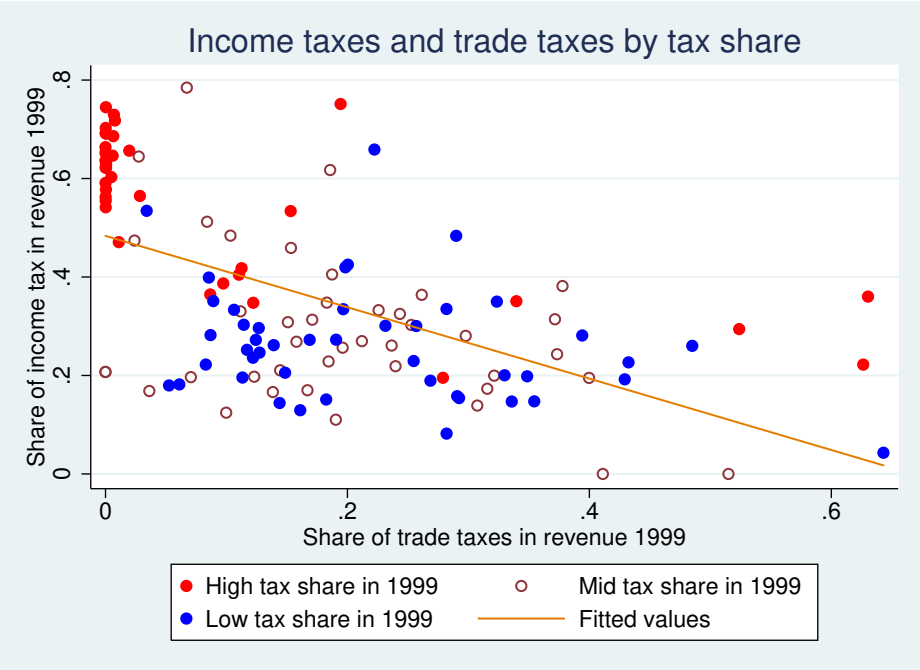


Figure: Original Cross-Section, New Data

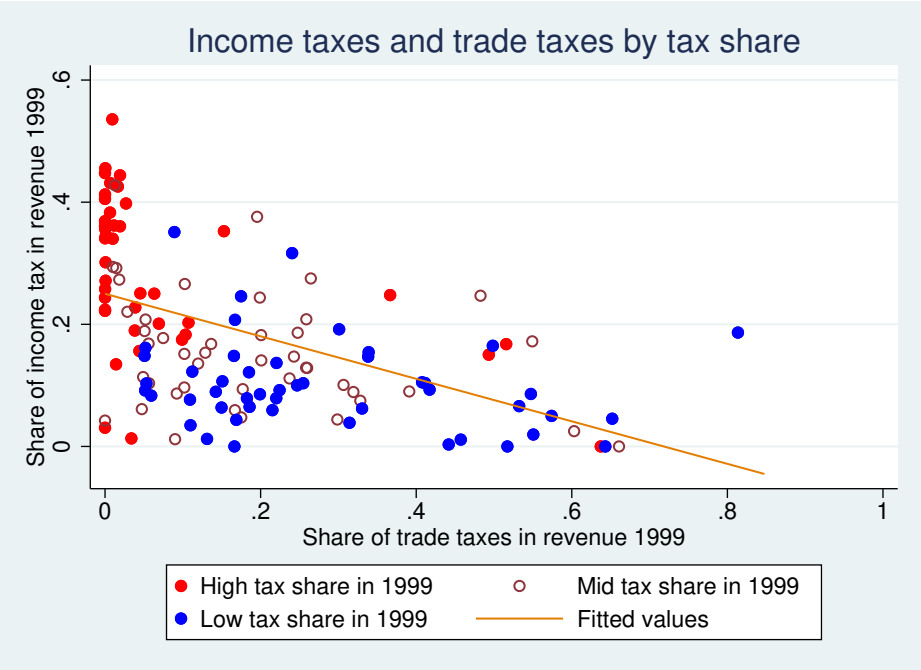


Figure 2.3 Income taxes and trade taxes conditional on total tax take

New Data, Cross-Section Ten Years Later

- In the next two slides, we now replicate the old versions of figures 2.2 and 2.3 in Pillars but for 2010 as a cross-section, conditional on income and total tax intake.
- We compare this to the new versions of figures 2.2 and 2.3 for 1999, from the previous two slides (right-side ones), to see how things have changed over a decade.
  - Also makes sense to compare different time periods but from same data source for consistency.

Figure: Original Cross-Section, New Data

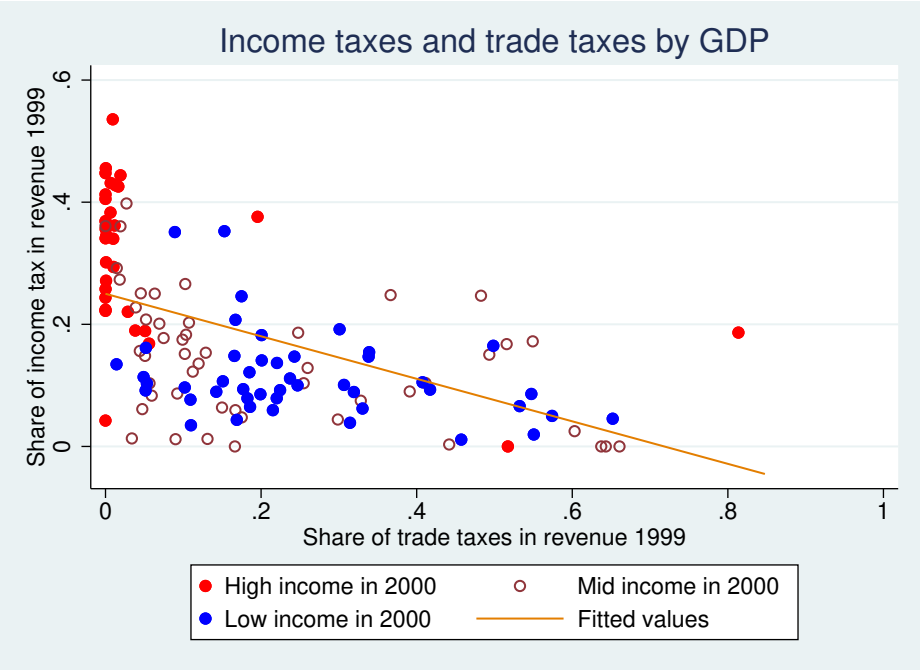


Figure: New Cross-Section, New Data

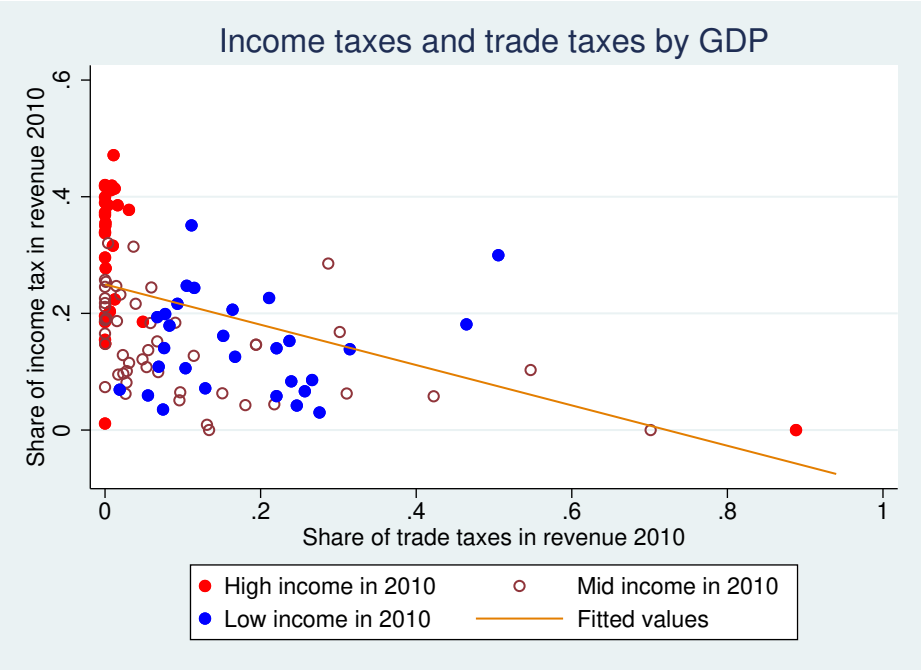


Figure 2.2 Income taxes and trade taxes conditional on income

Figure: Original Cross-Section, New Data

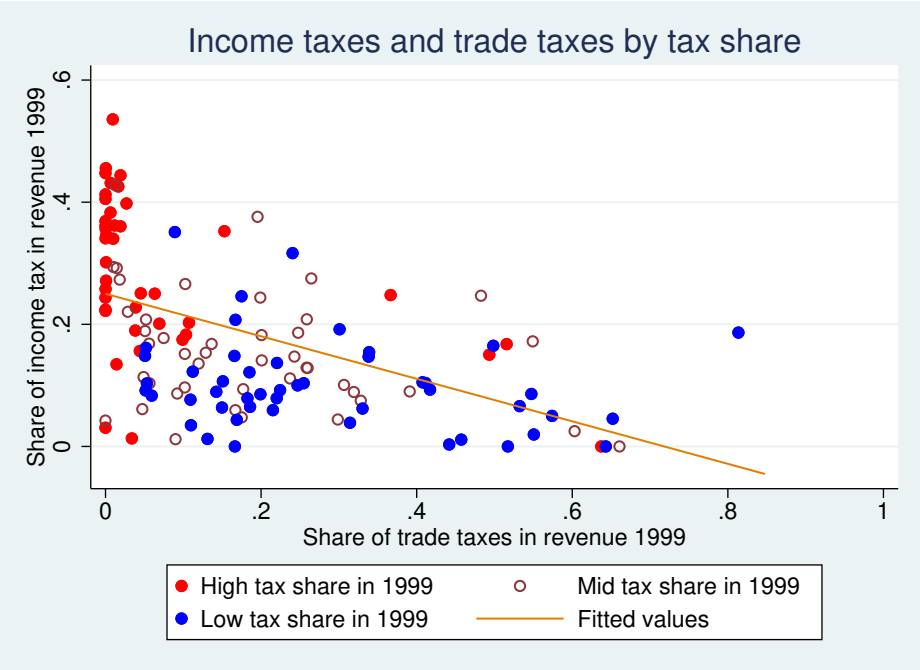


Figure: New Cross-Section, New Data

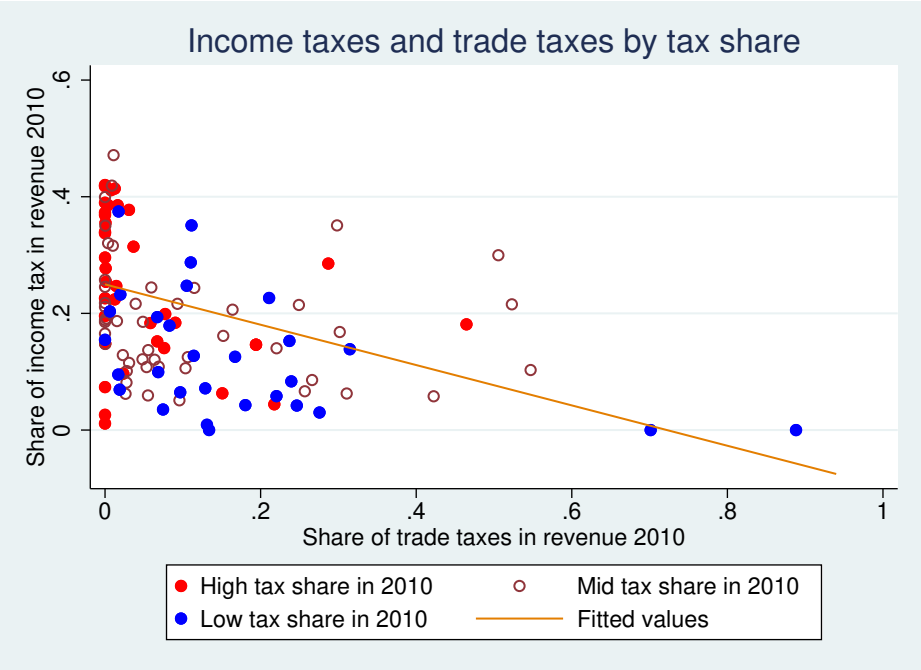


Figure 2.3 Income taxes and trade taxes conditional on total tax take

- As we can see from Figures 2.2 and 2.3, the negative correlation between income tax versus trade taxes as a share of total revenue still holds for a cross-section 10 years later with new data from the ICTD.
- Far more countries are now much less reliant on trade taxes versus income taxes since 1999; more countries moved leftwards on trade taxes axis.
- Our old data from Baunsgaard and Keen (2005) overestimated the share of income tax in revenue, although trends still exactly the same.
  - Although this could be due to definitional reasons; nonetheless, the trends are robust.

Old Tables

- The following slides in this section simply replicate the tables in the book for comparative purposes with the new tables in the next section.
- These can be created using the old *Pillars.dta* dataset.
- Note all measures of fiscal capacity are standard normalised, and so estimated coefficients represent increases/decreases in standard deviations.

Table 2.1 (old)

Table: Table 2.1 Correlations between fiscal capacity measures

	Tax revenue share in GDP	Income tax share	Non-trade tax share	Income tax bias	Formal sector share
Tax revenue share in GDP	1				
Income tax share	0.815	1			
Non-trade tax share	0.729	0.693	1		
Income tax bias	0.846	0.954	0.878	1	
Formal sector share	0.564	0.587	0.580	0.624	1

Table 2.2 (old)

	Tax revenue share in GDP in 2000	Income-tax share in 2000	Nontrade-tax share in 2000	Income-tax bias in 2000	Formal sector share around 2000
	(1)	(2)	(3)	(4)	(5)
Prevalence external war before 2000	1.897*	1.213	2.387**	1.972**	1.671**
	(1.142)	(0.952)	(0.915)	(0.965)	(0.690)
Average exec. constraints before 2000	2.130***	2.309***	1.135***	2.001***	1.768***
	(0.374)	(0.335)	(0.312)	(0.307)	(0.356)
Average nonopen exec. recruitment before 2000	1.080**	1.254***	0.541	1.054***	1.490***
	(0.432)	(0.451)	(0.391)	(0.392)	(0.447)
Ethnic homogeneity	1.058***	0.438	0.656**	0.606**	0.709**
	(0.300)	(0.271)	(0.304)	(0.270)	(0.298)
Observations	104	104	103	103	109
R-squared	0.503	0.465	0.301	0.482	0.317

Table 2.3 (old)

	Tax revenue share in GDP in 2000	Income-tax share in 2000	Nontrade-tax share in 2000	Income-tax bias in 2000	Formal sector share round 2000
	(1)	(2)	(3)	(4)	(5)
Prevalence external war before 2000	3.136	1.221	7.819***	4.604**	-1.029
	(2.928)	(3.076)	(2.426)	(2.288)	(2.790)
External war* high exec. constraints dummy	-1.539	-0.134	-6.204**	-3.096	3.176*
	(3.030)	(3.180)	(2.449)	(2.421)	(2.880)
Average nonopen exec. recruitment before 2000	1.934*	2.074***	1.053*	1.834***	1.125**
	(1.167)	(0.683)	(0.536)	(0.635)	(0.562)
Nonopen exec. recruitment* low exec. constraints dummy	-1.425	-1.176	-0.838	-1.156	0.961
	(1.140)	(0.774)	(0.636)	(0.701)	(0.630)
High exec. constraints dummy	0.495	0.169	0.010	0.080	-0.572
	(0.388)	(0.371)	(0.516)	(0.365)	(0.460)
Average exec. constraints before 2000	1.083*	1.790***	1.078**	1.679***	2.772***
	(0.596)	(0.543)	(0.516)	(0.501)	(0.658)
Ethnic homogeneity	0.774**	0.233	0.472	0.389	1.021***
	(0.312)	(0.285)	(0.358)	(0.291)	(0.352)
Observations	104	104	103	103	109
R-squared	0.550	0.490	0.337	0.503	0.352

Table 2.4 (old)

	Tax revenue share in GDP in 2000	Income-tax share in 2000	Formal sector share around 2000	Tax revenue share in GDP in 2000	Income-tax share in 2000	Formal sector share around 2000
	(1)	(2)	(3)	(4)	(5)	(6)
Prevalence of external war before 2000	1.536	0.884	1.203*	0.819	0.583	1.484**
	(1.076)	(0.867)	(0.660)	(1.341)	(0.860)	(0.659)
Average exec. constraints before 2000	1.595***	1.757***	0.891**	1.163**	1.240***	1.131**
	(0.415)	(0.383)	(0.397)	(0.452)	(0.402)	(0.429)
Average nonopen exec. recruitment before 2000	0.686*	0.866**	0.989**	0.891*	0.473	1.249**
	(0.408)	(0.410)	(0.428)	(0.474)	(0.396)	(0.475)
Ethnic homogeneity	0.718*	0.085	-0.010	0.423	0.024	0.084
	(0.368)	(0.339)	(0.372)	(0.384)	(0.322)	(0.397)
Log(GDP per capita in 2000)	0.209**	0.221**	0.398***	0.350***	0.342***	0.378***
	(0.105)	(0.099)	(0.106)	(0.112)	(0.083)	(0.117)
Low value of inequality				0.513*	0.321**	-0.182
				(0.297)	(0.151)	(0.191)
Observations	103	103	109	83	83	90
R-squared	0.531	0.496	0.404	0.591	0.570	0.480

New Tables

- The following slides now replicate the previous tables from the book but using new data in *Pillars 2.dta*.
- The following regressions repeat the specifications in the old tables but for a cross-section ten years later (i.e. for 2010, where relevant).

Table 2.1 (new)

- Recreate old table 2.1 with 2010 values from the ICTD and 2008 estimates for size of formal economy from Elgin and Oztunali (2012).
- Can see correlations still go in same direction as old table, and magnitudes not too far off.

	Tax revenue share in GDP	Income tax share	Non-trade tax share	Income tax bias	Formal sector share
Tax revenue share in GDP	1				
Income tax share	0.580	1			
Non-trade tax share	0.437	0.391	1		
Income tax bias	0.600	0.795	0.869	1	
Formal sector share	0.381	0.467	0.239	0.408	1

Table 2.2 (new)

	Tax revenue share in GDP in 2010	Income-tax share in 2010	Nontrade-tax share in 2010	Income-tax bias in 2010	Formal sector share in 2008
	(1)	(2)	(3)	(4)	(5)
Prevalence external war before 2000	2.656***	2.185**	1.986**	2.128**	1.535**
	(0.889)	(0.906)	(0.938)	(0.925)	(0.686)
Average exec. constraints before 2010	1.285***	2.093***	0.607**	1.714***	2.531***
	(0.393)	(0.374)	(0.306)	(0.314)	(0.303)
Average nonopen exec. recruitment before 2010	-.512	0.892**	-.843	0.317	2.344***
	(0.567)	(0.451)	(0.67)	(0.637)	(0.367)
Ethnic homogeneity	0.912***	0.195	0.723***	0.487*	0.507**
	(0.267)	(0.332)	(0.268)	(0.271)	(0.23)
Observations	134	92	119	92	144
R-squared	0.427	0.379	0.269	0.418	0.412

Table 2.3 (new)

	Tax revenue share in GDP in 2010	Income-tax share in 2010	Nontrade-tax share in 2010	Income-tax bias in 2010	Formal sector share in 2008
	(1)	(2)	(3)	(4)	(5)
Prevalence external war before 2000	8.423***	-.657	6.431*	3.768	-.557
	(1.880)	(2.436)	(3.637)	(3.389)	(2.930)
External war* high exec. constraints dummy	-7.053***	2.728	-5.154	-2.262	2.713
	(1.884)	(2.640)	(3.676)	(3.459)	(2.971)
Average nonopen exec. recruitment before 2010	0.162	2.568***	0.142	1.987***	1.939***
	(0.919)	(0.786)	(0.537)	(0.592)	(0.579)
Nonopen exec. recruitment* low exec. constraints dummy	-1.199	-1.980**	-1.188	-2.219**	0.714
	(0.856)	(0.958)	(0.841)	(1.049)	(0.566)
High exec. constraints dummy	0.232	-.484	-.743*	-.570	-.282
	(0.364)	(0.407)	(0.393)	(0.421)	(0.364)
Average exec. constraints before 2010	0.849	2.286***	1.571***	2.117***	3.057***
	(0.615)	(0.6)	(0.541)	(0.525)	(0.54)
Ethnic homogeneity	0.759***	0.156	0.669**	0.339	0.585**
	(0.276)	(0.344)	(0.274)	(0.269)	(0.239)
Observations	134	92	119	92	144
R-squared	0.47	0.426	0.328	0.462	0.426

Table 2.4 (new)

	Tax revenue share in GDP in 2010	Income-tax share in 2010	Formal sector share in 2008	Tax revenue share in GDP in 2010	Income-tax share in 2010	Formal sector share in 2008
	(1)	(2)	(3)	(4)	(5)	(6)
Prevalence external war before 2000	2.538***	1.872**	0.99	2.248***	1.882**	1.361**
	(0.902)	(0.854)	(0.612)	(0.682)	(0.824)	(0.641)
Average exec. constraints before 2010	1.632***	1.597***	1.623***	1.363***	1.328***	1.811***
	(0.347)	(0.465)	(0.37)	(0.35)	(0.509)	(0.37)
Average nonopen exec. recruitment before 2010	-.033	0.507	1.577***	0.293	0.545	1.598***
	(0.48)	(0.502)	(0.384)	(0.463)	(0.546)	(0.404)
Ethnic homogeneity	0.865***	0.021	0.035	0.55*	-.149	0.163
	(0.306)	(0.421)	(0.254)	(0.322)	(0.461)	(0.305)
Log(GDP per capita in 2010)	-.025	0.164	0.336***	0.058	0.2	0.256***
	(0.079)	(0.122)	(0.074)	(0.077)	(0.144)	(0.087)
Low value of inequality				0.396	0.308	-.077
				(0.259)	(0.256)	(0.218)
Observations	129	89	139	120	83	128
R-squared	0.461	0.391	0.494	0.465	0.384	0.473

New Tables – Comments

- As per the previous slides, the results are largely the same as the original tables in Pillars for a cross-section ten years later.
- Executive constraints continues to be robustly, positively associated with almost all measures of fiscal capacity, as the theory in Pillars posits.
- Albeit the exact same variable from the old dataset, the prop. of years in external war also continues to be positively associated with our new measures of fiscal capacity.

Basic Robustness Checks: V-Dem

- We now perform some elementary robustness checks for our key variables from the new tables above.
- We use V-Dem to measure our executive constraints and openness parameters.
  - As per the *Pillars 2.dta* codebook, we measure executive constraints based on the average of V-Dem's judicial constraints (*v2x_jucon*) and legislative constraints (*v2xlg_legcon*) indicators.
  - We also measure the openness of executive recruitment/selection using V-Dem's free and fair elections (*v2xel_frefair*) variable.

Table 2.2 (V-Dem)

	Tax revenue share in GDP in 2010	Income-tax share in 2010	Nontrade-tax share in 2010	Income-tax bias in 2010	Formal sector share in 2008
	(1)	(2)	(3)	(4)	(5)
Prevalence external war before 2000	2.645***	2.658***	1.425**	2.133***	2.838***
	(0.825)	(0.985)	(0.683)	(0.791)	(0.755)
Average exec. constraints before 2010	0.922*	2.492***	1.159*	2.344***	0.724
	(0.534)	(0.648)	(0.7)	(0.853)	(0.574)
Average nonopen exec. recruitment before 2010	-1.126**	-.019	-.306	0.029	-.832*
	(0.488)	(0.585)	(0.493)	(0.572)	(0.489)
Ethnic homogeneity	0.756***	0.229	0.655***	0.573**	0.722***
	(0.272)	(0.327)	(0.238)	(0.273)	(0.263)
Observations	132	90	117	90	142
R-squared	0.442	0.439	0.276	0.477	0.295

Table 2.3 (V-Dem)

	Tax revenue share in GDP in 2010	Income-tax share in 2010	Nontrade-tax share in 2010	Income-tax bias in 2010	Formal sector share in 2008
	(1)	(2)	(3)	(4)	(5)
Prevalence external war before 2000	8.545***	3.278	5.566	4.800*	2.151
	(1.777)	(2.632)	(3.764)	(2.747)	(3.899)
External war* high exec. constraints dummy	-6.565***	-.497	-4.463	-2.639	0.77
	(1.847)	(2.840)	(3.830)	(2.954)	(3.935)
Average nonopen exec. recruitment before 2010	-.550	0.426	0.239	0.557	-1.434***
	(0.587)	(0.643)	(0.587)	(0.669)	(0.516)
Nonopen exec. recruitment* low exec. constraints dummy	-1.471**	-1.600*	-1.814**	-1.499*	2.002**
	(0.683)	(0.907)	(0.904)	(0.869)	(0.875)
High exec. constraints dummy	-1.235***	-1.703***	-1.665**	-1.851***	1.627**
	(0.467)	(0.623)	(0.712)	(0.651)	(0.691)
Average exec. constraints before 2010	1.808***	3.683***	2.148**	4.149***	0.205
	(0.665)	(0.834)	(0.971)	(1.149)	(0.867)
Ethnic homogeneity	0.768***	0.322	0.745***	0.703***	0.667**
	(0.273)	(0.323)	(0.234)	(0.256)	(0.282)
Observations	132	90	117	90	142
R-squared	0.487	0.475	0.336	0.556	0.327

Table 2.4 (V-Dem)

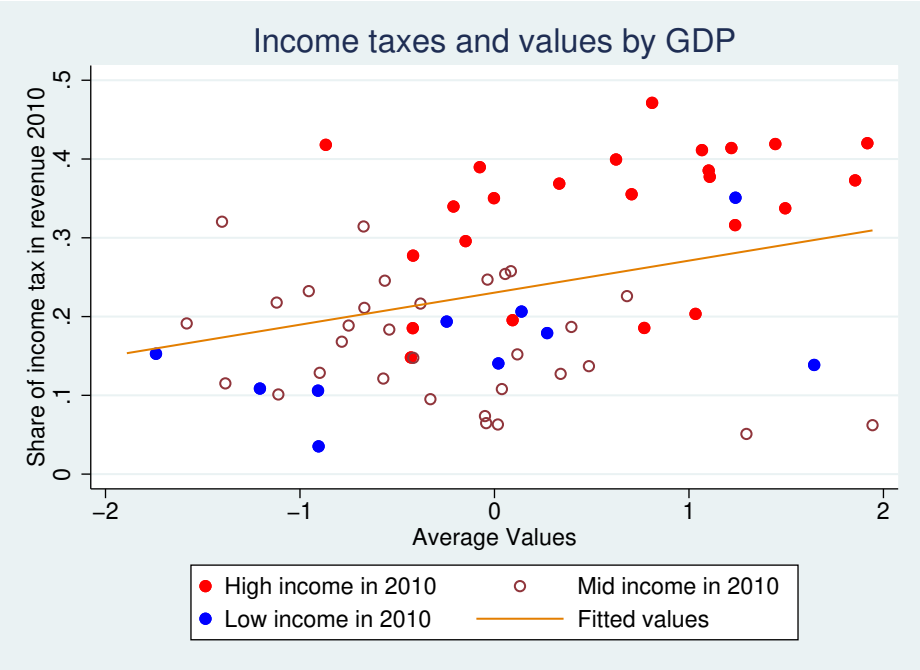
	Tax revenue share in GDP in 2010	Income-tax share in 2010	Formal sector share in 2008	Tax revenue share in GDP in 2010	Income-tax share in 2010	Formal sector share in 2008
	(1)	(2)	(3)	(4)	(5)	(6)
Prevalence external war before 2000	3.061***	2.176**	1.594***	2.614***	2.154**	2.096***
	(0.943)	(0.893)	(0.61)	(0.727)	(0.892)	(0.702)
Average exec. constraints before 2010	0.947*	2.284***	0.558	0.8	1.950***	0.816
	(0.538)	(0.649)	(0.592)	(0.532)	(0.698)	(0.607)
Average nonopen exec. recruitment before 2010	-1.308***	0.18	-.232	-1.003**	0.218	-.327
	(0.464)	(0.635)	(0.515)	(0.433)	(0.661)	(0.526)
Ethnic homogeneity	0.855**	0.077	0.048	0.555*	-.081	0.291
	(0.341)	(0.413)	(0.281)	(0.326)	(0.478)	(0.332)
Log(GDP per capita in 2010)	-.092	0.148	0.429***	0.028	0.193	0.313***
	(0.088)	(0.112)	(0.067)	(0.074)	(0.135)	(0.087)
Low value of inequality				0.271	0.241	-.131
				(0.24)	(0.25)	(0.222)
Observations	128	88	138	119	82	127
R-squared	0.489	0.448	0.447	0.509	0.426	0.428

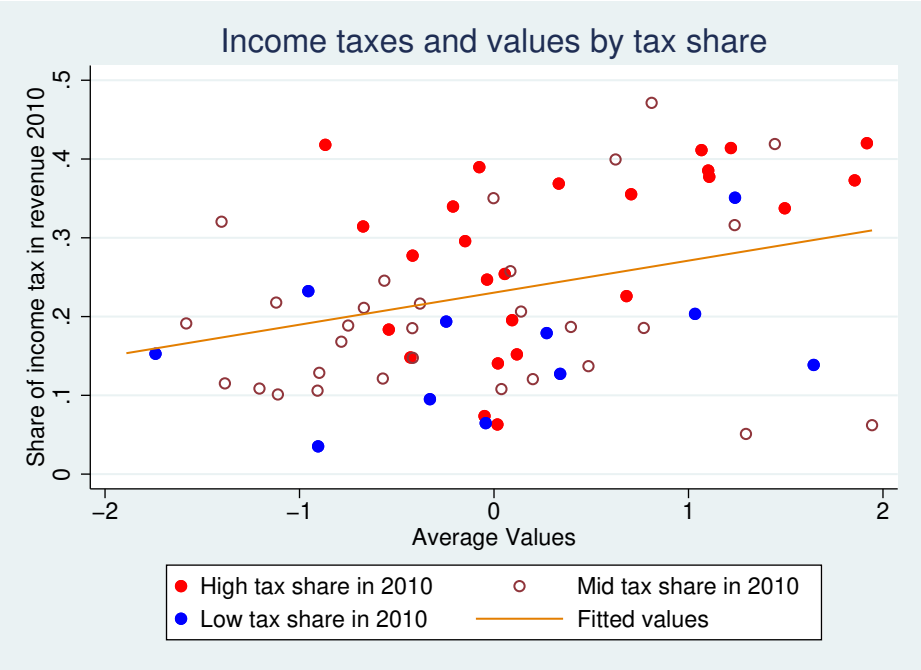
Extensions – Norms and Values

- In Pillars, we highlighted in Chapter 8 the need to understand the connection of values and norms vis-a-vis state development, of which various work has picked up on this (Acemoglu & Robinson, 2019; Besley, 2020; Besley & Persson, 2019; Bisin & Verdier, 2017; Collier, 2017; Persson & Tabellini, 2021).
  - This relates to an older tradition in political science on the role of "civic culture" as the foundation of successful polities (Almond & Verba, 1963; Putnam et al., 1993).
- Equipped with *Pillars 2.dta*, a final exercise allows us to explore some of the broad patterns in the data at the country-level.
  - See Besley & Mueller (2021) and Fergusson et al. (2020) for micro-level regressions using the World Values Survey (WVS) and Afrobarometer.

Fiscal Capacity and Values

- Using the WVS, we measure national average values of the following variables using the most recent WVS round until 2010 (see *Pillars 2.dta* codebook for further details):
  - Confidence in government
  - Unjustifiable to cheat on taxes
  - General trust in people
- Taking the first principal component of these three variables, the factor loadings of each variable are 0.2354, 0.6768 and 0.6975 respectively.
  - So this is broadly capturing if people are confident with their governments and trust people, but do not think it is justifiable to cheat on their taxes, all correlations we would expect (i.e. "civic culture").
- We can now replicate Figures 2.2 and 2.3 but using this general measure of "values", versus trade-tax share, on the x-axis.





Figures 2.2 and 2.3 using values principal component

- Despite some clear heterogeneity and noise, there is still an expected positive correlation between those countries that have a stronger "civic culture" and share of income taxes in revenue.
  - The three outlier countries on the bottom right are China, Jordan, and Bangladesh.
  - Trend line obviously becomes even sharper once omitting these countries (not shown here).
- Of course clear reverse causality issue, but figures show high income countries and countries with higher tax shares in GDP generally have a stronger civic culture.
  - Besley (2020) theoretically lays out the complementarities between institutions and civic culture in the development of fiscal capacity.
- Now we can replicate table 2.2, including values as an additional covariate, to gain some insights into the broad correlations in the data.

	Tax revenue share in GDP in 2010	Income-tax share in 2010	Nontrade-tax share in 2010	Income-tax bias in 2010	Formal sector share in 2008
	(1)	(2)	(3)	(4)	(5)
Prevalence external war before 2000	1.607**	1.884*	0.269	1.052*	1.875**
	(0.734)	(0.963)	(0.329)	(0.574)	(0.743)
Average exec. constraints before 2010	2.094***	2.224***	0.895***	1.865***	2.134***
	(0.452)	(0.481)	(0.288)	(0.382)	(0.366)
Average nonopen exec. recruitment before 2010	0.866	0.594	0.266	0.78*	1.474***
	(0.676)	(0.548)	(0.433)	(0.47)	(0.505)
Ethnic homogeneity	0.928***	0.144	0.603*	0.209	0.418
	(0.333)	(0.421)	(0.325)	(0.305)	(0.36)
Civic values	-.005	0.300***	-.076	0.123	0.306***
	(0.085)	(0.102)	(0.076)	(0.079)	(0.067)
Observations	73	61	70	61	80
R-squared	0.483	0.546	0.277	0.536	0.502

- As per the previous slide, whilst again a mixed picture, it is interesting that civic values are strongly correlated with income tax as a share of total revenue and the size of the formal sector.
  - Arguably across all five indicators of fiscal capacity used, these are the two we would most expect civic values to greatly impact.
  - E.g. compliance with tax authorities, registering firms with the government, etc (see La Porta & Shleifer, 2008, 2014).
- On this note, in Pillars we provided brief micro-foundations for why the informal sector could hamper fiscal capacity; Besley and Persson (2014) empirically visualised this inverse relation using data from Schneider (2002).
- The next two slides repeat this exercise, replicating the 1999 cross-section with our new data from Elgin and Oztunali (2012) and creating the same chart for 2008 (last year of data available from their dataset).

Figure: Original Figure

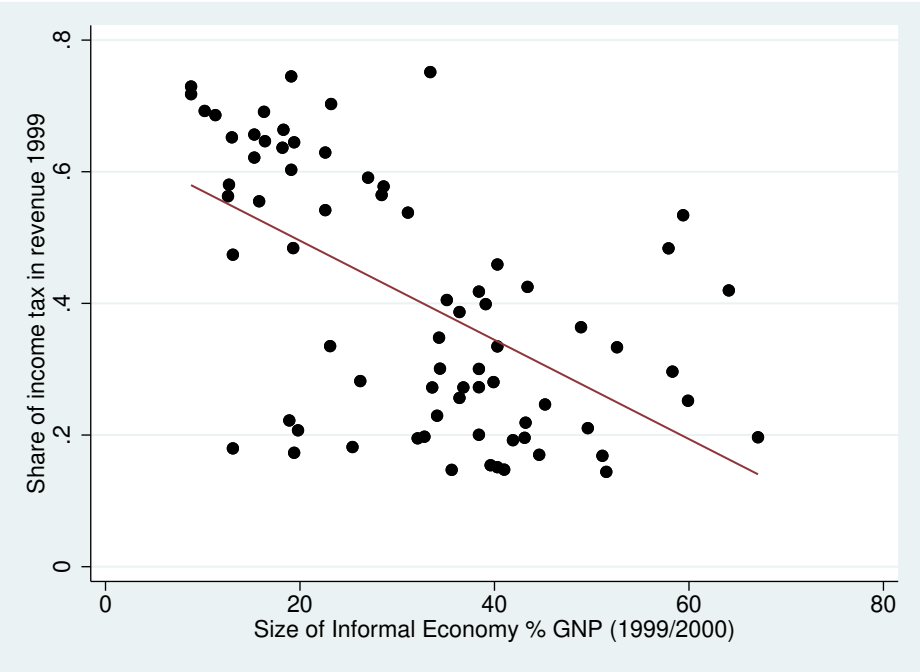


Figure: Original Cross-Section, New Data

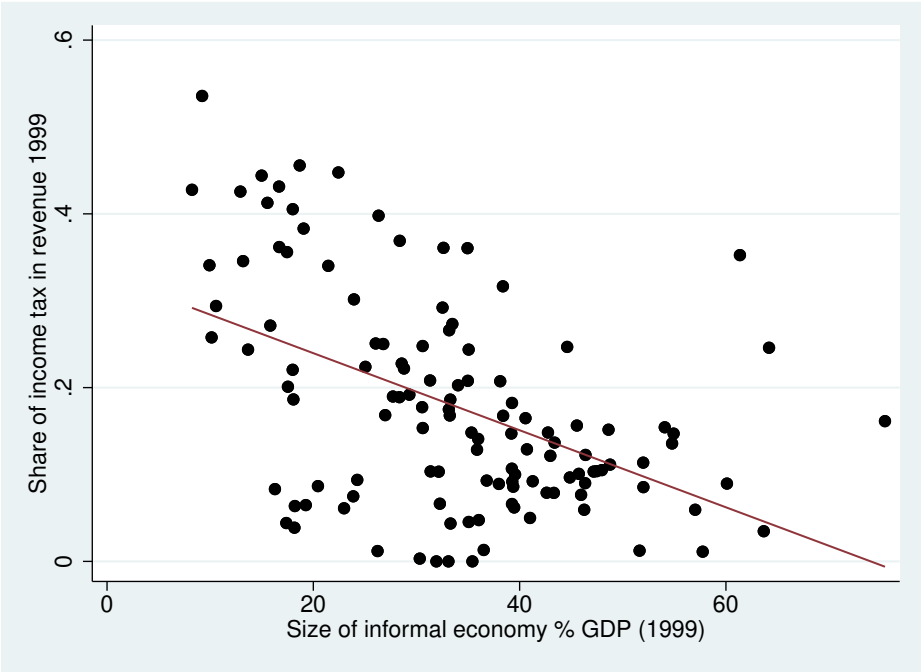


Figure 7 from Besley & Persson (2014)

Figure: Original Cross-Section, New Data

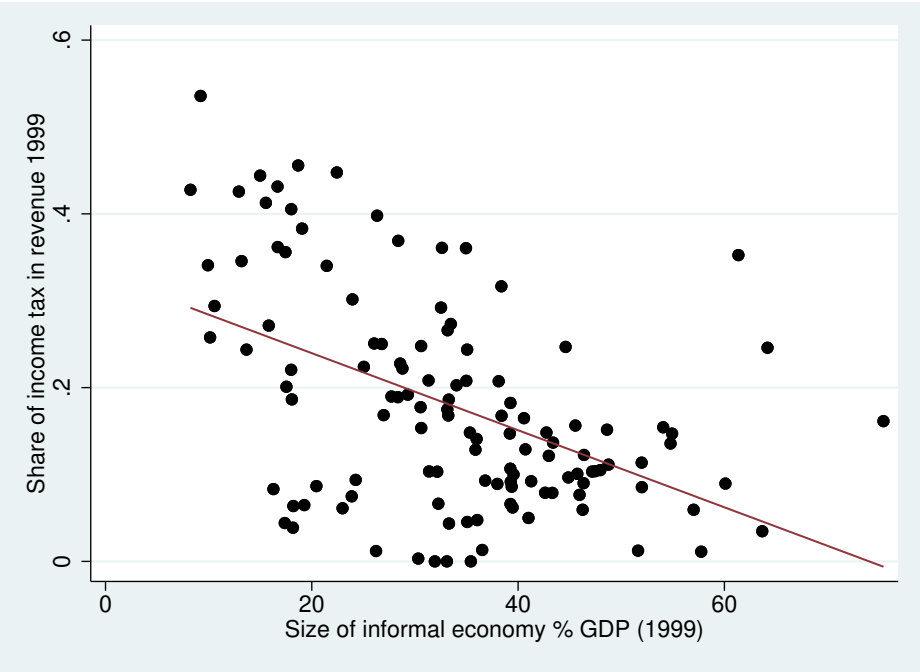


Figure: New Cross-Section, New Data

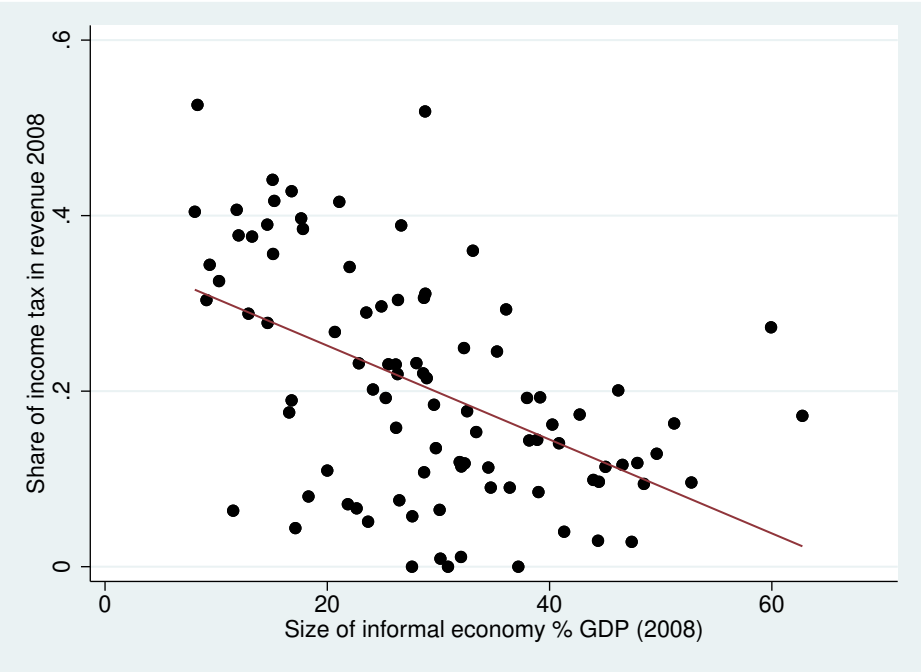


Figure 7 from Besley & Persson (2014)

- Again, even using new data for 1999, the inverse correlation holds, albeit with a slightly flatter slope due to an increased sample size.
  - Using the new data, the three outlier countries (far right-hand side) for 1999 are Azerbaijan, Georgia and Zimbabwe.
- When comparing 1999 to 2008 with the new data, it is evident that a few countries have slightly decreased the size of their informal sector.
  - The two outliers (far right-hand side) for 2008 are Georgia and Zimbabwe.
- The triangulation clearly shows there is no country with strong fiscal capacity if the informal sector is large, either in 1999 or 2008.