Endogenous Property Rights and Inequality in Non-democratic Regimes: Theory and Evidence

Alexander Yarkin

National research university – Higher school of economics,

Moscow, Russia

Property rights institutions…

- Are important for the explanation of cross-country differences in living standards and economic growth rates (Hall and Jones, 1999; Acemoglu et al., 2001; Besley and Ghatak, 2010)

- Prevent and limit unproductive (rent-seeking) behavior (Murphy et al., 1991, 1993; Nunn, 2006; Gradstein, 2007; Besley and Ghatak, 2010)

- Are itself endogenous: a policy variable, determined by a narrow elite class (Glaeser, 2003, 2004; Sonin, 2003; Polishchuk and Savvateev, 2004)

Property rights and inequality

Literature mainly suggests negative relationship. Higher inequality leads to lower level of institutional strength:

- Engerman and Sokoloff (2002), Glaeser et al. (2003), Sonin (2003), Gradstein (2007)
- The richer is the elite, the lower institutional quality they prefer
- As a consequence, the arguments in favor of progressive redistribution, limiting the power of the elite, and ruling class expansion have support

Property rights and inequality

However, we suggest that the impact of wealth inequality on institutions is much more complex and non-monotonic. Namely, it depends on:

1) Whether the inequality is due to high wealth share of the elite (positive impact), or low share of the elite in population (negative impact)

2) Whether society has managed to reduce conflict and expropriation of masses by the elite (“social contract”) or not (“state of nature”).

3) How narrow is the ruling class (the level of democratization).

Empirics of property rights and inequality (Amendola et al., 2013)

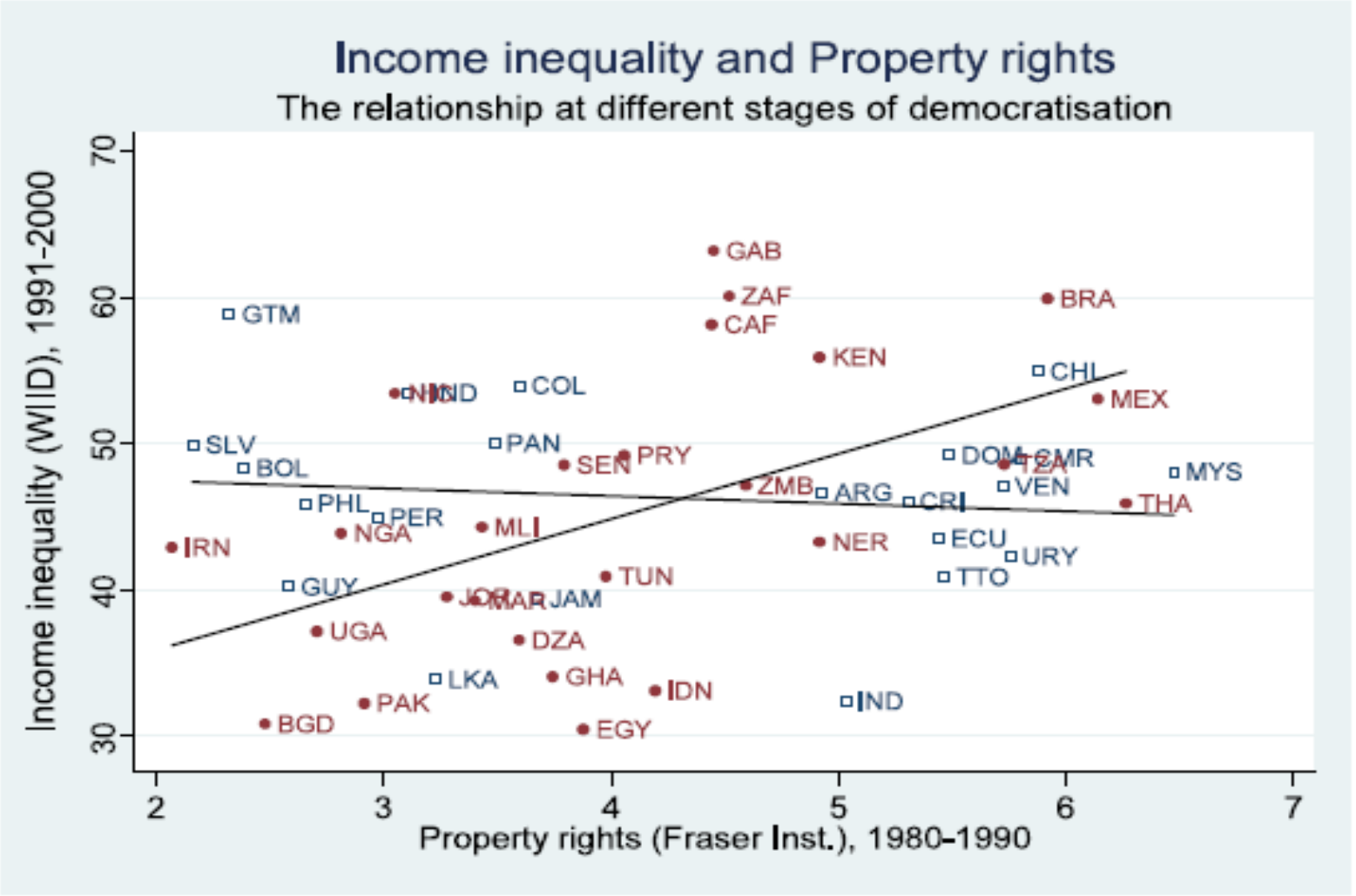


Fig. 2 Inequality and property rights at different stages of democratization

Empirics of property rights and inequality

- Chong and Calderon (2000) stresses that positive relationship between inequality and institutions (ICRG index) is observed for low levels on ICRG index

The case of Russia in 1990th and nowadays:

- The accumulation of wealth by oligarchs during the late 90th was matched by a two-fold increase in the quality of property rights protection (Frazer index)
- The “Yukos case” in 2003: rapid contraction of the ruling class, power and wealth concentrated in a hands of much more narrow group => institutional progress stopped

Empirics of property rights and inequality

Among the “limited access orders” countries with high level of property rights protection have either very high or very low levels of wealth concentration:

- Hong-Kong (50% of wealth per 1% richest)
- Singapore (25%)

Intermediate cases of wealth inequality correspond to worse property rights protection:

- Columbia (32-28%)
- Mexico (31-37%)

The model

Wealth distribution

- The elite (E) owns a fraction θ of the total wealth W, while masses own $1-\theta$ of W

- The elite constitutes a fraction $n < 0.5$ of total population, while masses constitute a fraction $1-n$

- All agents inside these groups are identical in terms of individual wealth: $w_E = \frac{\theta W}{n}$, $w_M = \frac{(1-\theta)W}{1-n}$

- $\theta > n$

Structure of the game

Three stage game:

1. The representative member of the elite chooses property rights institutions level, q_E^*

2. The representative agent in each group chooses the occupation of group members: either rent-seeking (RS), production (PR), or neither (leave or NotPR)

3. Each agent optimally allocates his initial wealth between consumption (C), capital (K), investment in protection (D), and investment in expropriation (R)

E/M	PR	$Not\ PR$
PR	V_1, V_2	V_3, V_4
RS	V_5, V_6	V_7, V_8

Table 1. Pay-off matrix of the "producer-expropriator" game

Third stage: assumptions

- Utility function

$$U_i = C_i + E\pi_k \qquad k = \{PR, RS\}$$

- Budget constraints of producer and rent-seeker:

$$w_M = C_M + K_M + D_M \qquad w_E = C_E + R_E$$

- Expected profit of producer and rent-seeker:

$$E\pi_{PR,M} = Y_M \cdot \left(1 - p^{PR}\right) + Y_M \cdot \left(1 - \tau_{EM}\right) p^{PR} = Y_M \cdot \left(1 - \tau_{EM}\, p^{PR}\right)$$

$$E\pi_{RS,\mathrm{E}} = Y_M \cdot q \cdot \tau_{EM}\, p^{RS}$$

- τ_{EM} - the expected share of extracted output; p^{PR}- the probability of matching; q – the share of successful rent-seekers (institutional quality)

Functions

- Production function:

$$Y_s = AK_s^{\alpha} \qquad s = \{E, M\}$$

- Contest success function (CSF)

$$\tau_{EM} = \frac{\gamma \cdot R_E}{\gamma \cdot R_E + D_M} \qquad \gamma = \frac{w_E}{w_M} = \frac{\theta(1-n)}{(1-\theta)n}$$

- Matching function (if x is a share of rent-seekers in population)

$$p^{PR} = \min\{1, \frac{xq}{1-x}\} = \frac{nq}{1-n}, \quad p^{RS} = \min\{1, \frac{1-x}{xq}\} = 1$$

Agents' optimization problems (3rd stage)

Producer from masses:

$$\begin{cases} U_M^{PR} = C_M + E\pi_{M,PR} = C_M + AK_M^{\alpha}\left(1 - \dfrac{nq}{1-n}\cdot\dfrac{\gamma R_E}{\gamma R_E + D_M}\right) \to \max\limits_{C_M, K_M, D_M} \\ s.t. \quad w_M = C_M + K_M + D_M \end{cases}$$

Rent-seeker from the elite:

$$\begin{cases} U_E^{RS} = C_E + E\pi_{E,RS} = C_E + AK_M^{\alpha}\cdot q\cdot\dfrac{\gamma R_E}{\gamma R_E + D_M} \to \max\limits_{C_E, R_E} \\ s.t. \quad w_E = C_E + R_E \end{cases}$$

Resulting payoffs:

$$V_6 = U_M^{PR}\left(C_M^*, K_M^*, D_M^*, R_E^*\right)$$

$$V_5 = U_E^{RS}\left(C_E^*, R_E^*, K_M^*, D_M^*\right)$$

Second stage Nash equlibrium

If it holds that $\begin{cases} V_5 > V_1 \\ V_6 > V_8 \end{cases}$, then the conflict (RS,PR) is a Nash equilibrium

If it holds that $V_1 > V_5$, then the peace (PR,PR) or “social contract” is a Nash equilibrium.

These inequalities give conditions in (θ, n) space for different equilibria to occur

First stage of the game

Member of the elite chooses institutional quality:

$$\begin{cases} V_5 = U_E^{RS}\left(C_E^*(q,...), R_E^*(q,...), K_M^*(q,...), D_M^*(q,...), q...\right) \to \max\limits_q \\ s.t. \quad 0 < q \le 1 \end{cases}$$

The solution is $q_E^*(\alpha, A, \theta, n, W)$

And corresponding maximum payoff in the conflict equilibrium is

$$V_5^* = V_5\left(q_E^*\right)$$

If the elite prefers peace, then we have $q^{**} = 0$

Endogenous institutions in conflict equilibrium

Indirect utility function of the elite in (RS,PR):

$$V_5 = w_E - R_E^* + qY_M^*\tau_{EM}^* = \frac{\theta W}{n} + Y_M^*(q)\cdot\nu(\theta,n,q)$$

Optimal property rights for the elite: $q_E^* = \min\left\{1,(1-\alpha)\left(\frac{(1-\theta)n}{\theta(1-n)}+\frac{1}{n}-1\right)\right\}$

$$\frac{\partial q_E^*}{\partial\theta}<0,\frac{\partial q_E^*}{\partial n}<0$$

Moreover, $q_E^*=1$ if $\theta<\bar{\theta}(n,\alpha)$, $\frac{\partial\bar{\theta}}{\partial n}<0$

Main logics

The wealth of the elite and weak property rights are **“substitutes”**:

- Wealthy agents are more effective in rent-seeking
- Hence strong (wealthy) elite may well extort high rents under good institutions
- Moreover, the richer is the elite, the higher are risks for masses: if both the elite is rich and it establishes bad institutions, masses reduce productive efforts greatly
- Finally, the poorer are producers, the larger is marginal effect of their efforts decrease on the rents for the elite

Main logics

The tightness of the ruling class and weak property rights are **“complements”**:

- Lower risks for masses, lower incentives for protection, more production
- Higher efficiency of the elite in expropriation
- Hence, higher marginal benefits from worsening institutions
- Lower marginal losses from worsening institutions, since the response of masses decreasing their investment is not as strong

Regime switch

The conflict regime is a Nash equilibrium if the following condition holds:

$$\theta > \bar{\bar{\theta}}(n,\alpha) = \frac{1}{1+\left(\varphi(\alpha)\cdot\frac{1-n}{n}-1\right)\cdot\left(\frac{1-n}{n}\right)^2}$$

, where $\frac{\partial\bar{\bar{\theta}}(n,\alpha)}{\partial n} > 0$

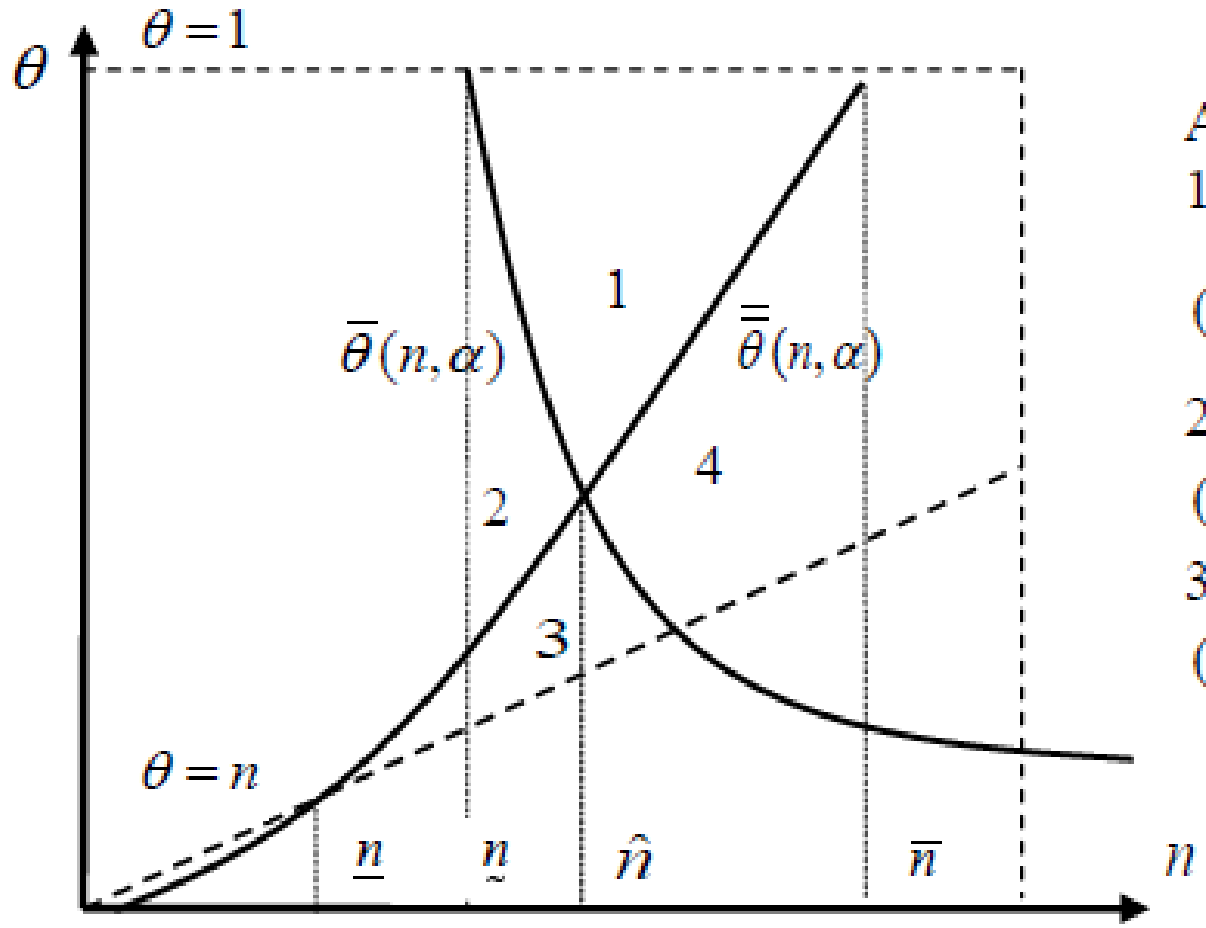
Main logics

We see that inequality affects

a. Incentives to establish weak institutions
b. Incentives to engage in rent-seeking
c. Aggregate rent-seeking expenditures

in different directions.

Institutional regimes



Areas:

1 – conflict equilibrium

$(RS, PR),\ q_E^* < 1, \frac{\partial q_E^*}{\partial \theta} < 0, \frac{\partial q_E^*}{\partial n} < 0$

2 – conflict equilibrium

$(RS, PR), q_E^* = 1$

3, 4 – peaceful equilibrium

$(PR, PR),\ q_E^* = 0$

Picture 1. Wealth distribution and institutional regime

Some preliminary empirics

Data

Dependent variable:

- Rule of Law (WGI, World Bank)

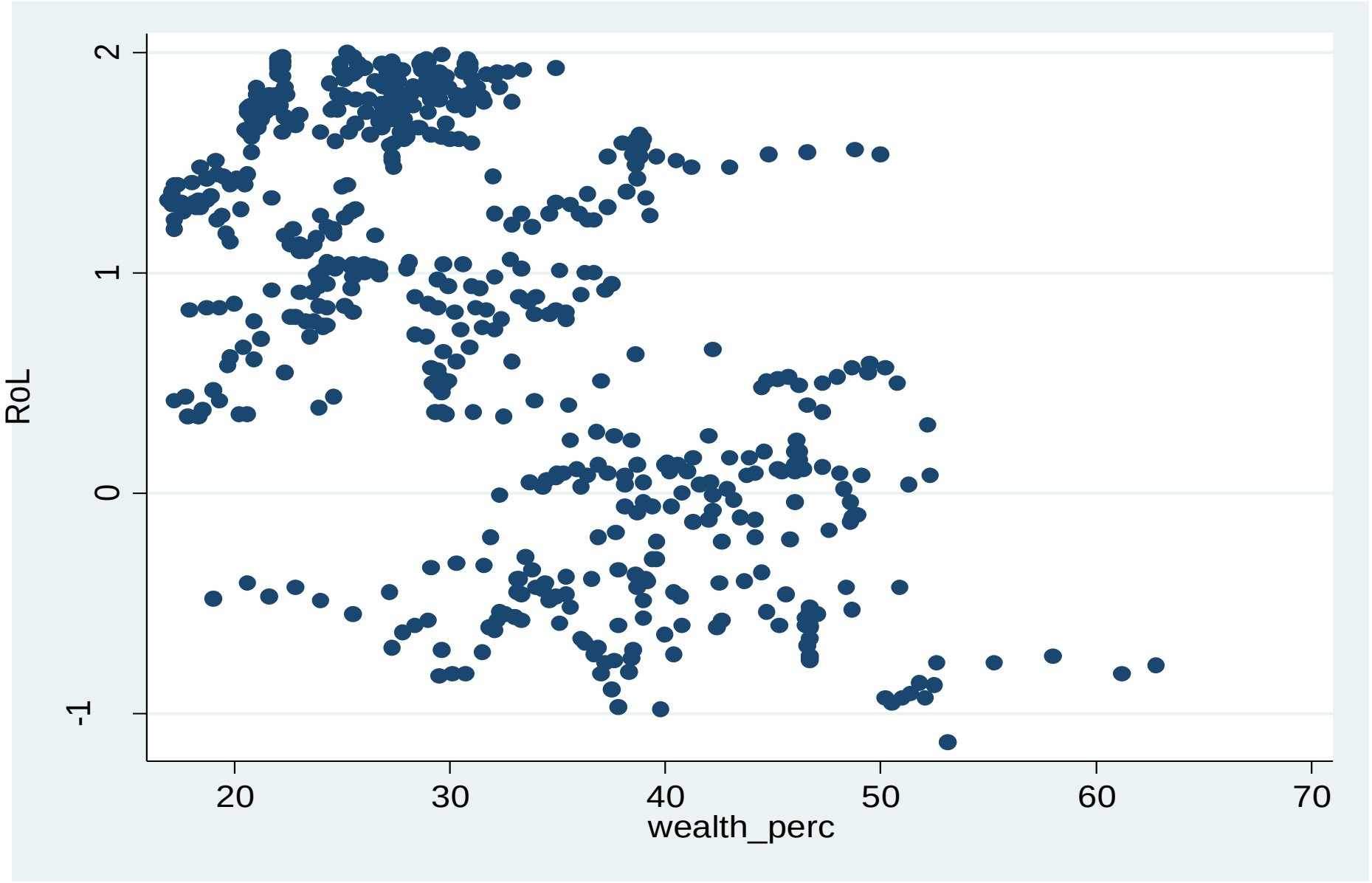
Main explanatory variables:

- Wealth share of a top percentile (Davies and Shorrocks, Global wealth databook); T=15 (2000-2014), N=46
- Regime: Free, Partly Free, Not Free (Freedom House Dataset)

Controls:

- GDPpc, Human capital (EducExp_GDP)
- country fixed effects

Rule of Law and Wealth share of the richest 1%



Hypothesis

H1:

The higher wealth share of the elite corresponds to better institutions in societies with intermediate size of the ruling class (Partly Free)

H2:

There is no significant relationship between the elite's wealth and institutions in absolutely authoritarian (Not Free) societies and in democracies (Free)

Dependent variable: Rule of Law

	Partly Free		Free	Not Free
Model	RE GLS	FE within	FE within	FE within
GDPpc	2.10e-05***	1.43e-05***	2.09e-05***	1.66e-05***
	(0.00)	(0.00)	(0.00)	(0.00)
Educ_expGDP	0.0903***	0.0696***	0.0465**	0.0307**
	(0.0256)	(0.0263)	(0.0223)	(0.0144)
wealth_perc	0.0170**	0.0218***	-0.00291	0.00467
	(0.00706)	(0.00732)	(0.00382)	(0.00511)
Constant	-0.455	-0.166	0.243	0.0510
	(0.365)	(0.392)	(0.191)	(0.237)
Observations	111	111	181	137
R-squared		0.138	0.096	0.111
No of country	18	18	19	18

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Thank you for your attention!