

Corporate Socialism Around the World

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Motivation

- 75% of capital allocation within firms: Gorton and Winton [2005]
 - ❑ Large proportion of firms allocating resources internally are diversified
 - ❑ Phenomenon both within US and outside the US
- Broadly two economic forces operate when thinking about resource allocation inside diversified firms
 - ❑ Benefit: Financing from internal rather than expensive external markets
 - ❑ Cost: Within firm frictions in operating a multi-divisional firm
- Different frictions may drive benefits and costs
 - ❑ Important to understand to assess within firm resource allocation

Cheaper Internal Financing

- A reduced form way of capturing “Benefit of Diversified Firms”
 - ❑ External markets cannot direct resources towards better projects as well as internal markets can
 - ❑ Think as “cost of capital” is lower
- Bright side: More good projects funded relative to what external market would finance
 - ❑ Asymmetric information/Moral Hazard
- Benefit potentially large, especially when external markets underdeveloped: Stein [2003]
 - ❑ Not the focus of this paper

Corporate Socialism...

- A reduced form way of capturing “Cost of Diversified Firms”
 - ❑ Resources might be allocated away from good projects towards bad projects
- Distortion: good projects underfunded relative to bad projects
 - ❑ Preference
 - ❑ Lobbying (power)/asymmetric information
- Distortions may be large...

Corporate Socialism around the World

- ...and may interact with country level variables, such as institutions
 - ❑ Could impact corporate socialism – and through it how resources get allocated in markets and firms
 - Reduce it: If institutions are weak, might have to reduce distortions due to socialism to attract external financing
 - Increase it: If institutions weak, might aggravate internal distortions
- Goal: Understand these distortions around the world
 - ❑ How large are these distortions?
 - ❑ What factors relate to distortions in capital allocation within firms around the world?

This Paper

- Write a simple model of diversified firms with the basic tradeoffs discussed earlier
 - ❑ Frictions in resource allocation within the firm
 - ❑ Frictions at accessing the external financial market
- Model simple, easy to estimate
 - ❑ Use investment and financing behavior of firms to infer frictions
 - ❑ Can estimate across countries
- What country features are correlated with distortions in capital allocation within the firm?
 - ❑ Relate “socialism” around the world to institutional factors considered important in the literature

Why Model?

- Reduced form approach not suitable for directly focusing on the issue of socialism
 - ❑ Studies on Diversification discount
 - ❑ Studies on Investment / Q sensitivity
- Can back out “Net benefit” of diversified firms
 - ❑ High costs & high benefit = low cost & low benefit
- For our goal
 - ❑ Need to disentangle the forces
 - ❑ Correlate with institutional factors to better understand the interactions between firms and markets

Related Literature

- **Business groups**
 - ❑ Prevalent form of business organization around the world
 - ❑ Arise to facilitate financing of affiliated member firms
 - ❑ Arise to create wedge between control and cash flow rights
- **Conglomerates**
 - ❑ Bright Side
 - ❑ Dark Side
- **Theory of the firm**

Model: Production and Financing

- Production
 - ❑ Linear technology
 - ❑ Adjustment cost
- External financing
 - ❑ Costly external financing
 - ❑ Firm can save but saving costly
 - ❑ Adjustment costs

Model: Production and Financing

- Two departures from standard models
 - *Multiple divisions and HQ*
 - HQ allocates funds to divisions
 - HQ chooses external financing
 - *HQ has socialistic preferences*
 - Preference for equality=> Maximizes profits + equality
 - Key parameter weight between profits and equality, λ
- Manager maximizes profits of the firm $-\lambda \sum_j (z_{tj} - z_t^*) k_{ij}$
 - If $\lambda > 0$ corporate socialism
 - If $\lambda < 0$ corporate Darwinism
- Reinterpretation: manager maximizes profits of a firm with division productivity of $(1 - \lambda) z_{tj} + \lambda z_t^*$

Model: HQ Utility

$$U = E_{\sigma} \sum_{t=1}^{\infty} \left[\underbrace{\sum_i^n \left(k_{it} z_{it} - I - \frac{1}{2} \frac{I_{it}^2}{k_{it}} \right)}_{\text{Production}} - \underbrace{\frac{\phi}{2} \frac{f_t^2}{\sum_i^n k_{it}} - \frac{\gamma}{2} \frac{p_t^2}{\sum_i^n k_{it}}}_{\text{Costly external finance}} - \underbrace{\lambda \sum_i^n k_{it} (z_{it} - z_t^*)}_{\text{Corporate Socialism}} \right]$$

Model

$$\begin{aligned} V(K_t, Z_t, p_t) = & \max_{I_t, f_t} \sum_i^n \left(k_{it} z_{it} - \lambda k_{it} (z_{it} - z^*) - I - \frac{1}{2} \frac{I_{it}^2}{k_{it}} \right) \\ & - \frac{\phi}{2} \frac{f_t^2}{\sum_i^n k_{it}} - \frac{\gamma}{2} \frac{p_t^2}{\sum_i^n k_{it}} \\ & + \beta E(V(K_{t+1}, Z_{t+1}, p_{t+1}) | K_t, Z_t, p_t, I_t, f_t) \end{aligned}$$

s.t.

$$k_{it+1} = (1 - \delta) k_{it} + I_{ij}$$

$$p_{t+1} = p_t + f_t + \pi_i(\cdot)$$

$$p_t \geq 0$$

Investment Choice

- Investment FOC:

$$\frac{I_{it}}{k_{it}} = \frac{\beta EU_{k_{it}}}{1 + \beta EU_{p_t}} - 1$$

- Standard investment equation with financial frictions
 - Change: perspective of utility, not value

External Financing and Capital

- Model: map unobservable quantity to observable choices
 - ❑ Marginal utility of cash βEU_p
 - ❑ Marginal utility of capital $U_{k_{it}}$

- External financing FOC:

$$\beta EU_p = \underbrace{\phi \frac{f_t}{\sum_i^n k_{it}}}_{\text{Marginal cost of external finance}}$$

- Envelope for capital:

$$U_{k_{it}} = \underbrace{z_{it}}_{\text{Productivity}} + \underbrace{\lambda(z_{it} - z_t^*)}_{\text{Socialism distortion}} + \underbrace{\frac{1}{2} \left(\frac{I_i}{k_{it}} \right)^2 + \frac{\phi}{2} \left(\frac{f_t}{\sum_i^n k_{it}} \right)^2 + \frac{\gamma}{2} \left(\frac{p_t}{\sum_i^n k_{it}} \right)^2}_{\text{Adjustment cost savings}}$$

Investment Equation

$$\frac{I_i}{k_{it}} = \left(\begin{aligned} & \frac{\beta(1-\lambda)}{1 + \phi \frac{f_t}{\sum_i^n k_{it}}} z_{it} + \frac{\beta\lambda}{1 + \phi \frac{f_t}{\sum_i^n k_{it}}} z_t^* - 1 + \\ & + \frac{1}{2} \left(\frac{I_i}{k_{it}} \right)^2 + \frac{\phi}{2} \left(\frac{f_t}{\sum_i^n k_{it}} \right)^2 + \frac{\gamma}{2} \left(\frac{p_t}{\sum_i^n k_{it}} \right)^2 \\ & + \frac{\quad}{1 + \phi \frac{f_t}{\sum_i^n k_{it}}} \end{aligned} \right)$$

Linearization to take to Data

- Estimation equation:

$$\frac{I_{it}}{k_{it}} = ((1 - \lambda)\beta)z_{it} - ((1 - \lambda)\beta\phi) \frac{f_t}{\sum_i^n k_{it}} z_{it} + (\lambda\beta)z_t^* - (\lambda\beta\phi) \frac{f_t}{\sum_i^n k_{it}} z_t^* - 1$$

- Regression:

$$\frac{I_i}{k_{it}} = \gamma_0 + \gamma_1 z_{it} + \gamma_2 \frac{f_t}{\sum_i^n k_{it}} z_{it} + \gamma_3 z_t^* + \gamma_4 \frac{f_t}{\sum_i^n k_{it}} z_t^*$$

- Link:

$$\lambda = \frac{\gamma_3}{\gamma_1 + \gamma_3}, \quad \lambda = \frac{\gamma_4}{\gamma_2 + \gamma_4}$$

Estimation

- Simple to implement: OLS regression by country
- Is over-identified:

$$\lambda = \frac{\gamma_3}{\gamma_1 + \gamma_3} = \frac{\gamma_4}{\gamma_2 + \gamma_4}$$

=> can impose directly in estimation

Data

- Data sources: Amadeus/Orbis of Bureau van Dijk
 - ❑ Extract financial and ownership data on companies in 2000-2011
 - ❑ Combine multiple issues of Amadeus and Orbis to solve the attrition bias and to collect historical data on ownership
 - ❑ Construct panel dataset on business groups
- Unbalanced panel that has subsidiary-ultimate owner-calendar year structure
 - ❑ **Ultimate owner** controls the subsidiary if it has $\geq 25.01\%$ total stake (direct or indirect) in a subsidiary and there is **no other** (know or unknown) shareholder with total stake $> 25.00\%$ in this subsidiary.
 - ❑ Create a sample of **subsidiary firms that have an ultimate owner**

Sample Selection

- Subsidiaries
 - ❑ Report unconsolidated financial statements, industry affiliation, year of incorporation
- Ultimate owners
 - ❑ Report consolidated financial statements
 - ❑ Ultimate owner has to be an incorporated firm that is **widely held**, i.e., is not controlled by another ultimate owner
 - ❑ **Industrial** ultimate owners, i.e., we exclude family-owned groups and groups held by financial holding companies
 - ❑ Ultimate owners that control at least 2 subsidiaries in at least one year
 - ❑ Exclude ultimate owner-years in which the ultimate owner's total assets is less than EUR 50,000, i.e., exclude shell firms

Descriptive Statistics

Country	Mean Sub Size	Mean Group Size	Mean Investment	Mean ROA	# of Groups	# of Subs
Austria	49	1,835	13.0%	6.5%	44	621
Belgium	55	2,311	14.2%	4.7%	507	4,891
Canada	101	1,474	18.9%	2.8%	93	595
Switzerland	93	10,600	14.7%	6.4%	194	3,290
Germany	159	25,700	15.0%	7.3%	644	9,641
Denmark	22	655	15.5%	5.9%	1,704	8,790
Spain	97	12,000	18.7%	5.0%	874	8,796
Finland	33	1,691	15.6%	9.4%	782	5,675
France	96	28,700	14.7%	5.5%	1,520	28,142
UK	155	10,900	14.3%	4.2%	7,347	51,226
Greece	51	897	22.4%	4.7%	159	987
Ireland	44	2,777	13.4%	4.2%	127	1,483
India	58	638	21.2%	1.3%	96	418

Descriptive Statistics

Country	Mean Sub Size	Mean Group Size	Mean Investment	Mean ROA	# of Groups	# of Subs
Italy	113	11,700	13.5%	4.0%	1,381	8,874
Japan	105	5,082	8.9%	5.1%	999	9,130
Korea	271	5,511	15.5%	5.5%	202	1,058
Luxembourg	214	42,300	14.7%	3.6%	27	620
Mexico	324	24,600	13.9%	5.1%	13	149
Netherlands	52	4,136	15.6%	6.9%	521	5,832
Norway	30	1,655	18.1%	5.6%	1,742	9,314
Poland	27	5,426	18.3%	4.2%	128	678
Portugal	129	5,426	18.3%	4.2%	99	1,044
Russia	122	6,050	27.0%	10.5%	80	752
Sweden	23	1,814	14.2%	7.0%	6,563	29,467
Taiwan	131	519	8.5%	3.3%	43	168
US	137	13,500	12.2%	5.9%	1,060	15,489

Baseline Specification

$$I_{ijt} = \beta_0 + \beta_1 ROA_{ijt} + \beta_2 EFU_{jt} * ROA_{ijt} + \beta_3 \overline{ROA}_{jt} + \beta_4 EFU_{jt} * \overline{ROA}_{jt} + \beta_5 EFU_{jt} + \beta_6 share_{ijt} + \beta_7 \mathbf{X}_{ijt} + \mathbf{FE}_{country} + \mathbf{FE}_{industry} + \mathbf{FE}_t + \epsilon_{ijt}$$

- i subsidiaries, j groups (by ultimate owners), t calendar years
- investment of subsidiary i
- average profitability of all subsidiaries controlled by j
- net change in external finance use of all subsidiaries controlled by j
- size of subsidiary i relative to the total size of the portfolio of subsidiaries controlled by j
- subsidiary-level control variables
- subsidiary country fixed effects
- industry fixed effects defined at NACE 2-digit level
- Scaled by assets

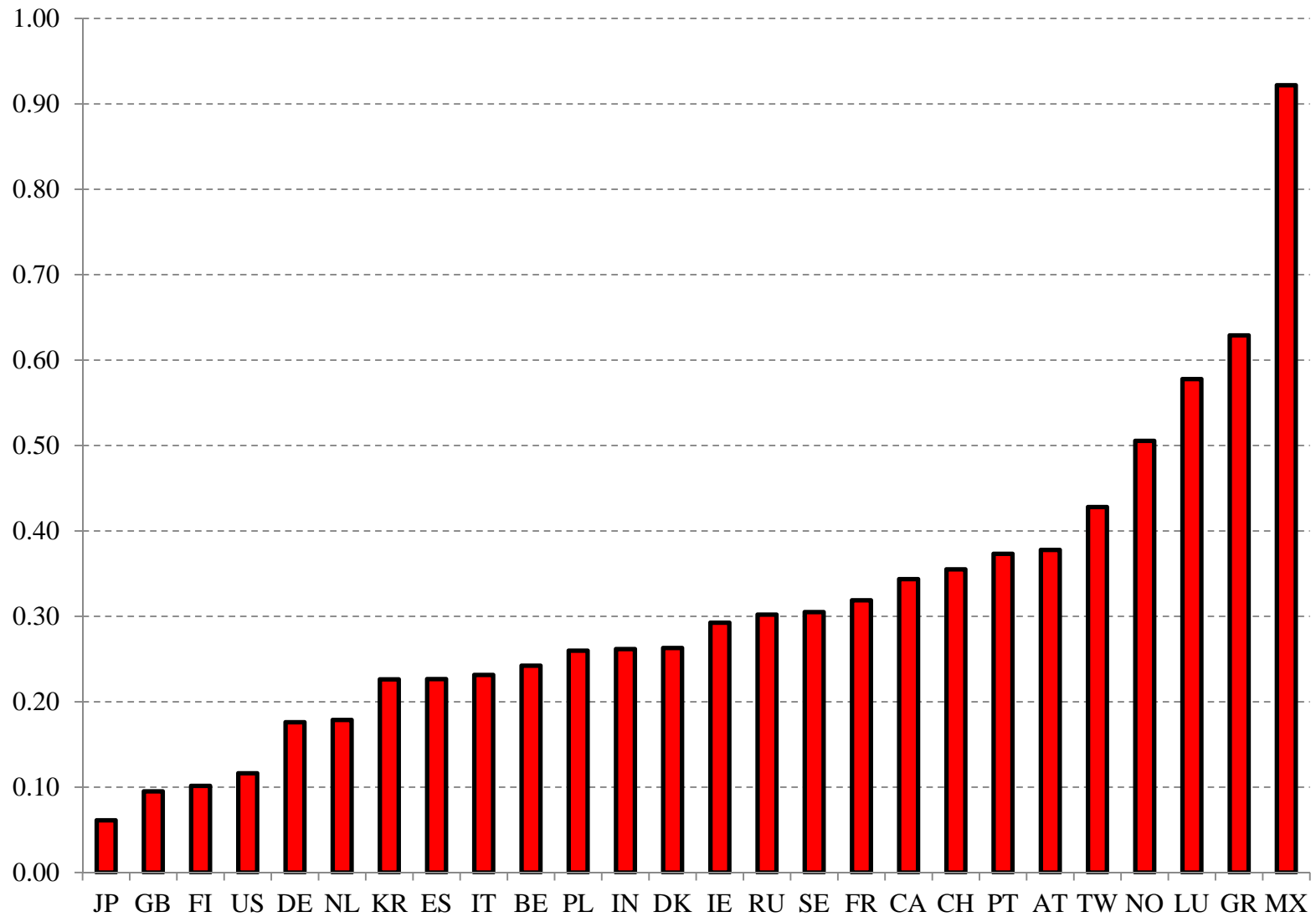
Estimation

- Estimation country-by-country based on the country of incorporation of the group's ultimate owner
- Consider domestic as well as foreign subsidiaries
- Use non-linear least squares imposing the over-identified constraint
- Standard errors clustered at the group level

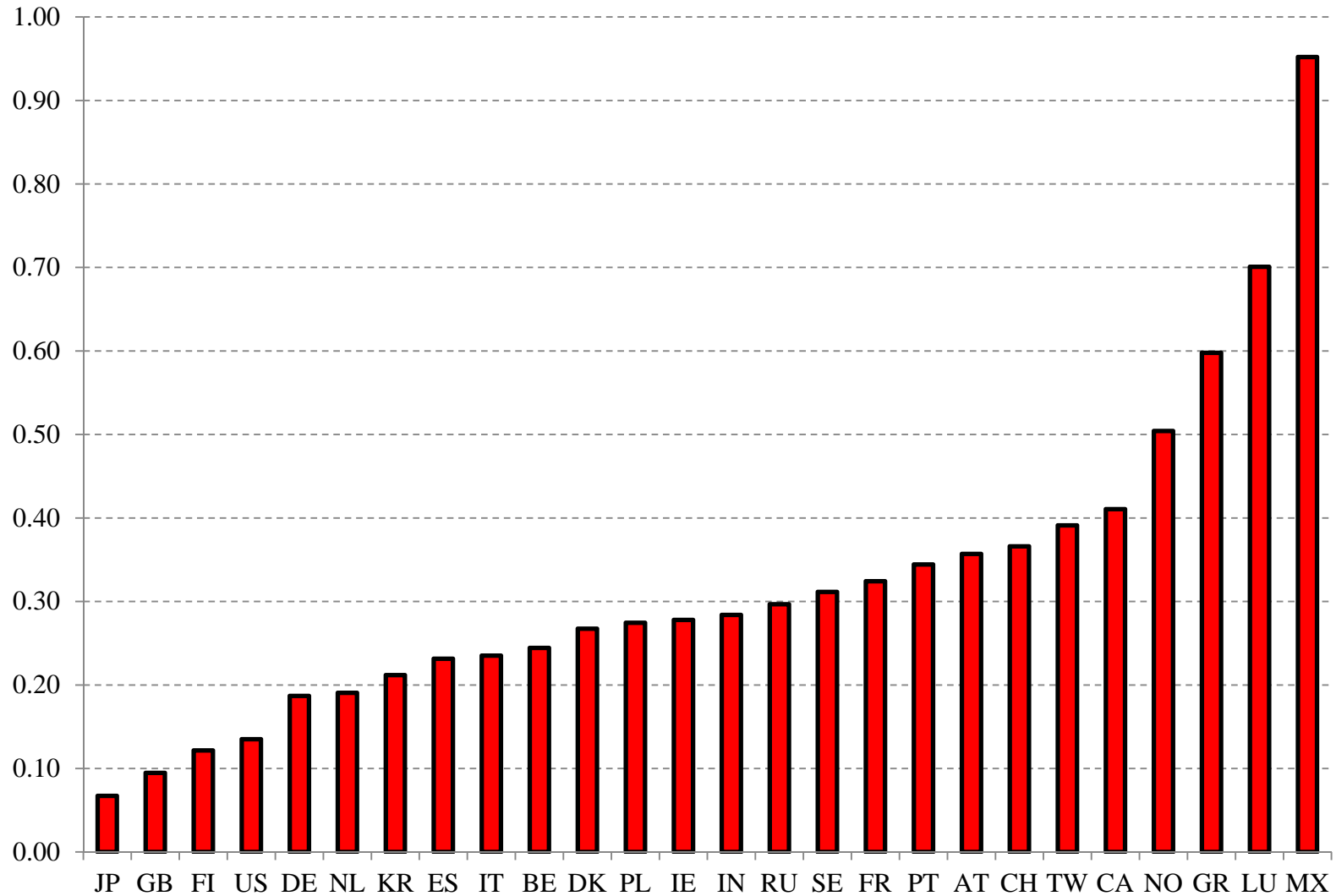
Baseline Results

- Pooled estimate across countries:
 - ❑ $\lambda = 0.24$ (s.e: 0.02)
 - ❑ Did not impose $\lambda > 0$ in estimation
 - ❑ Corporate socialism
- What does it mean?
 - ❑ Productivity of strong division increases by 1%, treated as 0.7%
 - ❑ Productivity of weak division increase by 1%, treated as 1.3%

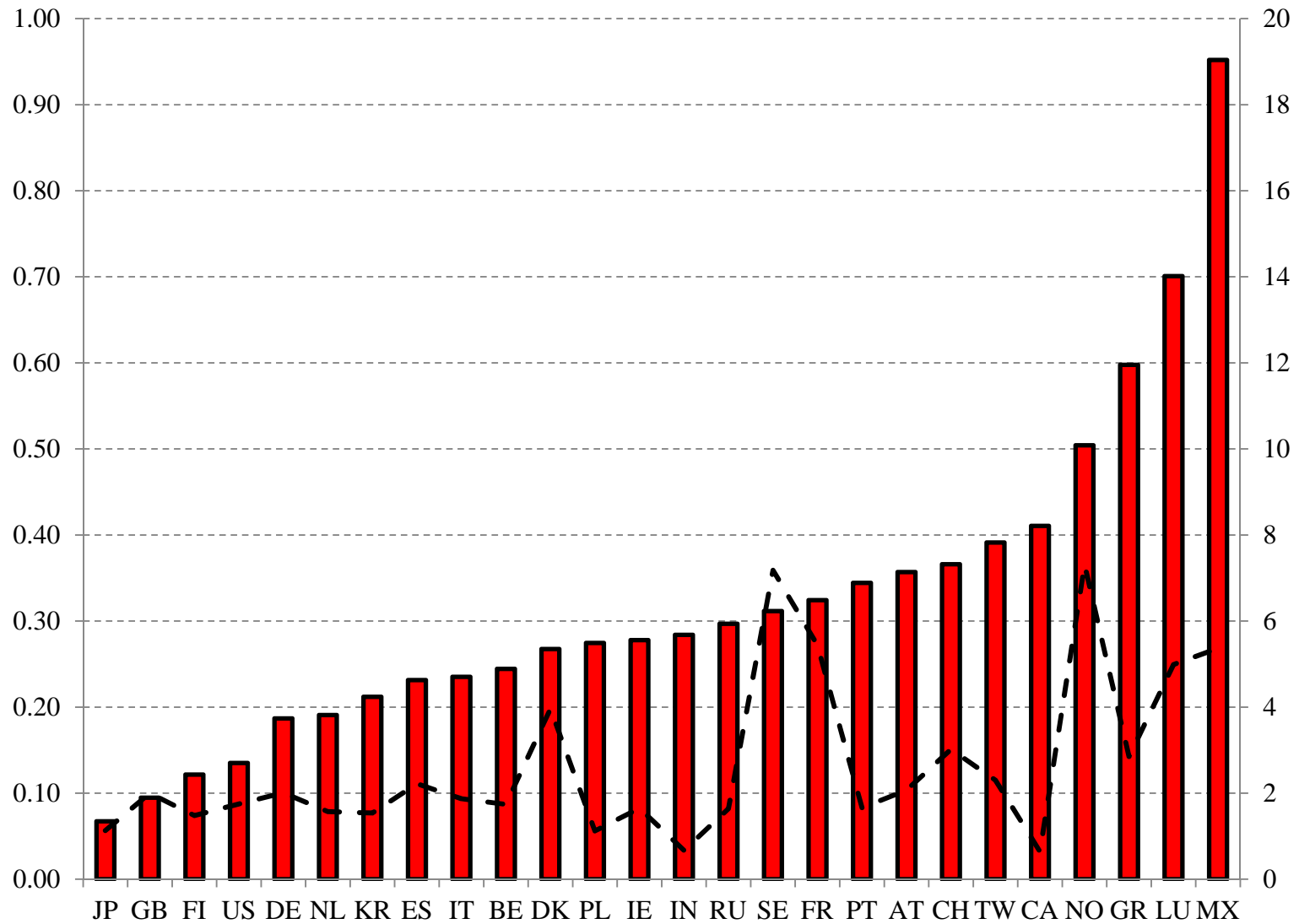
Baseline Results: No Country FE



Baseline Results: Country FE



Baseline Results: Country FE



Baseline Results

Country	λ	Rsq	Obs	Country	λ	Rsq	Obs
Austria	0.357**	0.11	2,781	Italy	0.235*	0.08	36,368
Belgium	0.244*	0.05	25,763	Japan	0.067	0.13	37,818
Canada	0.411	0.12	2,165	Korea	0.212	0.22	4,991
Switzerland	0.366***	0.06	18,065	Luxembourg	0.701***	0.10	2,157
Germany	0.187**	0.06	50,157	Mexico	0.952***	0.30	511
Denmark	0.267***	0.07	47,362	Netherlands	0.191	0.06	32,858
Spain	0.231**	0.06	48,870	Norway	0.504***	0.09	50,284
Finland	0.122	0.08	33,577	Poland	0.275	0.21	2,814
France	0.324***	0.05	163,788	Portugal	0.344*	0.05	4,609
UK	0.095**	0.07	300,517	Russia	0.297	0.15	2,495
Greece	0.598***	0.08	5,175	Sweden	0.311***	0.08	149,526
Ireland	0.278*	0.11	7,847	Taiwan	0.391**	0.24	601
India	0.284	0.13	961	US	0.135*	0.07	59,932

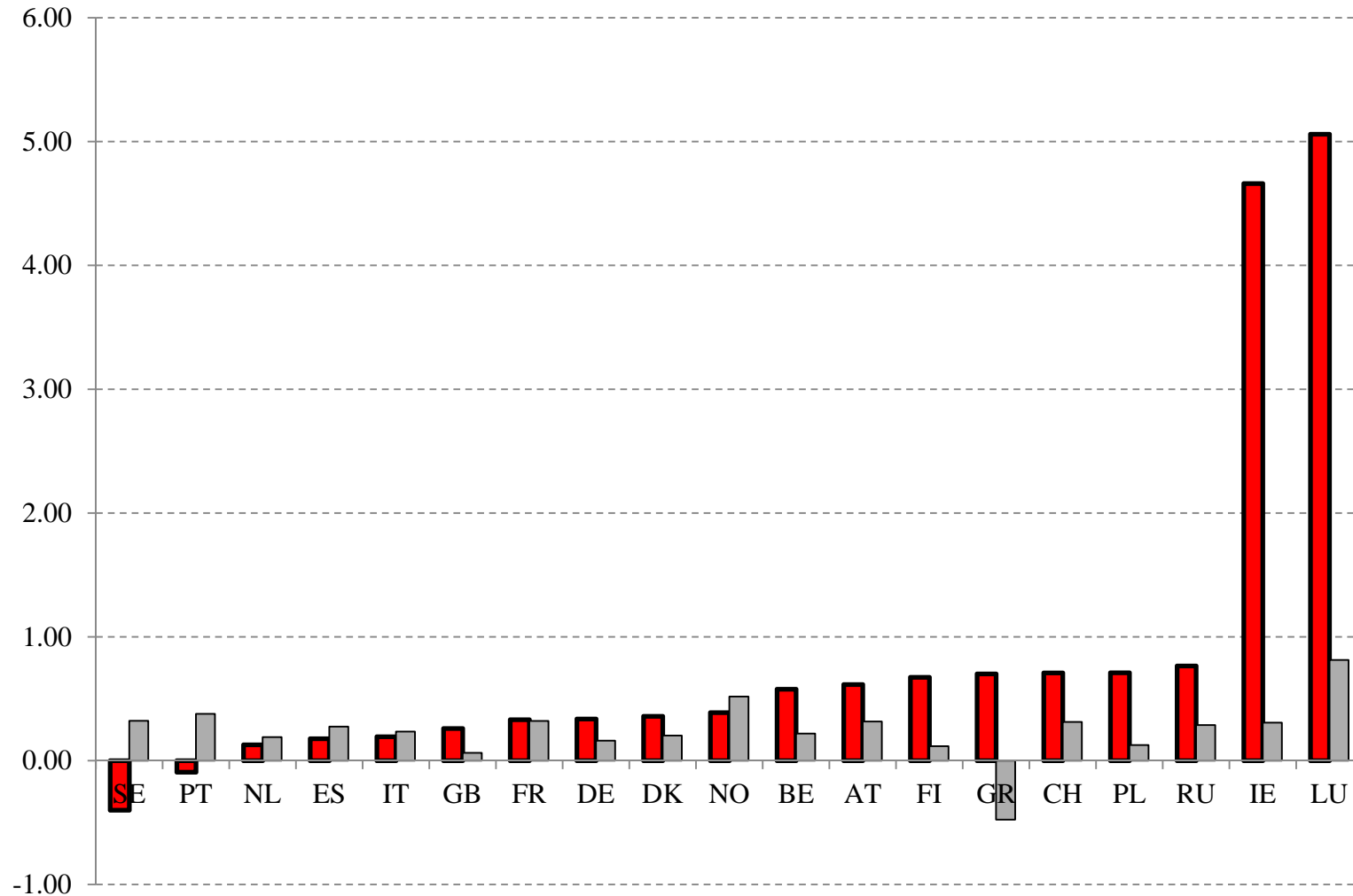
Baseline Results

- Across countries get that $0 < \lambda < 1$
- Mean=0.23
 - ❑ Productivity of strong division increase by 1%, treated as 0.7%
 - ❑ Productivity of weak division increase by 1%, treated as 1.3%
 - ❑ Misallocation large
- Large differences between countries
 - ❑ Standard Deviation 0.19
- Country with large distortions (mean + 1 st. dev)
 - ❑ Productivity of strong division increase by 1%, treated as 0.5%
 - ❑ Productivity of weak division increase by 1%, treated as 1.5%

Robustness

- Alternative measure of productivity (Value Added/# of employees)
 - ❑ $\lambda = 0.25$ (s.e: 0.06)
 - ❑ Did not impose $\lambda > 0$ in estimation
 - ❑ Corporate socialism
- Similar estimates with another measure (Revenue based residual)

High Insider Ownership



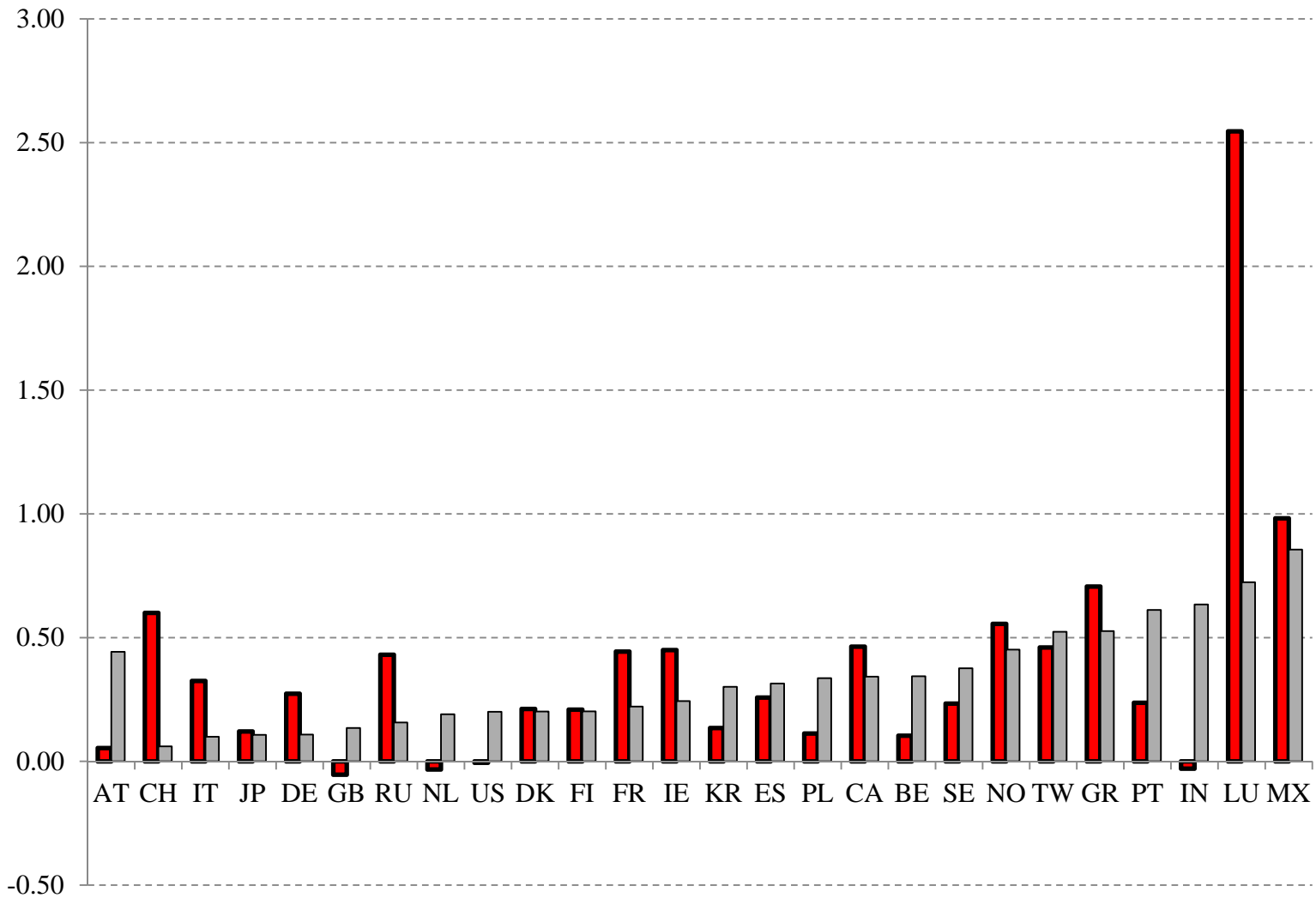
- Higher corporate socialism in groups with high insider ownership

High Insider Ownership

Country	Lambda low insider	Lambda high insider	Country	Lambda low insider	Lambda high insider
Austria	0.316	0.615	Ireland	0.307*	4.661
Belgium	0.219	0.577**	Italy	0.235*	0.193
Switzerland	0.313**	0.708***	Luxembourg	0.813***	5.059
Germany	0.161	0.336**	Netherlands	0.191	0.128
Denmark	0.203**	0.358***	Norway	0.518***	0.387**
Spain	0.275**	0.177	Poland	0.126	0.709***
Finland	0.117	0.673	Portugal	0.378*	-0.093
France	0.321***	0.331***	Russia	0.288	0.764***
UK	0.064	0.260***	Sweden	0.322***	-0.400
Greece	-0.476	0.700***			

- Increase in corporate socialism for groups where the ultimate owner of the group has high (>75 %tile) ownership by inside shareholders

Size



- No clear pattern with firm size

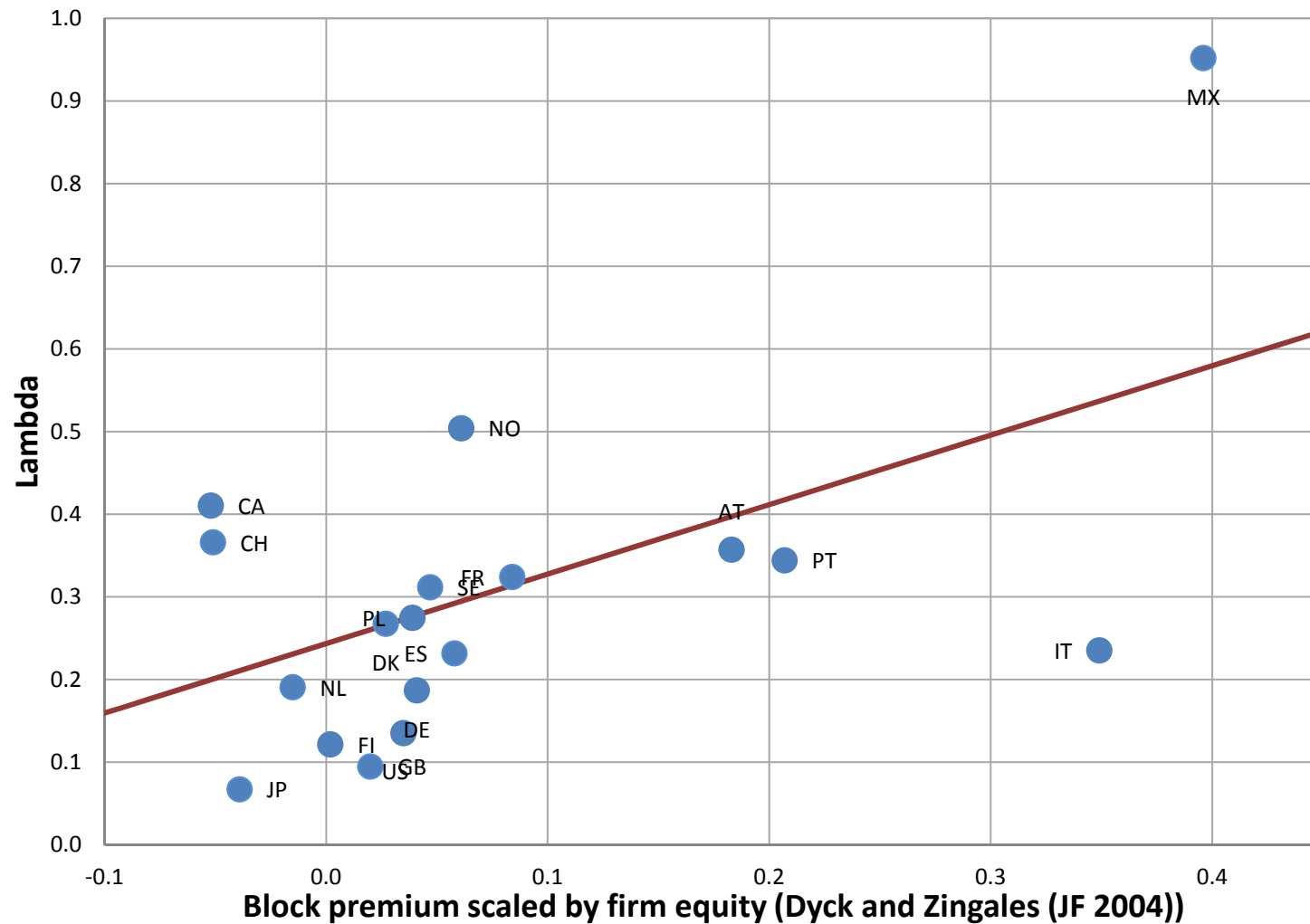
Size

Country	Lambda small group	Lambda big groups	Country	Lambda small group	Lambda big groups
Austria	0.443**	0.054	Italy	0.099	0.325**
Belgium	0.344***	0.104	Japan	0.107*	0.121
Canada	0.343	0.464	Korea	0.301	0.135
Switzerland	0.060	0.600***	Luxembourg	0.724***	2.545
Germany	0.108	0.273	Mexico	0.856***	0.982***
Denmark	0.201**	0.212	Netherlands	0.190*	-0.033
Spain	0.314***	0.258	Norway	0.451***	0.555***
Finland	0.202**	0.209*	Poland	0.336	0.112
France	0.221***	0.443***	Portugal	0.612***	0.236
UK	0.135***	-0.054	Russia	0.157	0.430*
Greece	0.526	0.706***	Sweden	0.376***	0.233***
Ireland	0.244	0.450**	Taiwan	0.524**	0.460**
India	0.634**	-0.030	US	0.200**	-0.006

- No systematic difference in the estimates between small and big groups (split by median of the sum of total assets of subsidiaries)

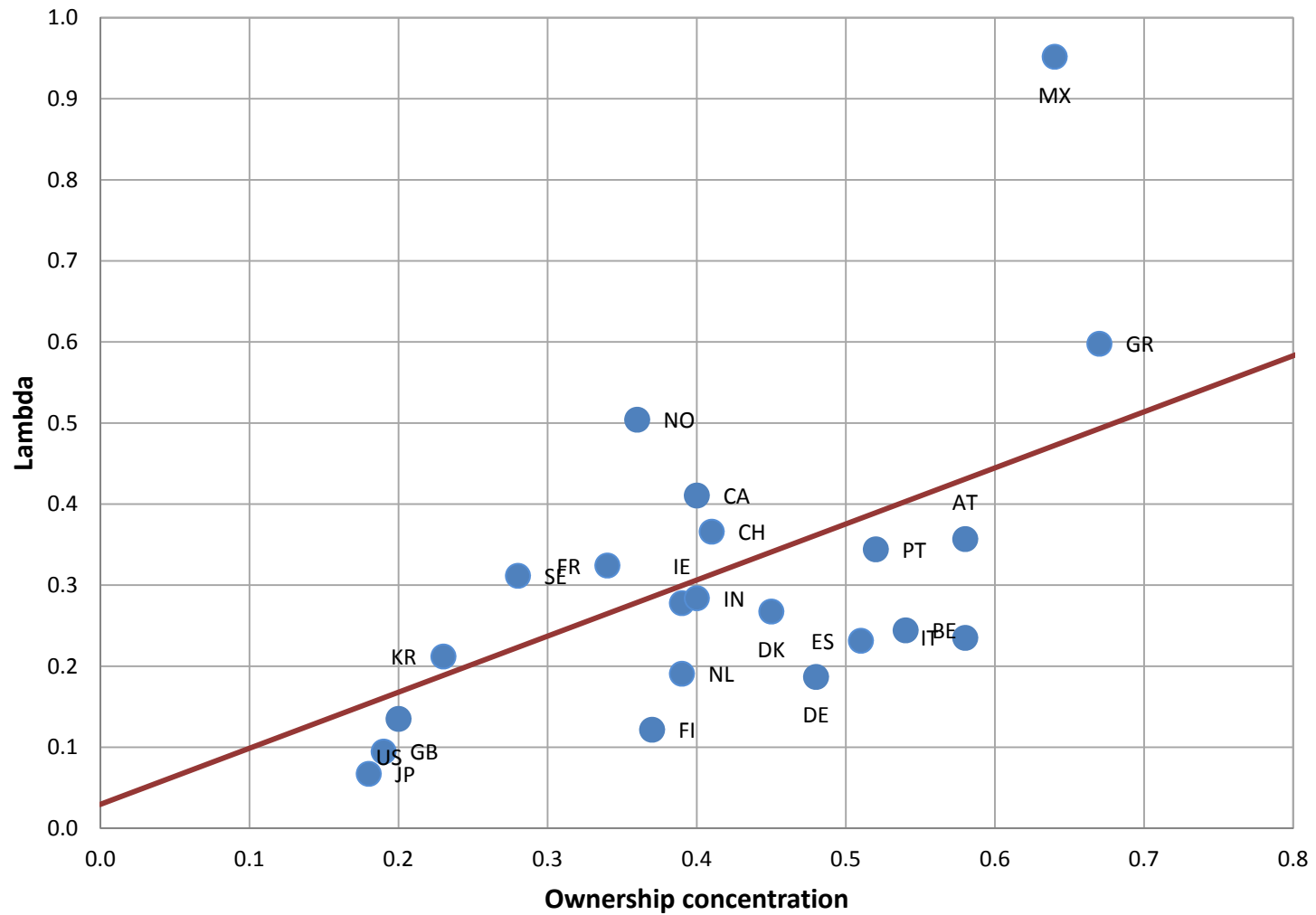
Power within Firms

Private Benefits of Control



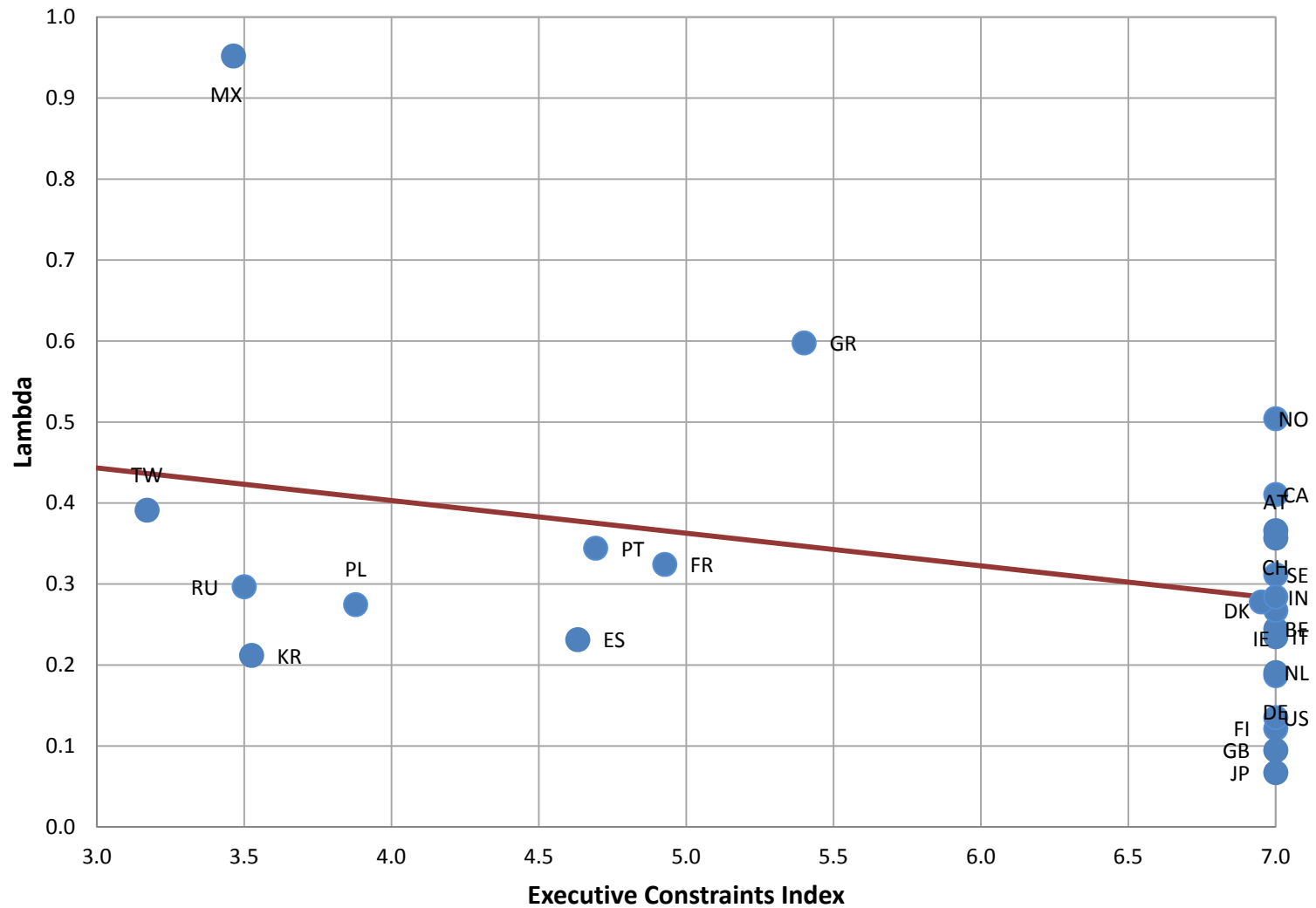
- $\beta = 0.84$ (t-stat: 2.69)

Ownership Concentration



- $\beta = 0.69$ (t-stat: 2.95)

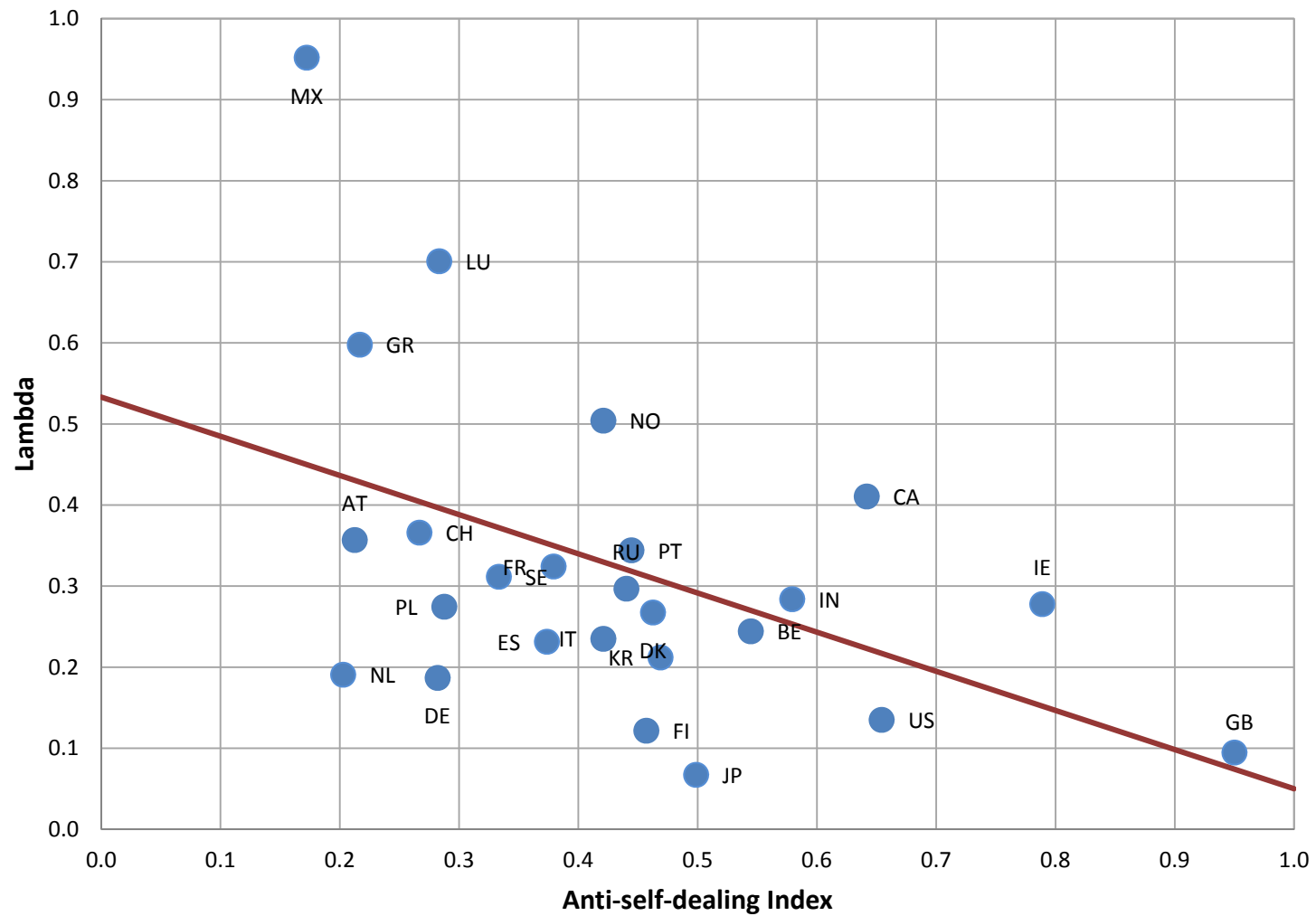
Executive Constraints



- $\beta = -0.040$ (t-stat: -1.59)

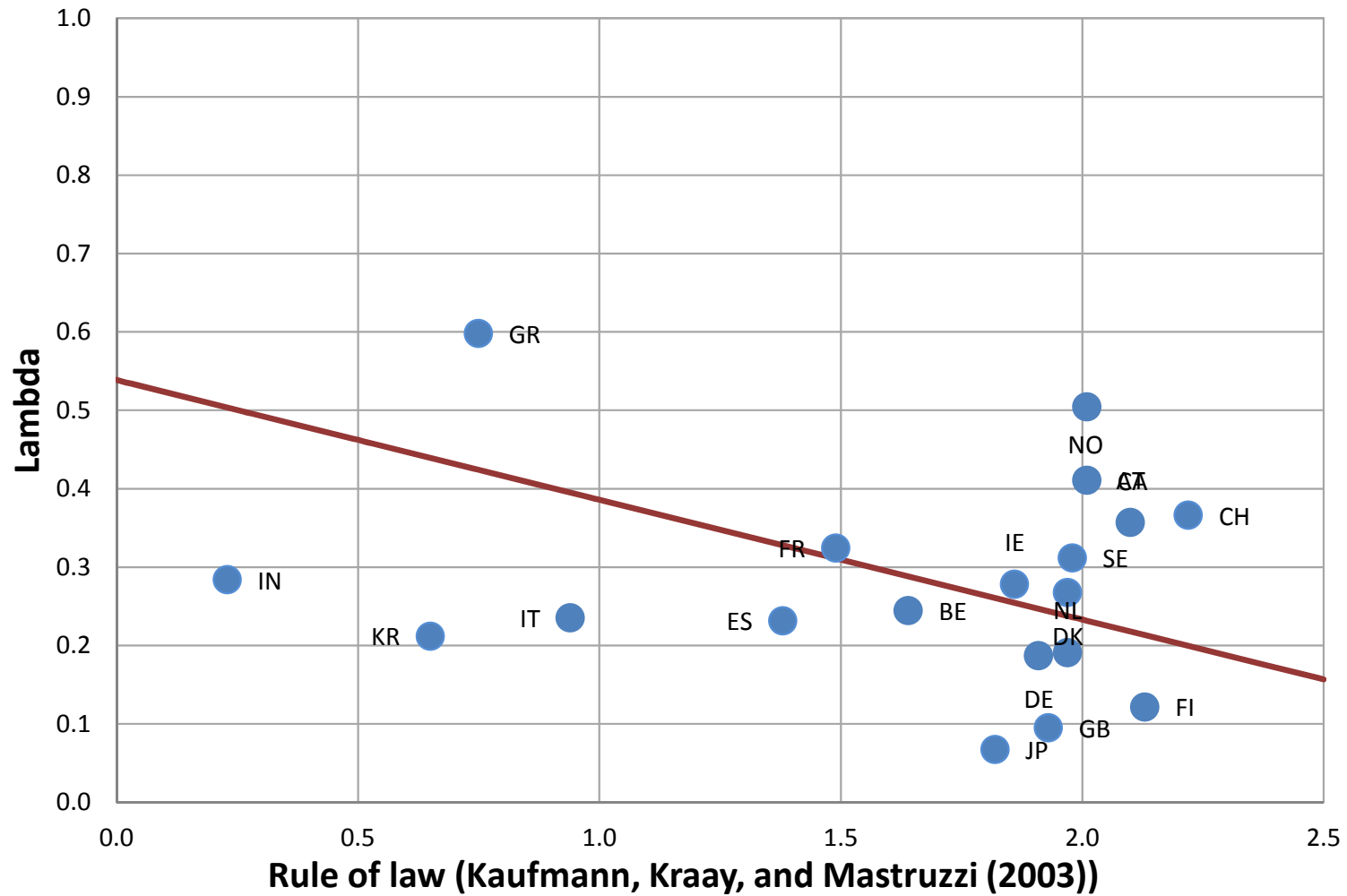
Law/Enforcement/Institutions

Self Dealing



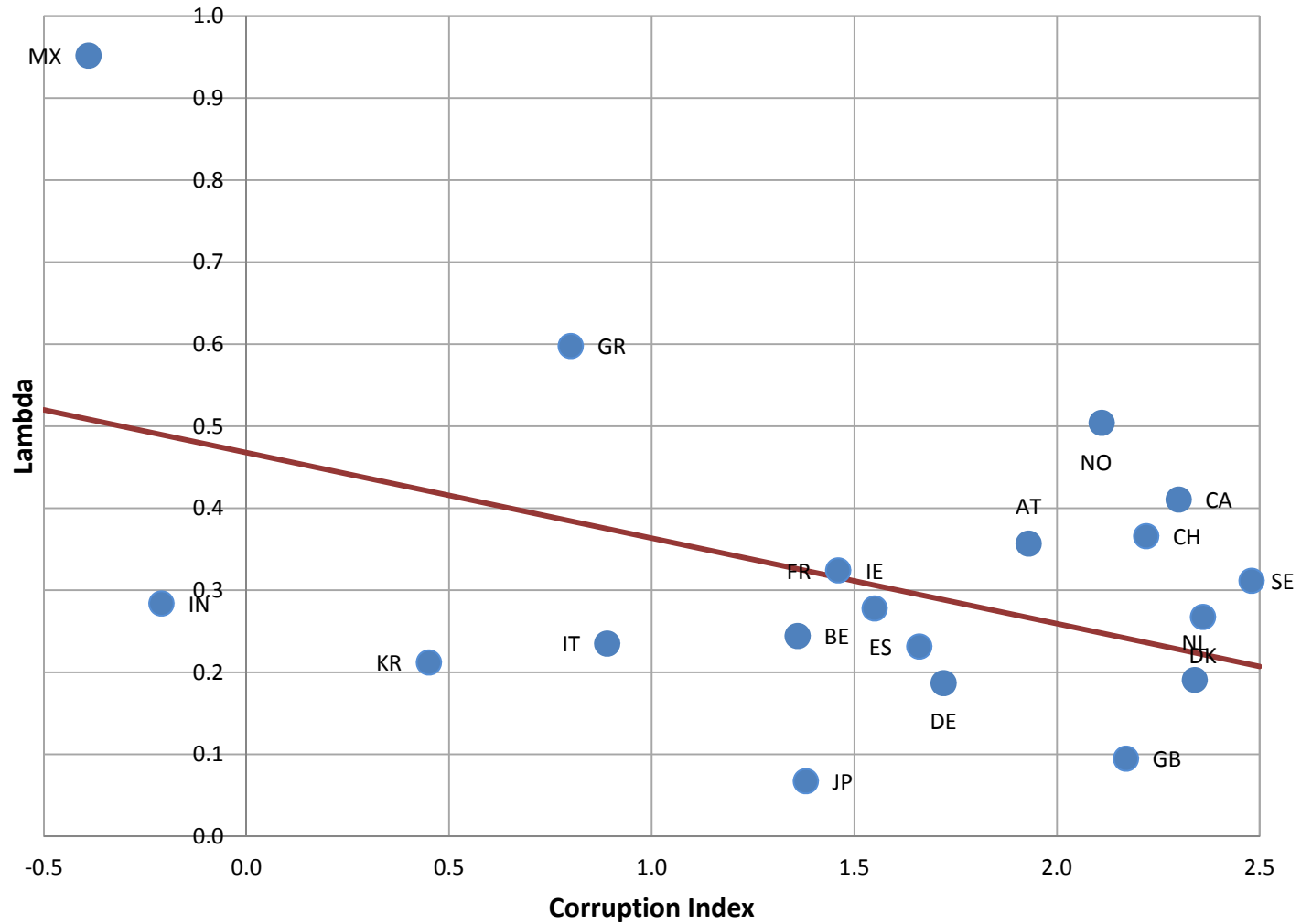
- $\beta = -0.48$ (t-stat: -2.58)

Quality of Institutions



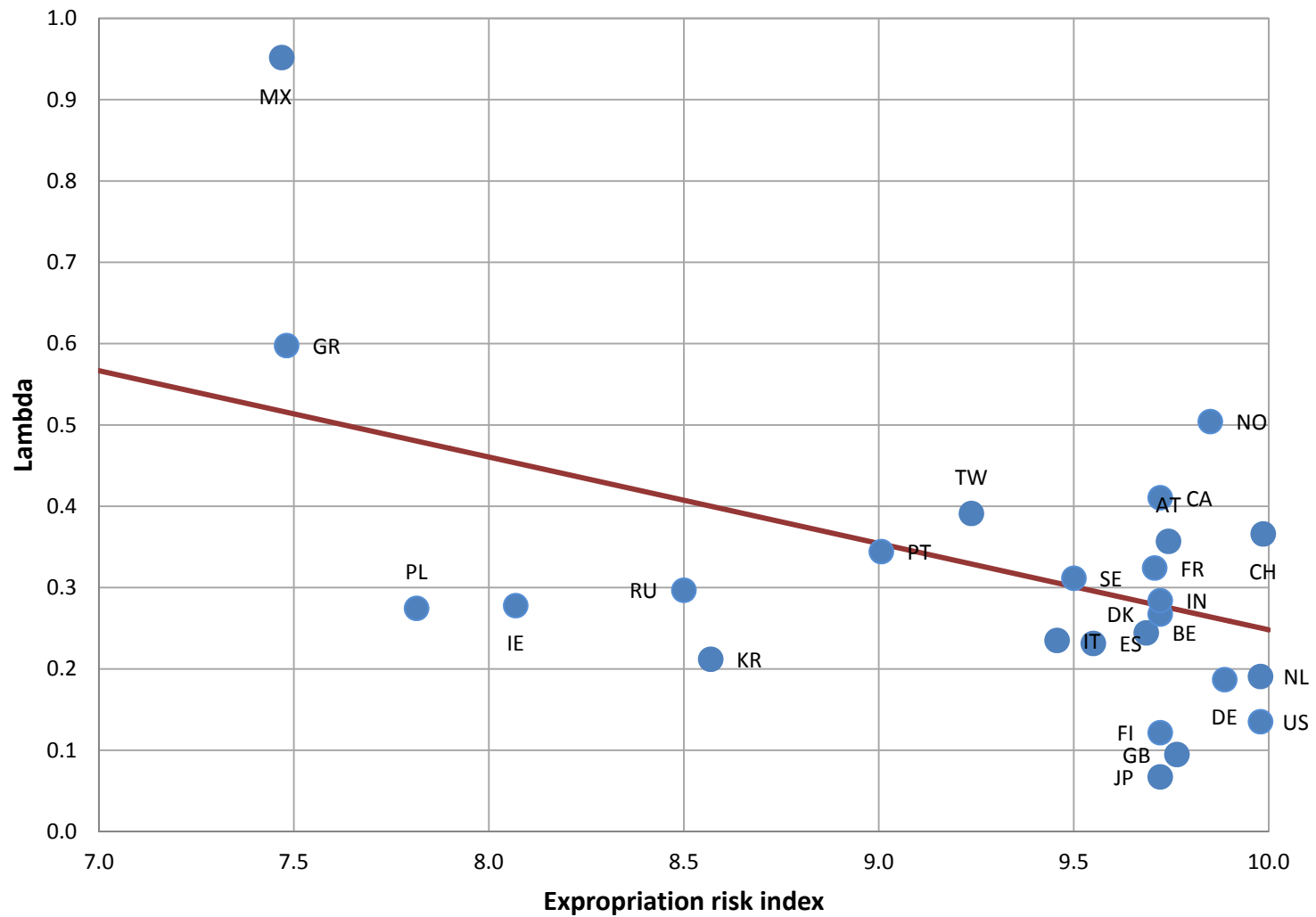
- $\beta = 0.28$ (t-stat: 2.03)

Corruption



- $\beta = -0.10$ (t-stat: -2.34)

Expropriation



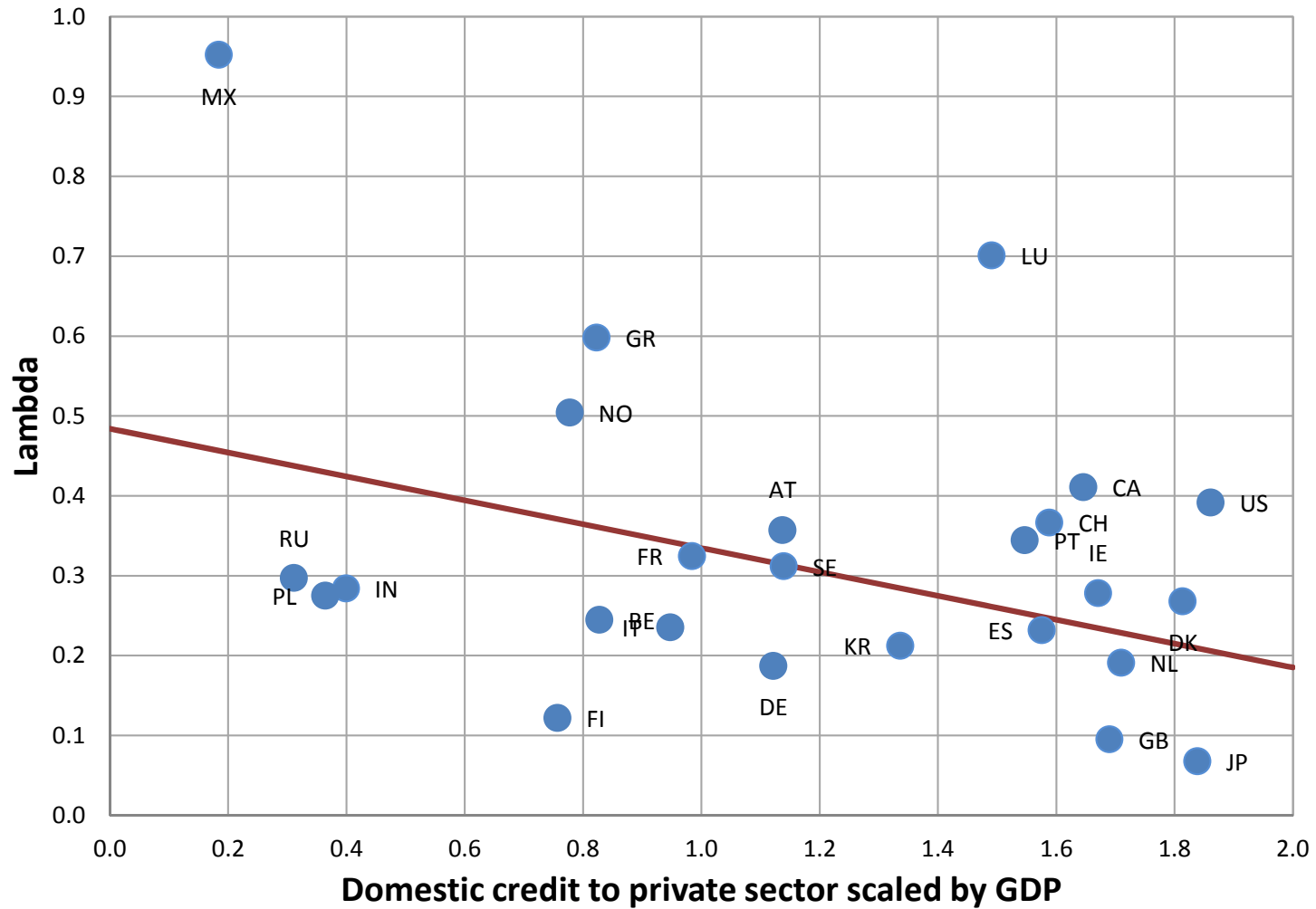
- $\beta = -0.11$ (t-stat: -2.39)

Other Measures

- Ease of proving wrongdoing (-ve)
- Democracy (-ve)
- Judicial efficiency (-ve)
- Enforceability of contracts (-ve)

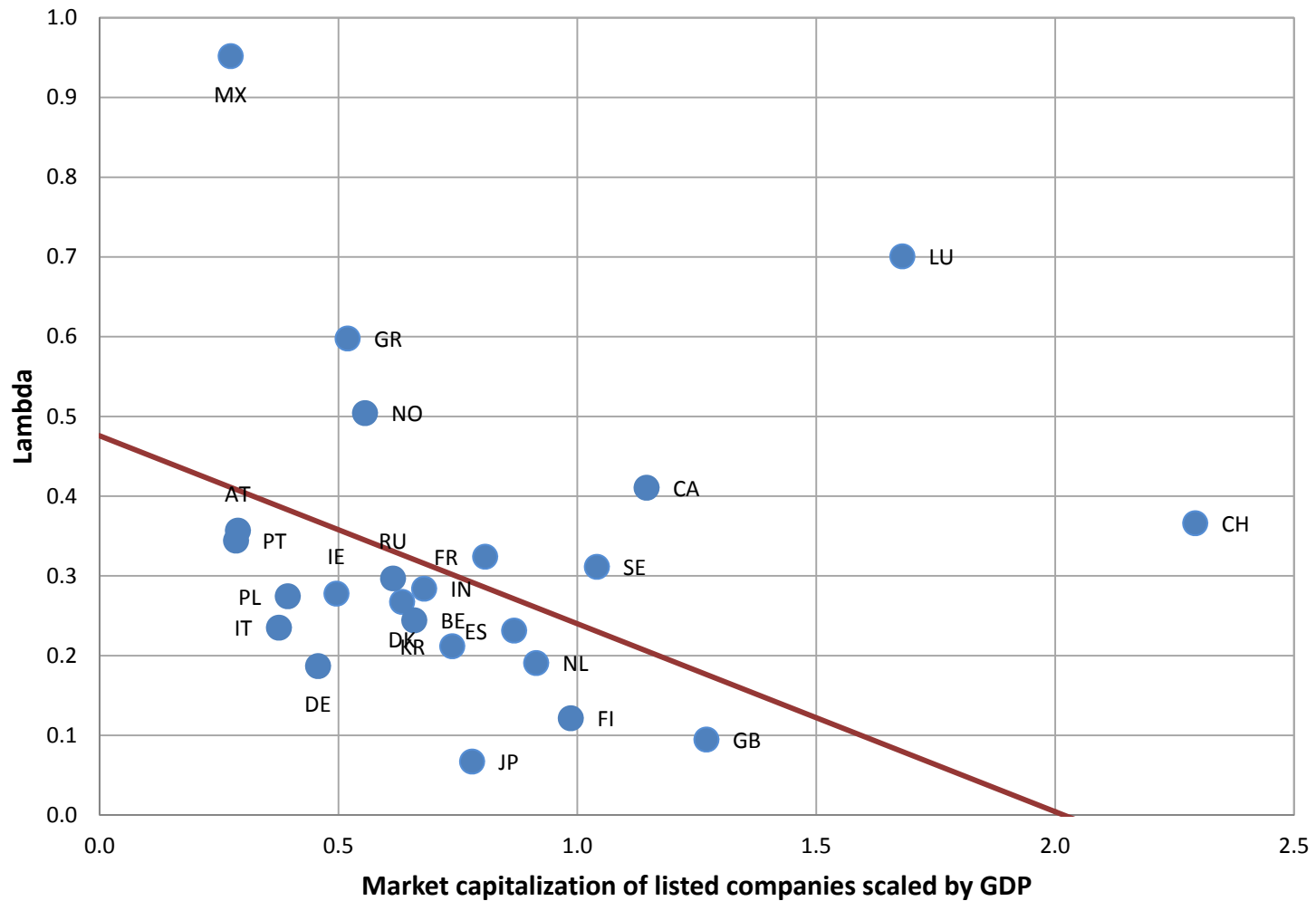
Capital Market Development

Financial Development



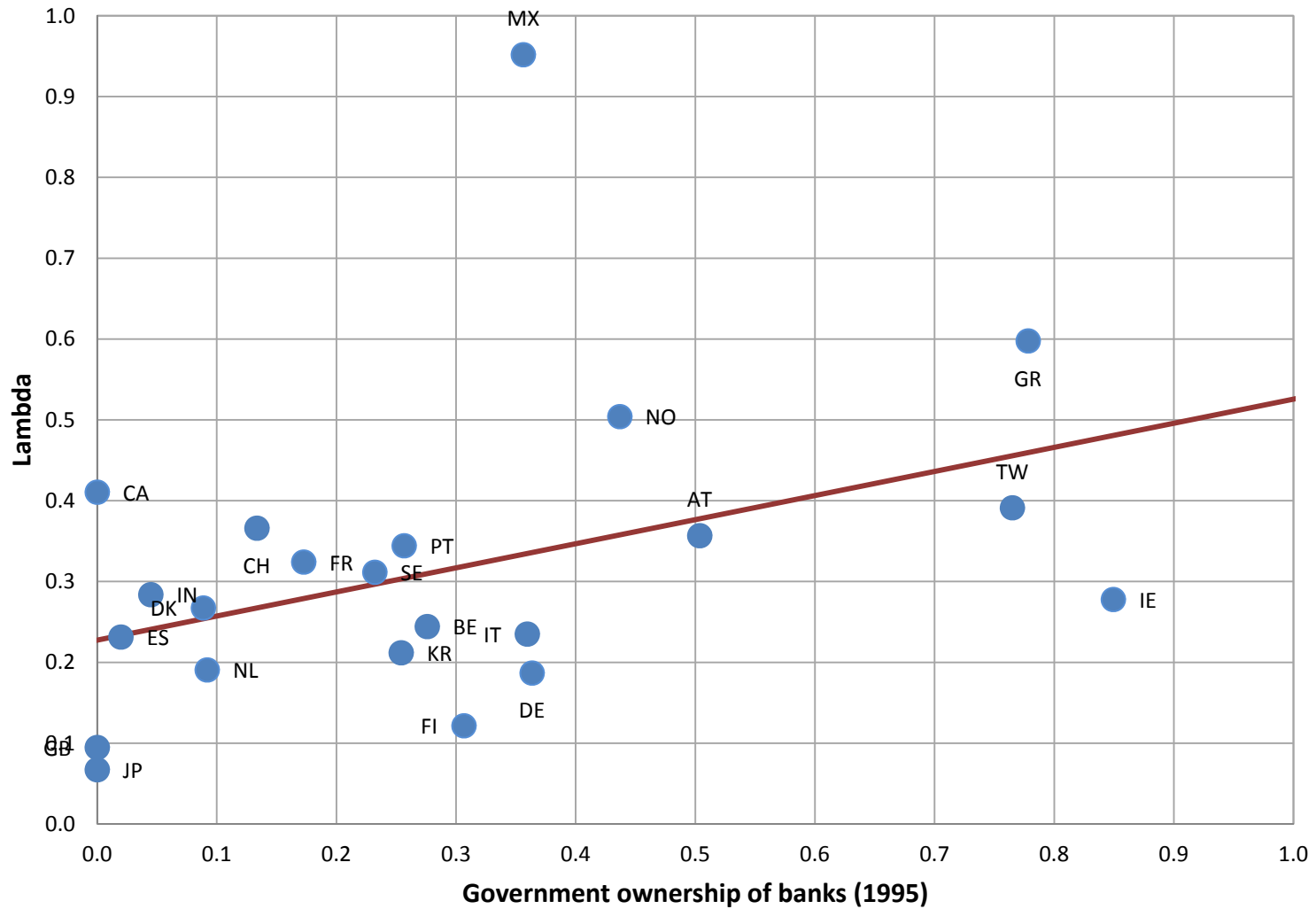
- $\beta = -0.15$ (t-stat: -2.19)

Market Capitalization to GDP



- $\beta = -0.24$ (t-stat: -1.87)

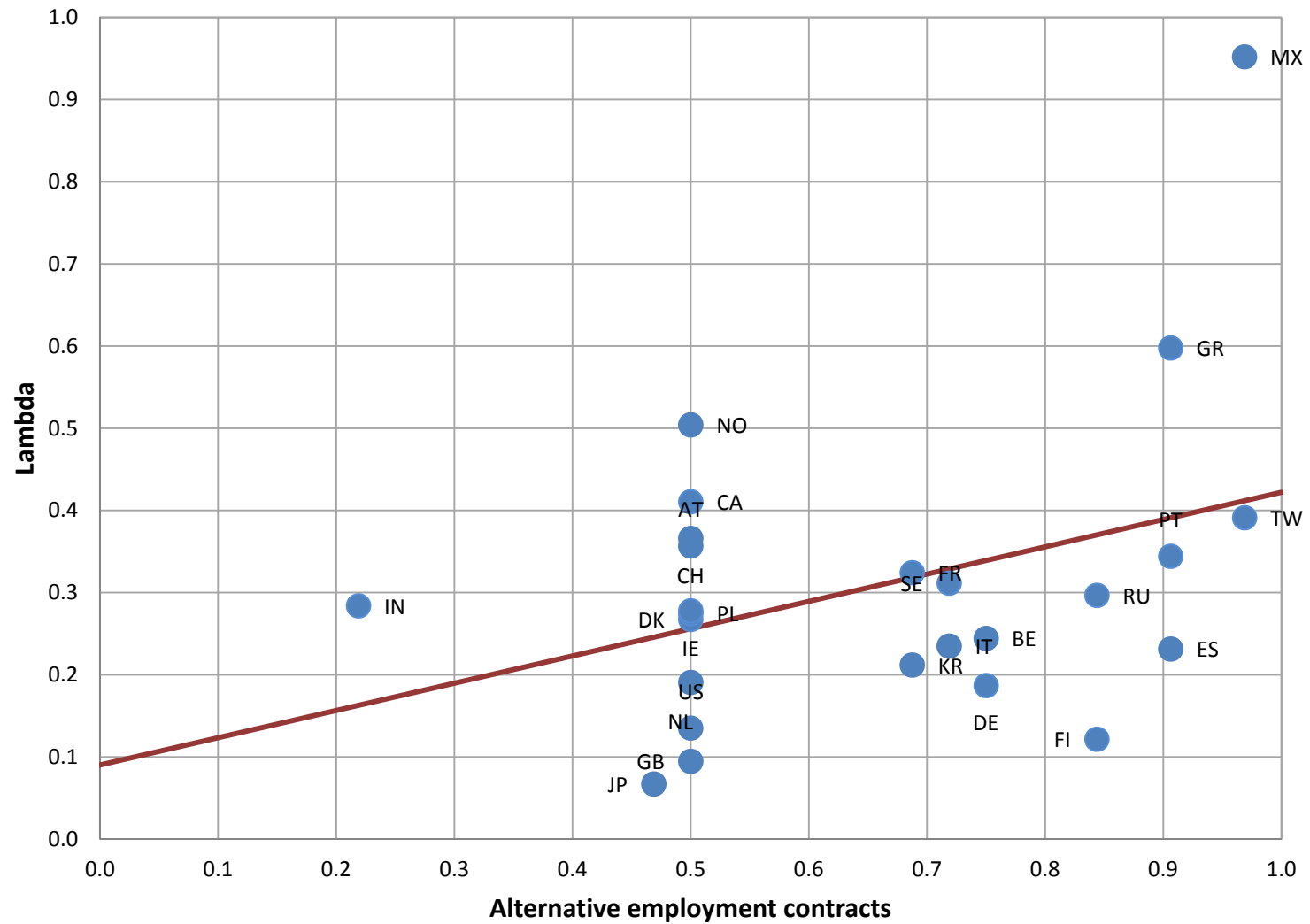
Government Ownership of Banks



- $\beta = 0.28$ (t-stat: 2.03)

Labor Protection

Alternative Contracts



- $\beta = 0.33$ (t-stat: 1.90)

Other Measures

- Fixed term contracts (+ve)
- Protection against dismissal (+ve)
- Sickness benefits (+ve)
- Unemployment benefits (- ve)

Conclusion

- Estimate within firm distortions in capital allocation
 - ❑ Simple model
 - ❑ Apply across countries
- “Socialism” distortion varies across countries
- Heterogeneity across countries seems to be related to various factors/indices
 - ❑ Good institutions positively related to within firm allocation
 - Firms in economies with bad institutions poorly managed
- Open questions:
 - ❑ Which micro frictions drive socialism?
 - ❑ Why do institutions interact with them?
 - ❑ What about benefits?

Example

- **PORSCHE AUTOMOBIL HOLDING SE**

- ❑ Listed German firm with 253 controlled subsidiaries in 2008
- ❑ Subsidiaries in 27 different countries outside of Germany
- ❑ Spanning 23 different 2-digit industries
- ❑ Number of employees of subsidiaries
 - Average 1,292 Median 97
- ❑ Total assets of subsidiaries
 - Average 547 EUR mil Median 25 EUR mil
- ❑ ROA of subsidiaries
 - Average 5.9% Std. deviation 19.9%
- ❑ Investment rate of subsidiaries
 - Average 13.2% Std. deviation 53.5%
- ❑ Examples: "VOLKSWAGEN AUDI ESPAÑA SA", "SCANIA HOLDING FRANCE", "VOLKSWAGEN GROUP UNITED KINGDOM LIMITED", "BUGATTI AUTOMOBILES S A S", "BENTLEY MOTORS LIMITED", "LAMBORGHINI ARTIMARCA S.P.A.", ...