

Combating Corruption: On the Interplay between Institutional Quality and Social Trust

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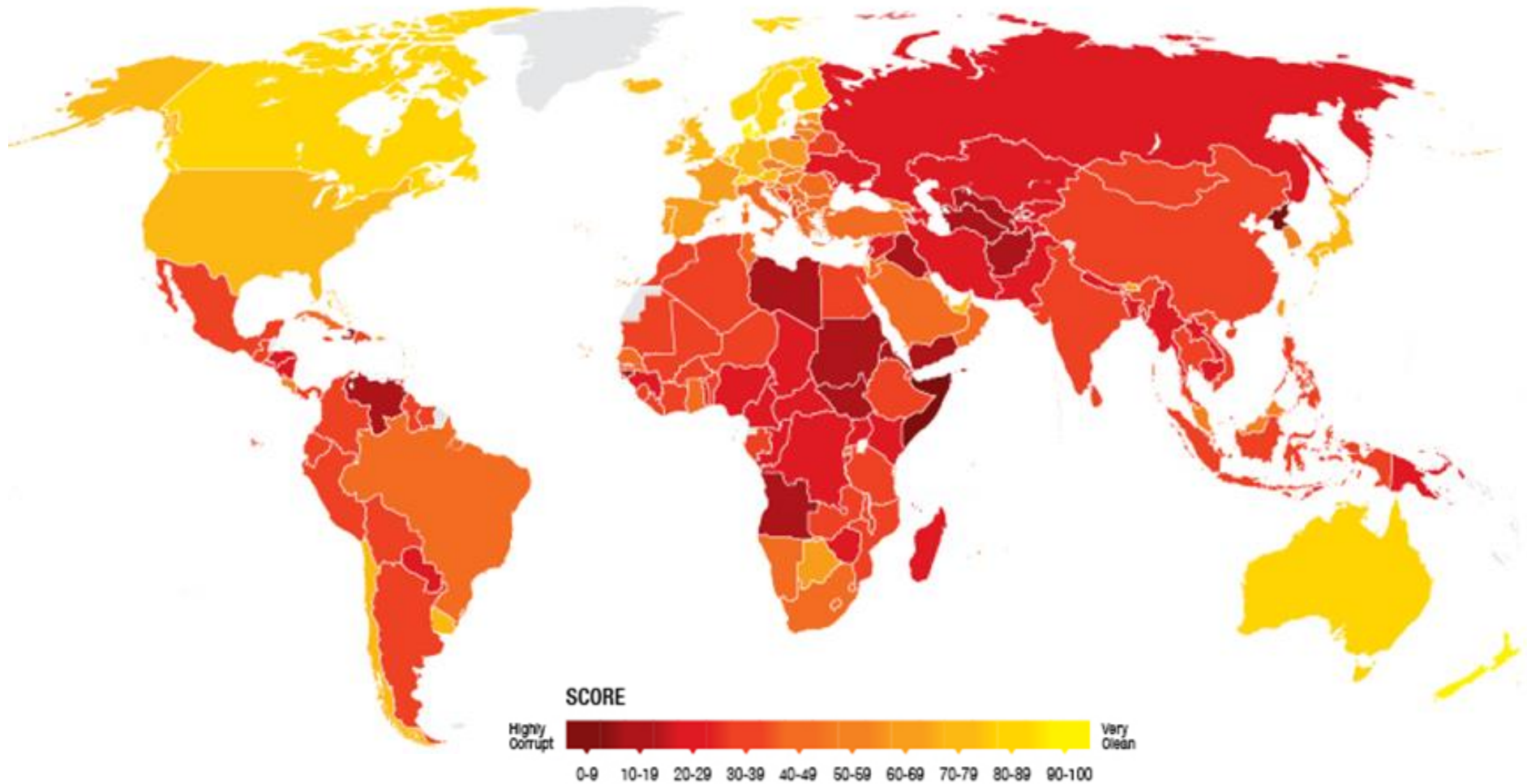
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Introduction

- corruption : the misuse of public office for private gains (Svensson 2005)
- distorts government spending (Mauro 1998), affects productivity
- in the long run leads to very considerable losses of income and human welfare (Kaufmann, Kraay, and Mastruzzi 2005).

Corruptions Perception Index(CPI)-2014

Transparency International



Iran CPI fall in 5 years: 2.8 (2004) → 1.9 (2009)

determinants of corruption

Treisman(2000,2007) summarizes the determinants of corruptions:

- Income
- Established democracy
- freedom of the press
- rule of law
- openness to trade
- absence of reliance on exports resources (oil/ minerals)

problems of multicollinearity → **“regulatory capacity”**—is robustly associated with corruption.

- Cultural and Social Factors? → **Social Trust (Strength of honesty social norms)**

The Puzzle

- Whether social trust reinforces the effectiveness of the formal institutional quality or works as a substitute?

The Assumption:

- the association between the quality of the legal system and corruption is substantially stronger when social trust scores are relatively high.

The Model

Bureaucrats at a government agency hold a monopoly over the issuance of permits to Firms.

Agents:

- **Bureaucrat** (Government Agent)
- **Firm** (Private Agent)

Strategies:

Bureaucrat : Accepting bribe or not
Firm: Works Unofficially or Officially

Payoffs:

Bureaucrat: b (bribe), w (wage),
 w_{out} (wealth out of Fine, Prison Sentences)?
M (Moral Costs: external/internal costs)
Moral Cost is Increasing in Social Trust
Firm: Permission Fee, Profit Reduction

Probabilities:

λ : risk of being caught
p: Prob. Of Accepting bribe in Unofficial Economy by Bureaucrat
q: Prob. Of Accepting bribe in official Economy by Bureaucrat

To the Bureaucrat

- bureaucrat will chose to accept if the following inequality holds:

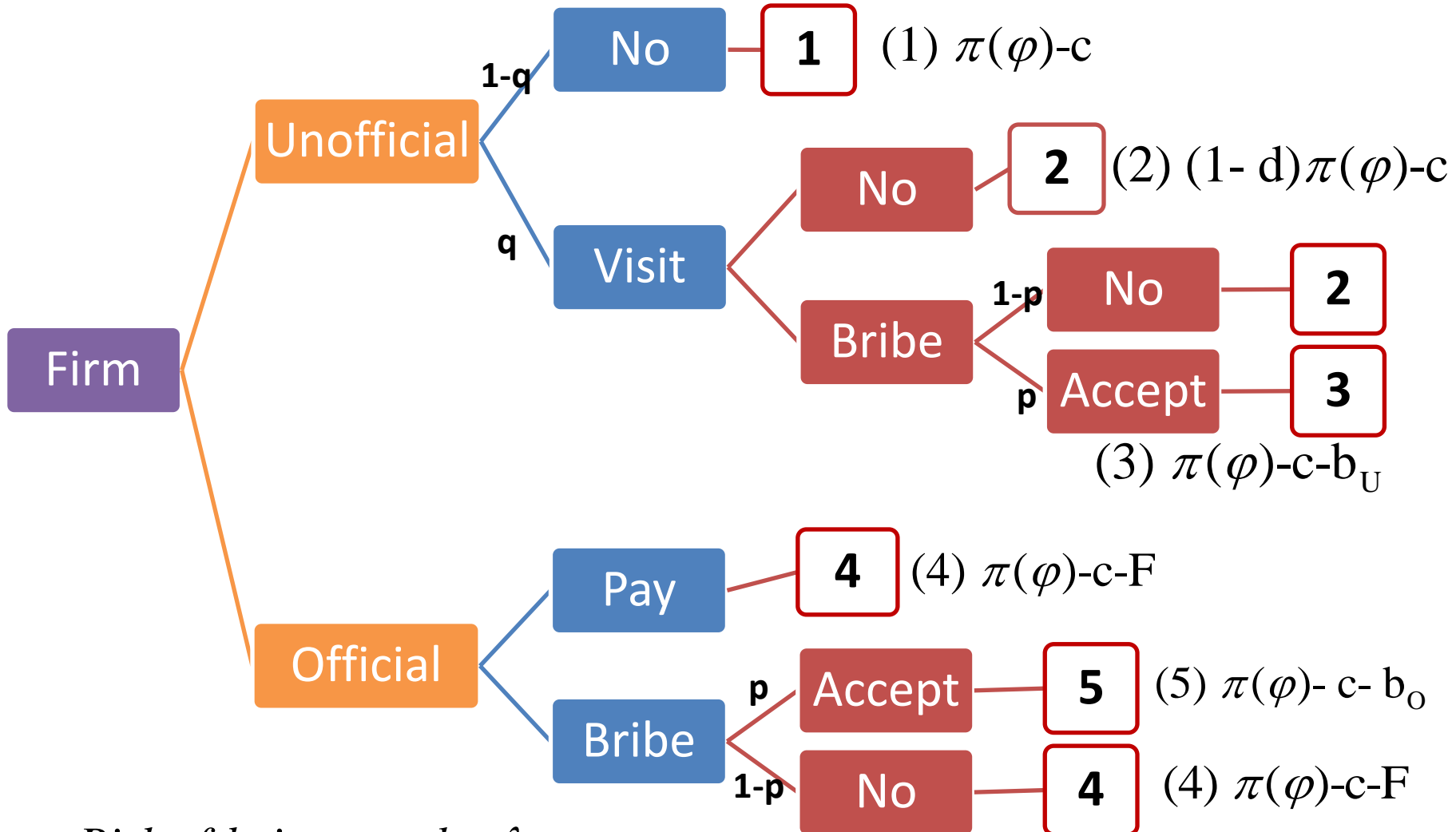
$$(1 - \lambda)(w + b) + \lambda w_{out} - M > w$$

- Solving this inequality gives the minimum bribe, b_{min} , acceptable to a risk-neutral bureaucrat:

$$b_{min} = \frac{\lambda}{1 - \lambda} (w - w_{out}) + \frac{M}{1 - \lambda}.$$

Theoretically: Moral costs is associated with a higher minimum bribe and is complemented by legal quality.

To the Firm



Risk of being caught : λ

Firm Behavior in Official Economy

- under which conditions are the expected profits from corrupt behavior larger than those from honest behavior, as in the right-hand side of inequality below:

$$(1 - \lambda)\{p[\pi(\varphi) - c - b_o] + (1 - p)[\pi(\varphi) - c - F]\} \tag{3}$$

$$+ \lambda\{p[\pi(\varphi) - c - F - b_o] + (1 - p)[\pi(\varphi) - c - F]\} > [\pi(\varphi) - c - F].$$

- the only cost of being caught [For Firm] is that the bribe is lost when the bureaucrat is being caught.

Firm Behavior in Official Economy

- The long expression (3) reduces to the short expression (4):

$$b_o < (1 - \lambda)E$$

- states that firms will attempt to bribe an official as long as the necessary bribe is smaller than the expected fine. $\rightarrow b_{\max} = (1 - \lambda)F$
- all bureaucrats will require the maximum bribe since they collectively hold sufficient monopoly power

The Corruption in Official Economy

- The probability of a bureaucrat's taking a bribe of the size in expression (4) is given by equation (5)

$$p = \text{prob}\{M < (1 - \lambda)^2 F - \lambda(w - w_{\text{out}})\}.$$

- ***quality of the legal system, λ , is always effective but may be more so in countries with a high average level of moral costs***

Allowing Unofficial Economy

- **Unofficial Economy**, is closer to reality in most developing countries
- **unofficial economy** can affect up to three-quarters of gross domestic product (GDP) (Schneider and Enste 2000).
- Effectively allow for an exit option as many firms (or parts of firms) in most countries exist in an unofficial economy.

Firm Behavior in Unofficial Economy

- $d = a - \mu\lambda$: the fraction of time to receive permit.
- μ : institutional capacity, b_U : bribe in unofficial

$$\pi(\varphi) - c - b_U > (1 - d)\pi(\varphi) - c \rightarrow b_U < d\pi_u(\varphi) \xrightarrow{\text{Monopoly}} b_U = d\pi_u(\varphi)$$

- bribes will occur in the underground economy when inequality (7) holds?

Min Bribe Cost

$$(a - \mu\lambda)\pi_u(\varphi) < \frac{\lambda}{1 - \lambda}(w - w_{\text{out}}) + \frac{M}{1 - \lambda}.$$

Max bribe Benefit

- the probability of a bureaucrat's accepting a bribe in the unofficial economy, that is, on a control visit, is given by q in equation (9):

$$q = \text{prob}\{M < (a - \mu\lambda)(1 - \lambda)\pi(\varphi) - \lambda(w - w_{\text{out}})\}.$$

Being Official or Unofficial?

- firms will choose to operate in the unofficial economy if the total expected profit of an underground firm $E\{\pi_u\}$ exceeds that of a corrupt firm in the official economy $E\{\pi_o\}$ in inequality (11):

$$q[\pi(\varphi) - b_u] + (1 - p)q(1 - d)\pi(\varphi) + (1 - q)\pi(\varphi) - c \\ > p[\pi(\varphi) - b_o] + (1 - p)[\pi(\varphi) - b_o - F] - c.$$

$$\pi(\varphi) < \frac{1 - pq}{(1 - p)qd} b + \frac{1}{qd} F.$$

- less productive firms are more likely to enter the underground economy
- the relation between the likelihood of going underground and institutional quality, λ , will be ambiguous.
- when a country's institutional quality moves from very bad to relatively better, a relatively large underground economy, an improvement of institutional quality has ambiguous effects on the level of corruption

What we explore in data?

1. Institutional quality is more effective in combating corruption in conjunction with high moral costs.
2. Corruption is less likely when average moral costs are high regardless of institutional quality.
3. In countries with particularly poor institutional quality, with relatively large unofficial economies, investing in overall institutional quality can in principle lead to more corruption.

Iran?

Data-Measuring Corruption

- most corruption indicators rest based on expert-opinion polls or forms of quantifying the perceptions of corruption in an economy
- the use of a perceptions-based corruption index, as in most of the empirical corruption literature, might give rise to a spurious association between social trust and corruption.
- corruption focused around specific business sectors or bureaucratic agencies, not public.
- **deviates from most of the literature on corruption by employing an index derived by a multiple-indicators multiple causes (MIMIC) estimator**

Data-Measuring Corruption- MIMIC

set of objective variables consisting of:

- rule of law
- secondary education rates
- cement consumption
- GDP per capita
- the severity of capital restrictions
- financial development
- latitude
- age of the democracy

Data-Measuring Social Trust

- indicator of M in the theoretical framework, is measured as is standard in the literature, by the percentage of a population answering **yes** to the question, “**In general, do you think most people can be trusted?**”
- Knack (2001), using data from a **wallet-drop experiment** conducted in 16 cities around the world and 12 major American cities, shows that the percentage of a population **answering yes** to the social trust question is a strong predictor of the share of the dropped wallets that are returned.

Data-Institutional Quality

- legal quality collected and published annually by the Fraser Institute
- Opinion Survey on judicial independence, the impartiality of courts, the protection of intellectual property, the degree of military interference in politics, and the degree of law and order in the country.
- The resulting index is distributed between 1 (virtual lawlessness) and 10 (maximum legal quality), with an average of 5.7 in the present sample and a standard deviation of 1.9

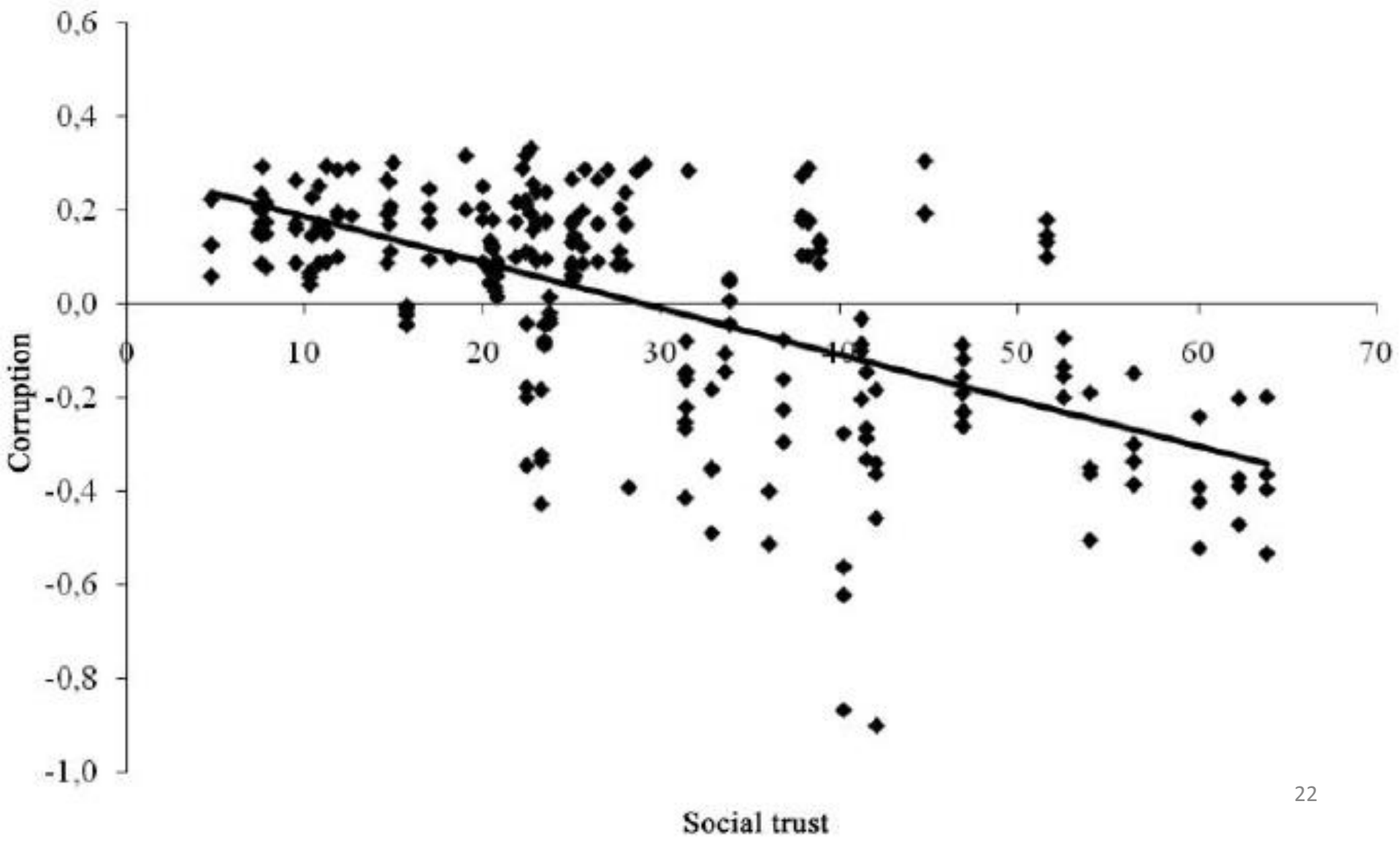
Data-Final Set

Dependent Variable: corruption

- legal quality
- social trust
- logarithm of GDP per capita
- openness
- Government size
- political competition (the HHI of the legislature)
- dummies for post communist countries, Latin America, the Middle East and North Africa (MENA), Asia, Sub-Saharan Africa
- an unbalanced panel of 194 observations from 74 countries with full data from 1981-2004

	Average	SD	Observations
Corruption	.047	.220	334
log GDP per Capita	8.635	1.062	333
Openness	.718	.486	334
Political Competition	.248	.274	321
Government Size	.206	.085	334
Legal Quality	5.310	1.916	289
Postcommunist	.033	.179	334
Latin America	.254	.436	334
Asia	.132	.339	334
MENA	.108	.311	334
SSA	.213	.409	334
Social Trust	.276	.139	304
Democracy	5.280	4.184	326
Checks	2.871	1.683	332
Political Constraints III	.277	.207	329
Monarchy	.186	.389	334
Regulatory Freedom	5.290	1.012	300
log Cement Consumption	7.437	1.867	334

Note. GDP = gross domestic product; MENA = Middle East and North Africa; SSA = Sub-Saharan Africa.



Main Results: Random Effects Regressions

- Remove Outliers -Remove
Corrup.
Above 0.253Remove
Corrup.
Below -.363

	(1)	(2)	(3)	(4)	(5)	(6)
log GDP per Capita	-.163** (.025)	-.135** (.015)	-.153** (.023)	-.129** (.012)	-.162** (.027)	-.115** (.014)
Openness	.015 (.029)	-.020 (.018)	.001 (.003)	-.036* (.015)	.026 (.029)	-.033 ⁺ (.017)
Political Competition	-.149** (.052)	-.082* (.035)	-.120* (.047)	-.104** (.027)	-.140* (.057)	-.082** (.032)
Government Size	.285 ⁺ (.152)	.248** (.096)	.263 ⁺ (.141)	.112 (.075)	.070 (.165)	.194* (.088)
Legal Quality	-.009 (.005)	-.011** (.004)	-.009 ⁺ (.005)	-.014** (.003)	-.005 (.006)	-.009** (.003)
Postcommunist	.231** (.059)	.199** (.034)	.212** (.056)	.209** (.027)	.199** (.066)	.197** (.033)
Latin America	.119* (.055)	.109** (.031)	.120* (.052)	.110** (.025)	.108 ⁺ (.057)	.126** (.030)
Asia	.038 (.057)	.062 ⁺ (.033)	.016 (.054)	.054* (.027)	-.016 (.058)	.055 ⁺ (.032)
MENA	.141 ⁺ (.072)	.127** (.041)	.120 ⁺ (.068)	.121** (.032)	.109 (.074)	.133** (.039)
SSA	.086 (.077)	.097* (.044)	.079 (.072)	.087* (.037)	.061 (.084)	.106* (.042)

Main Results: Random Effects Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
Social Trust	-.416** (.123)	-.352** (.068)	-.346** (.117)	-.339** (.051)	-.389** (.125)	-.232** (.069)
Legal Quality × Social Trust			-.168** (.028)	-.174** (.017)	-.164** (.031)	-.113** (.024)
Observations	194	174	194	154	171	172
Between R^2	.821	.921	.841	.958	.823	.911
Within R^2	.223	.349	.374	.597	.421	.446
Wald χ^2	326.45	810.12	406.94	1,463.78	329.46	706.3
Breusch-Pagan	36.37**	9.31**	48.47**	2.90 ⁺	49.55**	13.38**
Hausmann test	4.12	5.28	3.84	6.63	9.03	7.43
IV estimate:						
Social Trust	-.634** (.279)					
Hansen J -statistic	1.280					
First-stage Wald	195					

Note. All regressions include period dummies and a constant; standard errors are in parentheses. ²⁴In-

Random Effects Regressions: Social Trust in Countries with High or Low Legal Quality

	With Instrumental Variables			Without Instrumental Variables		
	All	Low	High	All	Low	High
log GDP per Capita	-.164** (.024)	-.083** (.015)	-.177** (.037)	-.149** (.023)	-.078** (.015)	-.182** (.035)
Openness	.012 (.029)	-.018 (.023)	.008 (.040)	-.003 (.027)	-.024 (.022)	.014 (.039)
Political Competition	-.151** (.053)	-.057 (.036)	-.179** (.071)	-.118* (.047)	-.047 (.034)	-.178** (.069)
Government Size	.275 ⁺ (.150)	.009 (.081)	.091 (.279)	.269 ⁺ (.140)	.023 (.081)	.072 (.279)
Legal Quality	-.008 (.006)	-.072 (.455)	-.025 ⁺ (.014)	-.009 ⁺ (.005)	-.080 (.430)	-.026 ⁺ (.014)
Postcommunist	.196** (.068)	.207** (.052)	.212** (.079)	.197** (.057)	.235** (.048)	.229** (.075)
Latin America	.068 (.076)	.103** (.038)	.114 (.086)	.112* (.052)	.139** (.030)	.131 ⁺ (.079)
Asia	.014 (.059)	.097** (.034)	-.017 (.077)	.001 (.054)	.111** (.033)	-.005 (.075)
MENA	.102 (.079)	.131** (.041)	.148 (.113)	.110 (.068)	.158** (.038)	.168 (.110)
SSA	.044 (.085)	.081 (.051)	.065 (.110)	.081 (.072)	.117** (.046)	.075 (.111)

Social Trust in Countries with High or Low Legal Quality

	With Instrumental Variables			Without Instrumental Variables		
	All	Low	High	All	Low	High
Social Trust	-.634** (.279)	-.325* (.116)	-.832* (.357)	-.313** (.118)	-.174** (.058)	-.680** (.179)
Legal Quality × Social Trust				-.154** (.029)		
log GDP per Capita × Social Trust				-.166 (.104)		
Observations	194	97	97	194	97	97
Between R^2	.823	.920	.829	.847	.925	.832
Within R^2	.223	.526	.659	.377	.564	.659
Wald χ^2	347.81	529.31	279.13	414.98	524.58	285.99
Hansen J -statistic	1.280	.901	.644			
First-stage Wald	195	116	101			

Static Result

- there are separate effects of trust and legal quality, that they are complements, but also that institutional improvements may not be effective in combating corruption in countries with the worst problems.
- Last Table shows that the coefficient on Social Trust in the sample with poor legal quality is only about a fourth of that with good legal quality.
- social trust is significantly associated with corruption and makes the legal system more efficient in combating corruption
- Result do not support the view that social trust can substitute for the lack of formal protection of property rights, as hinted at in some studies.

Dynamic Result

- improvements by a real decrease in the instance of corruption in countries with above-average levels of social trust, but generally not in countries with below average trust.

Success in Combating Corruption by Top and Bottom Performers: Changes from 1980 to 1997

	Social Trust	Corruption	Legal Quality
Top performers	.373	−.075	1.217
Bottom performers	.194	.078	1.334
Difference (<i>p</i> -value)	.000	.000	.827

Note. Values are simple averages. The differences are based on the 62 countries with corruption data from at least three periods.