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# CAN EFFICIENT INSTITUTIONS IN- DUCE COOPERATION AMONG LOW TRUST AGENTS?

**An Experimental Approach?**

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Can efficient institutions induce cooperation among low trust agents? An experimental approach  
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## ABSTRACT

The importance of political institutions for economic growth and social well-being has been demonstrated in a number of studies. Societies in which agents trust that other agents will collaborate in establishing and maintaining efficient institutions produce more social benefits. Yet there is still no solution to the problem known as the social trap, namely how societies can establish efficient institutions when the agents lack social trust. The emerging consensus on Acemoglu & Robinson's model is supported by observational data but micro-level data produced in controlled circumstances are absent. To shed light on this perennial problem, a set of laboratory experiments were carried with both high and low trust agents. The main result is that when endowed with strong, socially efficient institutions at the outset, even groups of agents with low social trust are capable of using political inclusion to maintain and also to strengthen the socially efficient institutions thereby achieving collectively high-yielding outcomes. These experiments provide the first experimental support for the importance of strong institutions for developing societies.

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Around 1990, three major works had a profound impact on the analysis of the importance of institutions in the social sciences, namely, James B. March and Johan P. Olsen's (1989) *Rediscovering Institutions*, Douglass C. North's (1990) *Institutions, Institutional Change and Economic Performance*, and Elinor Ostrom's (1990) *Governing the Commons*. Collectively they challenged the then dominant societal view in studies of social and economic outcomes. The main paradigms in the social sciences then (for example, Pluralism, Elitism and Marxism) all argued that societal variables such as economic power configurations, systems of social stratifications, or the structure of class divisions were central in explaining political and thereby social and economic outcomes. Contrary to this, the institutional approach turned the causal logic around by arguing that the character of a society's political institutions to a large extent determines its economic and social development: In short, "the rules of the game" should have a more central role in social science research.

In this vein, Daron Acemoglu and James A. Robinson and their collaborators<sup>1</sup> have taken on the "million-dollar" question transgressing economics, comparative history, political economy, international development, and comparative politics: Why are some nations rich and others are poor? Their recent *opus magnum* (Acemoglu & Robinson 2012) synthesizes a vast literature from Adam Smith (1776) to Douglass C. North (1982) and Robert Bates (2001), as well as from Weber ([1904-05] 1958) to Lipset (1959) and Tabellini (2010), and couples it with detailed historical analysis and come up with a parsimonious explanation. Inclusive (market based) economic institutions create sustained increasing prosperity but only inclusive (pluralistic and centralized) political institutions are able to guarantee the reproduction of such economic institutions in the long run. Pluralistic political institutions that safeguard dispersion of political power among a large share of the population (together with some amount of centralized authority) explain why some countries have much higher living standards and wellbeing than others. Getting "politics right" as it were, is a necessary condition for pro-growth economic institutions to be sustained over not only decades but centuries. Problem solved? Perhaps, but not quite yet.

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<sup>1</sup> The literature we refer to includes: Acemoglu (2005, 2008); Acemoglu, Cantoni, Johnson & Robinson (2010); Acemoglu, Johnson & Robinson (2001, 202, 2003, 2005); Acemoglu & Robinson (2000a, 2000b, 2001, 2006a, 2006b, 2008); García-Jimeno & Robinson (2011); Robinson (1998).

The issue remains to explain how societies caught in vicious circles of exclusionary political institutions and low societal trust and therefore extractive and usually destructive economics, can switch gear into inclusionary, high-trust politics sustaining inclusive, growth-generating economic institutions.

Take widespread corruption as an instance of “bad” social outcomes creating a sub-optimal equilibrium, or social trap. The supposedly “benevolent principals” are typically the ones who stand to gain the most from rents and therefore have no incentives to change the system (Aidt, 2003; Johnston, 2005; Rose-Ackerman 1999; Teorell 2007; cf. Persson, Rothstein & Teorell 2012). The same logic undergirds Acemoglu and Robinson’s (2012) explanation for why nations do not simply adopt the best institutions. Leaders of extractive systems simply have little to gain and a lot to lose from political and economic institutions that generate sustained economic growth. A little disturbingly for the Acemoglu and Robinson model, increased political inclusion in many countries over the past 30 years have far from always remedied the system. Corrupt politicians often stand a good chance of getting re-elected by structuring incentives (Golden 2003), machine politics (e.g. Stokes 2005) and/or using clientelism (Gonzales-Ocantos 2011; Nichter 2008; Kitschelt & Wilkinson *eds.* 2007; Magaloni 2006; Stokes & Dunning 2005; Weghorst & Lindberg 2011). Street level tax bureaucrats or policemen, poor and atomized voters or other agents at the bottom also have no incentive to refrain from corrupt practices because it makes no sense to be the only honest player in a “rotten game”.<sup>2</sup>

This leads to an even more difficult problem that has been labeled as a *second-order collective action* problem (Lichbach 1997; Ostrom 1998; Rothstein 2005). “All” the agents may well understand that they would stand to gain from establishing inclusive political and economic institutions, but they have little reason to cooperate unless they trust that most other agents would not defect in the very process of creating the institutions meant to facilitate cooperative behavior. (Olson 1963; Rawls 1971, 240; Levi 2007; Lichbach 2005). Hence, establishing credible institutions that facilitates co-operation, such as the rule of law and an impartial public administration, is in itself a (second-order) collective action problem. Consistent with the Acemoglu and Robinson model, empirical

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<sup>2</sup> This is also consistent with the evidence that democratic elections do not necessarily work against corruption (Teorell, 2007).

studies have shown that it is the existence of fair, impartial and universal institutions that generates the social trust needed for solving problems of collective action (Mungiu-Pippidi 2006, 2011; Newton & Delhey 2005; Norrs 2012; Rothstein & Stolle 2008; Rothstein & Eek 2008). Yet, this type of knowledge does not solve the policy problem how societies with low social trust can ever produce such socially efficient institutions because these “meta-institutions” are themselves public goods and are thus suffering from the standard problem of defection and/or non-cooperation.

The answer of Acemoglu and Robinson (e.g. 2012: 430-431) is that small initial differences resulting from institutional drift (*aka* genetic drift) and sometimes idiosyncratic choices at critical junctures make similar societies diverge radically and generate vast differences in outcomes both in terms of political and economic institutions. Once these institutions develop, a virtuous self-reinforcing (but not irreversible) cycle typically develops in the good cases, much along the lines of studies of individual self-reinforcing institutions (e.g. Lindberg 2006). In the less fortunate societies of the world, extractive economic institutions combine with exclusionary political structures to perpetuate poverty and misrule. Yet, one critical source of uncertainty in Acemoglu and Robinson’s analysis is that there are many covariates in differences between cases such as the Tokugawa shogunate and the Chinese emperor in 1853; the Melaka, Ambon, and Banten in 1620s South-East Asia; England and Spain in 1588, Botswana and Ghana in 1940, the Leles and the Bushongs in 17<sup>th</sup> century Congo. While natural experiments in history as well as advanced statistical modeling can provide powerful evidence, we still need to isolate the operative mechanism and test it in controlled circumstances at the micro level. This can only be done in a laboratory environment.

The second problem is that while abysmal historical differences in political inclusion between say the United States and Haiti, can be used to explain vast differences in economic institutions, social trust, and welfare, it is much more difficult to ascertain if countries by introducing similar levels of political pluralism can in effect reach higher levels of trust, effective economic institutions and welfare. For example, the experiences from trying to export rule-of-law type of institutions from the United States (or other countries) to developing nations have not been very successful (Messick 1999; Andrews 2010).

This second issue also obliges us to seek micro-level evidence produced in controlled circumstances, on how low-trust, defect-prone individuals (typical for poor societies with weak and/or extractive institutions) respond to changes in political institutions. Do groups of low-trust individuals use

political inclusion to destroy economic institutions that would serve their long-term interest because they will get short-term individual gain, or does the experience of efficient economic institutions make them opt to reproduce such conditions?

Previous laboratory experiments by Eriksson & Strimling (2012) show that groups consisting of low-trust, defect-prone individuals (akin to poor societies) seem incapable of building strong, efficient political and economic institutions despite the fact that they need those to achieve better societal outcomes.<sup>3</sup> This supports the standard  $N$ -persons prisoners' dilemma argument and corroborates the Acemoglu and Robinson model. But Eriksson and Strimling's study does not speak to the issue of how groups of low trust, non-cooperative individuals respond to exogenously imposed strong and efficient economic institutions. The latter is an approximate equivalent to the institutional drift and path-dependent argument resulting in individuals being born into societies with varying institutions. The available micro-level evidence produced in the controlled setting of a laboratory experiment, hence, cannot test the most critical causal link advanced by the institutionalist literature in general, and the Acemoglu and Robinson model in particular.

With this in mind, we have carried out a set of laboratory experiments designed to test directly what happens with socially efficient institutions when participants vary in their initial level of social trust under conditions of political pluralism and inclusive economic institutions. The experiments are thus designed to test, at the micro level, the operative mechanism in the Acemoglu and Robinson model by creating a pure public goods game and removing all the covariates of historical and observational designs. This paper reports and analyzes the data from the experiments.

There are two main results. First, the results of the experiments replicate the findings from the Eriksson & Strimling study. We show that with initially weak economic institutions groups consisting of uncooperative types are less successful than cooperative types in strengthening the institutions to generate better societal outcomes – despite the fact that the low-trust, uncooperative types are in greater need of stronger institutions. Hence, the results corroborate the existence of social

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<sup>3</sup> In the same series of experiments, the authors also show that groups of high-trust, cooperative individuals manage to build and sustain such efficient institutions.

traps and the historical record of vicious circles in terms of weak and inefficient institutions leading to bad social outcomes recreating the conditions for their continued existence.

Second, our results demonstrate that if given strong and efficient institutions at the outset, even the groups consisting of low-trust, uncooperative individuals succeed in not only maintaining these institutions but under conditions of political pluralism and choice akin to the Acemoglu and Robinson model, opt to rebuild and re-strengthen them in situations when institutional decay and free-riding threaten desirable outcomes. These results have clear policy-relevant implications. While any number of other factors may circumvent the effect, exogenous creation and “imposition” of strong and efficient institutions have the potential of disrupting and replacing vicious circles created by social traps.

### **The Model - An Iterative Public Goods Game**

Different from many other situations social scientists study, social traps lend themselves to be translated into strategically equivalent experimental situations in public goods (PG) games. While it may be that political scientists are sometimes “nearly obsessed” with external validity of experiments (McDermott 2002: 334), the use of this approach is less controversial for studying social traps than for most other areas of political science. We also agree with Druckman and Kam (2011) that external validity should be assessed in light of the entire research agenda, existing facts, and the specifics of the theory. Our study involves testing highly specific hypotheses of observable behavior of individuals in strategic settings that are easily manipulated based on a well-developed theory with clear predictions. The use of students (as in our case) may even strengthen the experimental realism in our design that relies on induced value theory and involves relatively complicated instructions since students are educated, in need of small amounts of money, and used to receiving instructions from professors (Guala 2005: 33; Friedman and Sunder 1994: 39-40). Finally, the results reported here are consistent with, and corroborates, the Acemoglu and Robinson model of the origins of rich and poor nations; with the historical record of North-Western Europe creating efficient and credible political and economic institutions first, and expansion of political pluralism then reinforcing and sustaining these achievements; as well as with the consistent pattern over time in differences between corrupt and relatively corruption-free countries.

## **Inclusive Economic Institutions**

We use a similar set-up to Eriksson & Strimling (2012) in constructing the PG game. In our implementation of the PG game, agents are divided into groups of four or five. Each agent obtains an endowment of ten units. The agents then decide individually how much of their endowment to contribute to the common pot and keeps the rest. After these decisions have been made, the common pot grows by a multiplicative factor 1.6 for groups of size four and 2 for groups of size five. The common pot is then distributed equally to all agents in the group. This means that for each unit contributed, each agent receives 0.4 units. This game, which we shall refer to as the *unregulated* PG game, is a collective action problem because the social optimum is achieved when everyone contributes their entire endowments to the common pot but each agent increases her own payoff by keeping her endowment instead of contributing to the common pot. In a stylized fashion, it also represents Acemoglu and Robinson's inclusive economic institutions where everyone are allowed to participate in economic activity, invest, save, and contribute. In the PG game, this economic inclusion is perfect and it is not influenced by any possible covariates. Our setup is thus designed to generate exactly the operative conditions in the Acemoglu and Robinson model.

We then take advantage of the fact that lab experiments consistently find that some individuals are far more cooperative than others (Gunnthorsdottir et al. 2007; Gächter & Thöni 2005; Rooij et al. 2009; Sally 1995; Yamagishi 1986). In a non-technical language, we first let the participants play the unregulated PG game repeatedly (six rounds) to identify two groups of individuals: those who tend to behave in trustful ways towards others and cooperate in generating collectively beneficial outcomes; and those who tend to be uncooperative types and not trust others. These groups are then implemented in practice by sorting the individuals by the sum of their contributions in the unregulated PG game so that the four or five individuals with the highest contribution is assigned to the cooperative group and the four or five with the lowest contribution to the uncooperative group. If the number of participants resulted in one group of four and one with five individuals, we randomized whether the cooperative or the uncooperative group would contain five individuals. The comparative statistics of the individuals we classified as in one of these two groups is found in Table 1.

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Table 1. MEAN CONTRIBUTION IN THE UNREGULATED PG

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	All participants	Participants classified as uncooperative types	Participants classified as cooperative types	<i>P</i> (two-tailed)
<i>Mean</i>	6.28	4.12	8.48	<.001
<i>S. D.</i>	2.9	2.1	1.6	

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The unregulated PG game is thus used to generate a political “state of nature” where there are no rewards or punishments for being uncooperative (except the possible higher returns if everyone cooperates). This allows individuals to reveal their “true” inclinations when unconstrained by political institutions in a condition of economic inclusion and equal buying-power. In the subsequent stage of the laboratory experiment, we let the cooperative types represent individuals in the high-trust, economically prosperous nations in the Acemoglu and Robinson model. The uncooperative types represent the citizens caught in vicious circles of nations staying poor as a result of collective action failures. This division, based on the unregulated PG game, sets up for the possibility of testing directly the operative mechanism of the Acemoglu and Robinson model.

### Varying the Strength of Institutions

After sorting individuals in groups of cooperative and uncooperative types, we now introduce an institution to both types of groups in order to regulate their behavior. The strength of this institution can be varied exogenously in the laboratory setting. In its weak form it generates relative poverty and in its strong form it generates prosperity for the individuals of the group. The structure of this institution is modeled on the framework provided by Ostrom (1990). It has previously been used by Eriksson and Strimling (2012).

- *Operational rule*: The institution stipulates what is the smallest acceptable level of contribution to the common pot. Let  $A$  denote this acceptability threshold.
- *Monitoring*: Every agent can monitor at the cost of  $C$  (set to 1) units. If she chooses to monitor, then another agent is randomly drawn and is checked for rule compliance. This was

implemented so that any one agent could never be monitored more than once in a single round.

- *Reward:* If someone who has contributed less than the acceptable level of  $\mathcal{A}$  units (henceforth a “cheater”) is monitored, the successful monitor obtains a reward of  $R$  (set to 3) units. The reward is financed by the common pot after it has been multiplied, so rewards redistribute resources to successful monitors.
- *Punishment:* An agent who is found out as a cheater is automatically punished by a fine of  $F$  units. These units disappear, so for the rest of the group the punishment is associated neither with a direct cost nor a direct benefit.

After the initial unregulated PG game, we had sorted the participants into 20 groups of cooperative types, and 20 that consisted of uncooperative individuals. The groups were randomly assigned to one of two different treatments, either starting with a weak or a strong institution:

- Weak institution: Acceptance threshold starts at  $\mathcal{A}=1$  and the fine starts at  $F=2$ .
- Strong institution: Acceptance threshold starts at  $\mathcal{A}=8$  and the fine starts at  $F=9$ .

Hence, one set of ten groups from each type were provided with initial conditions of strong economic institutions regulating behavior towards cooperation and generating more prosperity. The other set of groups from each type of individuals were given initial conditions of weak economic institutions that would initially generate relative poverty for the group. In total we had 40 groups of individuals conducting the following experiment as displayed in Table 2.

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TABLE 2. TYPES OF INDIVIDUALS AND INITIAL CONDITIONS

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	<i>Initial Institutions</i>	
	<b>Strongly encourages cooperation</b>	<b>Weakly encourages cooperation</b>
<i>Type of Individual</i> Cooperative	10 groups	10 groups
Uncooperative	10 groups	10 groups

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Within cooperative and uncooperative groups, participants played twenty rounds of the regulated PG game. But before this, we have to introduce “political inclusion”.

## **Political Inclusion**

In the Acemoglu and Robinson model political pluralism, perhaps more appropriately labeled political inclusion<sup>4</sup>, plays a critical role as the principal way in which inclusive and societally efficient economic institutions are sustained. In order to test the operative mechanism we therefore need to include a requisite political institution: voting. It is true that Acemoglu and Robinson carefully point out that voting or democracy is not required in their model. Nevertheless, in the laboratory setting of this experiment, voting fulfills the requirement stipulated by their theory: To politically empower a broad swath of economic agents so they can safeguard the institutions that generate increased prosperity. This is exactly what we make possible with voting in the regulated PG game.

After every two rounds, agents get to vote on whether to change the value of a given institutional parameter. There are three options: first, raising the parameter value by one unit; second, keeping it at its current level; third, lowering it by one unit. If either raising or lowering the parameter value is

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<sup>4</sup> While in our stylized situation voting based on the principle one person – one vote represents the condition of political inclusion and we argue this is a good approximation, it should be noted that Acemoglu and Robinson (e.g. 2012: 460) correctly argue that in the real world a country can also be nominally democratic without having the requisite political inclusion/pluralism. As is well established, many factors related to economic power, clientelism, political corruption, lawlessness and so forth can skew the distribution of power to the extent of making extractive economic institutions attractive and viable for a small elite.

strictly more popular than any of the other two options, the value is changed accordingly. Agents are allowed to vote for the acceptance threshold ( $\mathcal{A}$ ) and fine ( $F$ ). The acceptance threshold is limited to at most  $\mathcal{A} = 9$ , so that agents can afford to both monitor and contribute the minimum level. No limit is imposed on the fine. We shall refer to this scenario as the regulated PG game with voting.

Viewed as one-shot games, the unregulated PG game has a unique pure Nash equilibrium with zero contributions. The regulated PG game with voting typically has a mixed equilibrium where players either try to cheat by contributing zero or contribute at the lowest acceptable level of  $\mathcal{A}$  units. These equilibria are differentiated both by the probability with which we would expect people to cheat and how much they contribute when they do. Putting these two factors together it is possible to determine how efficient the institution is at creating cooperation for a one shot game. Eriksson and Strimling (2012) performed an equilibrium analysis showing that as long as the fine ( $F$ ) is high enough to ensure a mixed equilibrium, the institution is more efficient the higher  $\mathcal{A}$  is. However, in our experiment, the games are repeated a number of times and they include voting which allows for several other more complex equilibria. Therefore, this analysis serves merely as a reference. The fact that stronger institutions give rise to more contributions will be tested explicitly in the result section.

We investigated the effect of manipulating the starting values of the acceptance threshold  $\mathcal{A}$  and the size of the fine  $F$  for different groups. We kept the reward for successful monitoring fixed at  $R = 3$  units. We then studied the behavior of the four groups over 20 iterative regulated PG games with voting.<sup>5</sup>

## Results

We use the acceptance threshold ( $\mathcal{A}$ ), the level of the fine ( $F$ ), as well as the actual contributions to assess the level of successful cooperation to achieve greater public good across the four groups with varying conditions. Our focus is on the acceptance threshold, because once the fine is large

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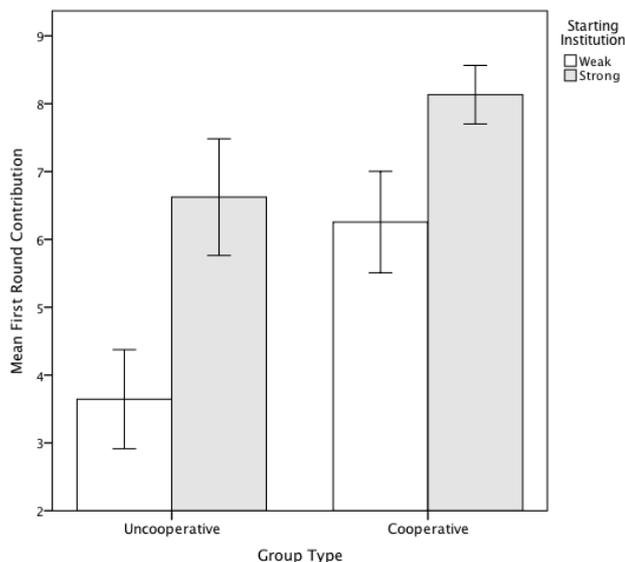
<sup>5</sup> Participants were not informed that they were divided into groups depending on their contribution. They were simply told that they would be placed into new groups. Nor did they know how many rounds they were going to play, or which one was the last one. They were not allowed to communicate during the experiment and the protocol followed was standard for lab experiments in economics.

enough to deter cheating, changing it will not have a significant effect on the social outcome. This holds true both for the behavior we find in the experiment and the formal analysis (appendix A). To assess the differences between the groups of uncooperative and cooperative individuals, we use two-tailed t-tests unless otherwise noted.

## Building Institutions

First, we are able to replicate the substantial findings from Eriksson and Strimling (2012) in that both group types benefit from a stronger institution and that uncooperative groups benefit more than cooperative groups. In the first round, the average contribution in uncooperative groups starting with a weak institution ( $M=3.64$ ,  $SD=2.43$ ) is significantly lower than that in low groups starting with a strong institution ( $M=6.62$ ,  $SD=2.86$ ), a difference of 2.98,  $t(86)=5.3$ ,  $p<0.001$ . Cooperative groups exhibit a similar effect, but with a smaller difference (weak institution:  $M=6.26$ ,  $SD=2.43$ , strong institution:  $M=8.13$ ,  $SD=1.44$ ), a difference of 1.87,  $t(68)=4$ ,  $p<0.001$ . The results are graphically displayed in Figure 1

Figure 1: Mean contributions in the first round.



Note: The difference between the weak and strong institution is larger for low groups than for high groups. The error bars represent a 95% confidence interval.

We are also able to substantially replicate the second finding from Eriksson and Strimling (2012) that uncooperative groups starting with a weak institution are less successful in building a strong institution than cooperative groups, even though they would benefit more than cooperative groups from a stronger institution and institution building is free. At the end of the game, uncooperative

groups typically have a significantly lower acceptance threshold ( $M=5.80$ ,  $SD=2.90$ ) compared to cooperative groups ( $M=8.50$ ,  $SD=1.08$ ),  $t(11)=2.8$ ,  $p=0.02$ . The effect is even stronger for the fine, where uncooperative groups ( $M=5.00$ ,  $SD=2.71$ ) also are less successful than cooperative groups ( $M=8.20$ ,  $SD=3.12$ ),  $t(18)=2.4$ ,  $p=0.03$ . Studying the evolution of the institution at a per group level, we find that it is common for the groups to reach a certain level and then stay there. Regression analysis show that the level of contribution depends on the type of group ( $b=0.45$ ,  $t(37)=7$ ,  $p<0.001$ ) and the strength of the institution, here defined as  $A+F$  ( $b=0.70$ ,  $t(37)=11$ ,  $p<0.001$ ),  $r^2=0.86$ . Uncooperative groups contribute less than cooperative groups with the same institution and are also less successful in building strong institutions. Thus the uncooperative groups are at a disadvantage compared to the cooperative groups both in terms of contributions and the ability to establish high levels of cooperation by creating institutions that regulate behavior.

## Maintaining Institutions

The key contribution of our study is that the design allows us to test how successful the groups are at maintaining institutions given varying exogenously imposed institutions under the condition of political inclusion. When the groups start with a strong institution, the differences between the strength of the institutions in the last round diminish. The acceptance threshold in uncooperative groups ( $M=8.40$ ,  $SD=0.70$ ) did not differ significantly from that in the cooperative groups ( $M=8.50$ ,  $SD=0.97$ ),  $t(16)=0.26$ ,  $p=0.80$ . The same holds for the fine, where there difference between uncooperative groups ( $M=9.90$ ,  $SD=3.38$ ) and cooperative groups ( $M=12.40$ ,  $SD=4.06$ ) is not significant,  $t(17)=1.5$ ,  $p=0.15$ . Contrary to standard game theoretic predictions, both groups are thus able to maintain institutions *if* they are exogenously provided with strong institutions generating greater prosperity to begin with.

Despite the fact that it was quite common for the institution to become weaker than its starting level at some point during the 20 rounds of the experiment, it was rare for the institution to end up weaker than the starting level. Among the groups starting with strong institutions that generate greater prosperity, six of the uncooperative groups and one of the cooperative groups at some point had an acceptance threshold lower than the starting level ( $A<8$ ), but only one of the uncooperative groups and one of the cooperative groups finished with  $A<8$ . Seven of the uncooperative groups and two of the cooperative groups voted for the fine to decrease past its starting level ( $F<9$ ), in the last round three of the uncooperative groups and two of the cooperative groups had a

fine that was lower than the starting level. This shows that the strong institutions are not maintained because of any inherent difficulty in decreasing the strength of institutions. The groups had no problem decreasing either the fine or the acceptance threshold, but if they did, they often decided to return to the original, or a stronger institution.

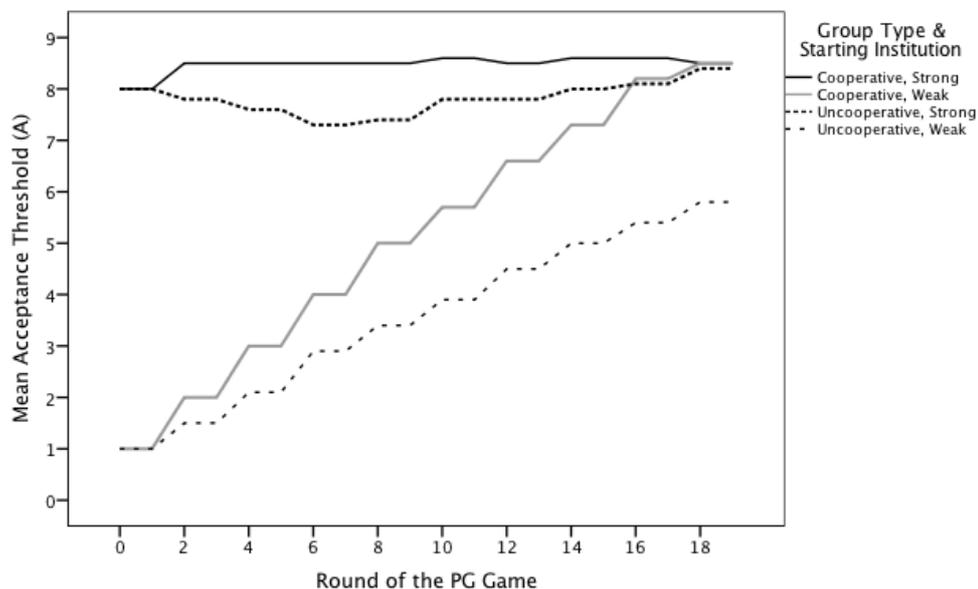
TABLE 3: STARTING WITH STRONG INSTITUTIONS: GROUP TYPE AND PATTERN OF MAIN-

	<i>Group Type</i>	<b>Was at some point lower than starting level</b>	<b>Finished lower than starting level</b>
<i>Acceptance threshold</i>	Uncooperative	6	1
	Cooperative	1	1
<i>Fine</i>	Uncooperative	7	3
	Cooperative	2	2

Figure 2 displays the mean levels of the acceptance thresholds collectively decided by the participants through the institution guaranteeing political inclusion (voting) for uncooperative and cooperative groups across the 20 rounds of the regulated PG games when exposed to varying treatments. It graphically illustrates the substantive differences between uncooperative groups exposed to weak institutions compared to the others. On average, the uncooperative groups are doing worst and are unable to build strong institutions whereas the cooperative groups build institutions strong as quickly as they can.

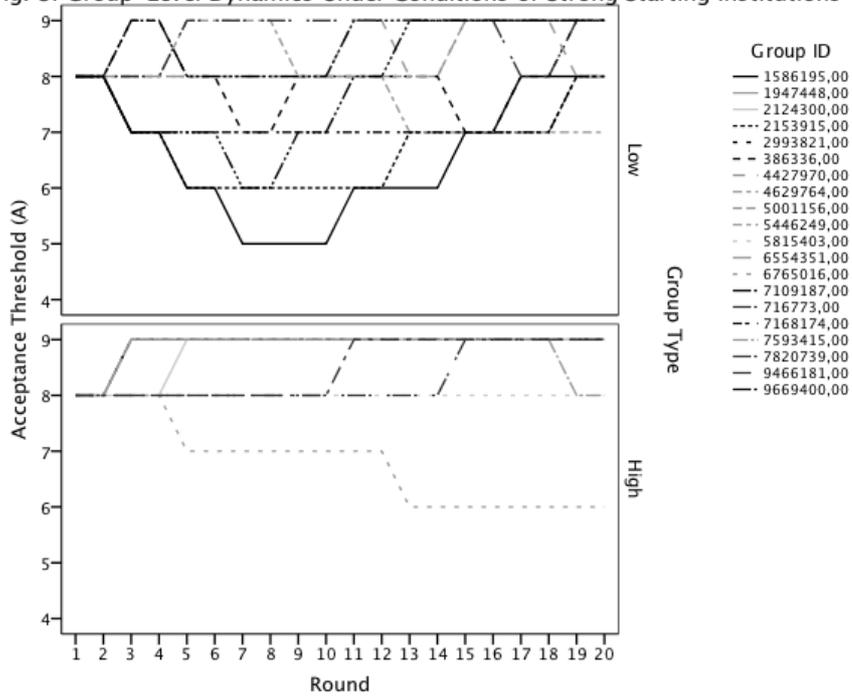
The most interesting part of the story is the pattern displayed by uncooperative groups exposed to strong institutions. Initially, they tend to use political inclusion to vote down the acceptance threshold but eventually manage to rebuild the weakened institution to its former level and frequently above. This demonstrates the key finding of our analysis: Even when uncooperative groups initially weaken an exogenously imposed strong institution (the acceptance threshold level), they quickly manage to “repair” it and even strengthen it further as displayed by the tightly dotted line.

Fig. 2: Acceptance Threshold, Group Type, and Treatment



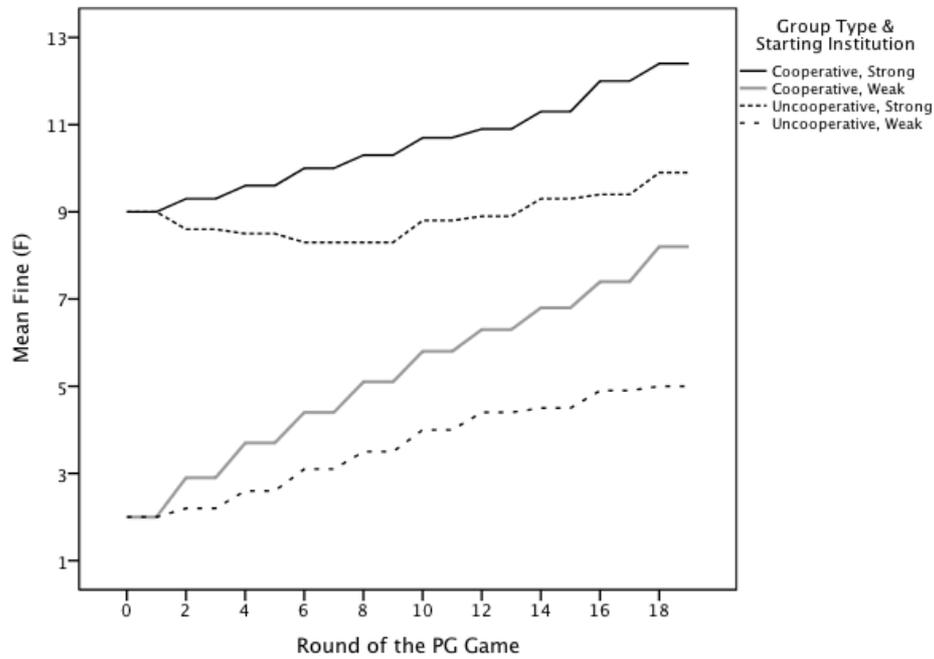
Digging deeper and in order to show that the mean effect is not misrepresenting what is going on at the individual group-level, Figure 3 graphs acceptance thresholds for all groups starting with strong institutions, with uncooperative groups in the top graph and cooperative groups in the lower graph. The reader should note that since many groups in round  $t$  chose the same acceptance threshold, they cover each other so the number of lines appear fewer than they are. The display confirms that all but one of the cooperative groups either maintain or strengthen the institution, while uncooperative groups often use political inclusion to first weaken the institution but then quickly rebuild it again. One of the uncooperative groups (ID=1586195) lower the acceptance threshold as far down as to five ( $A=5$ ), but nevertheless end in round 20 of the PG game at the initial threshold of eight ( $A=8$ ).

Fig. 3: Group-Level Dynamics Under Conditions of Strong Starting Institutions



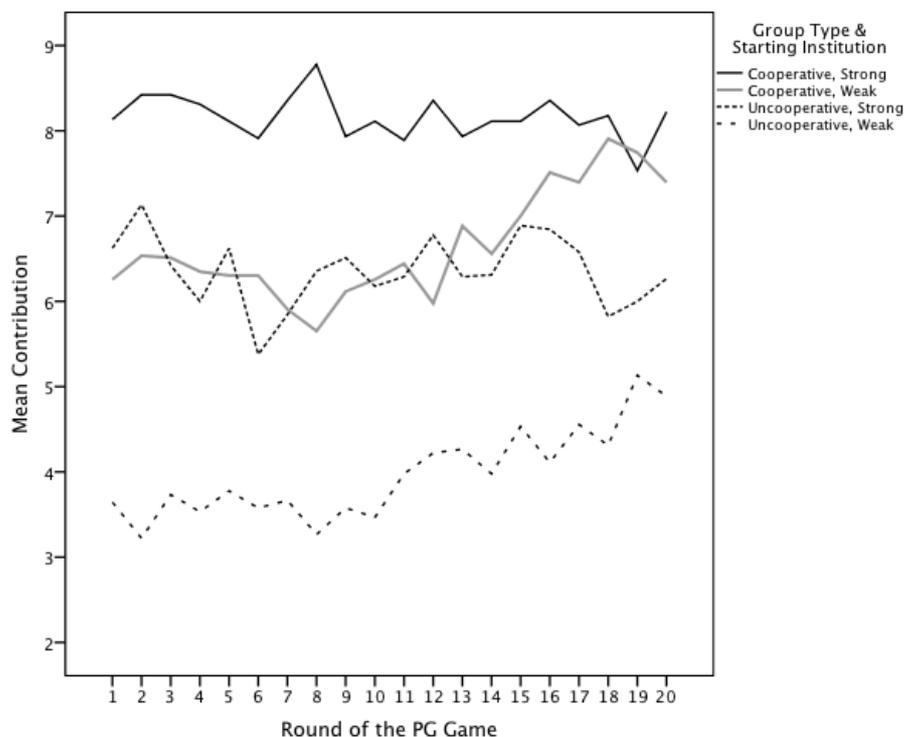
A similar pattern emerges when graphing the results for mean fine levels are graphed by group and treatment as in Figure 4. Uncooperative groups are unable to build really strong and socially efficient institutions when starting from initial conditions of a weak institutional setting, while groups of cooperative types typically manage do accomplish this.

Fig. 4: Mean Fine Levels, Group Type, and Treatments



When exposed to conditions of already strong and socially efficient institutions, both types of groups are able to maintain and even strengthen them. As above, uncooperative types first typically use political inclusion to weaken the institutions but then use the same process to rebuild and strengthen them again. The mean contribution across the 20 rounds of the regulated PG games with voting is the third and final indicator we use to test the causal mechanism of the Acemoglu and Robinson model. The results are graphed in Figure 5 and show the same kind of pattern as illustrated in the figure 3 and 4.

Fig. 5: Contributions by Group Type and Treatment

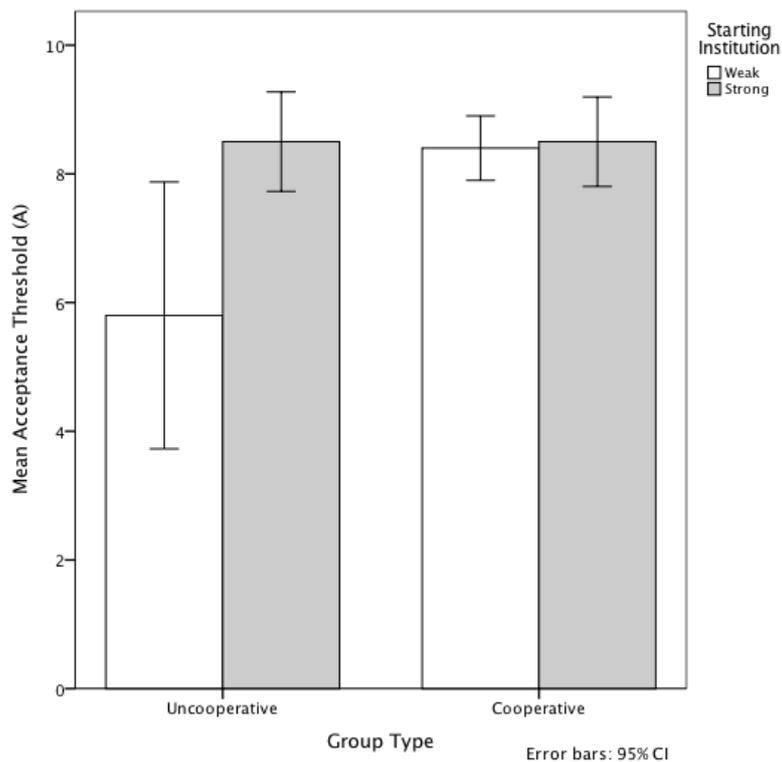


In part the results for this third indicator are following because of the acceptance thresholds and fine levels given that most players do not defect most of the time. But the mean contributions are of special significance because they show the *de facto* outcome in terms of actual contributions that either generates greater prosperity, along the lines of the Acemoglu and Robinson model, or relative poverty.

Another way of looking at this is to compare within cooperative and uncooperative groups starting with strong vs. weak institutions. Both groups can reach the maximum acceptance threshold,  $A=9$ . Therefore, there should not be a difference in last round acceptance threshold between groups starting in the weak institution treatment, assuming they are efficient in constructing the institutions. Figure 6 shows the average acceptance threshold in the last round. In cooperative groups we find no such difference between the weak ( $M=8.5$ ,  $SD=1.08$ ) and strong institution ( $M=8.5$ ,  $SD=0.97$ ) treatments  $t(18)=0$ ,  $p=1.0$ . However, in uncooperative groups there is a statistically significant difference between weak ( $M=5.8$ ,  $SD=2.90$ ) and strong ( $M=8.4$ ,  $SD=0.70$ ) starting institutions,  $t(10)=2.8$ ,  $p=.02$ . The uncooperative groups do not seem to have a set level that they try to

reach. Rather, there is a distribution of different levels that they will finish at. When starting with a strong institution, this distribution is shifted, resulting in significantly stronger institutions than when starting with weak institutions. The results show that while uncooperative groups are less successful in building institutions that regulate cooperation, they are able to maintain such institutions if they are already in place and will even manage to rebuild them if they decline.

Fig. 6: End-Game Institutional Strength



## Conclusions

Why are some societies rich and others poor? Following the institutionalist turn in political science from the early 1990s, Acemoglu and Robinson's theory has emerged as the perhaps one of the most believed explanation: Only in nations where inclusive politics disperse power over a larger share of populations are pro-growth inclusive and market-based economic institutions reproduced in the long run. Yet, their model does not resolve the issue of whether there is a necessary sequence of adoption of the "right" economic institutions and the "right" political institutions. Given the

emphasis on “getting politics right” in the international development and aid community during the last two decades, the lack of empirical support for this policy doctrine is problematic. This is especially troublesome since we lack evidence that the significant steps forward in terms of political inclusiveness in many countries since the start of the “third wave of democratization” has led to improvements in economic growth (Norris 2012; Doucouliagos & Ulubasoglu 2008; Przeworski & Limongi 1993). Their theory, which is based on extensive historical research, is also silent on what to do to break vicious circles in countries characterized by exclusionary political institutions, low societal trust and extractive economic systems.

In the end, the problem boils down to a micro level issue about causal mechanisms: How do groups of low-trust, defect-prone individuals respond to changes in the strength and social efficiency of institutions? This paper reports on a set of laboratory experiments that test the suggested causal mechanism in the Acemoglu and Robinson model at the micro level, and at the same time offers a better understanding on the issue of sequence.

The first main result replicating earlier studies corroborates the historical analyses by Acemoglu and Robinson. Groups (*aka* societies) of uncooperative, defect-prone and low-trust individuals tend to be unable to use political inclusion in order to build the strong and efficient economic institutions that they so badly need to improve collective outcomes.

Our second main finding, however, is that when endowed with strong, socially efficient economic institutions at the outset, even these collective action-failure-prone groups are capable of using political inclusion to maintain *and even strengthen* socially efficient economic institutions and achieve collectively high-yielding outcomes.

These experiments thus provide the first micro level evidence produced in controlled circumstances corroborating the Acemoglu and Robinson theory. It also takes us one step further in suggesting that while political inclusion is useful for generating growth and collective well-being, it is not a remedy that works unless economic institutions have been made strong and relatively uncorrupt first.

The external validity of laboratory experiments can always be questioned and this is no exception. Reality is, of course, much more complex and many more variables are at play. However, the point

of our set-up is not first and foremost to recreate reality but to approximate a test of the causal mechanisms suggested by the emerging dominant theory in the field at the micro level.

Since institutions are “man-made”, it seems simple – poor countries could just import the type of institutions that are known to produce economic prosperity and human well-being. But the introduction of “good institutions” has turned out to be a much more complicated and difficult affair than expected. (Grindle 2004; Mungiu-Pippidi 2011). In particularly problematic result is that the introduction of representative democracy is not a sure cure against “bad governance” and corruption (Sung 2004; Montinola & Jackson 2002). This remains true and illustrates another aspect of the external validity issue for our findings, where the introduction of voting did not lead to increased efficiency for groups of uncooperative subjects.

In the experiment, players can trust completely that the institutions (strong or weak) are upheld. Checks and punishments are carried out impartially and without risks of being corrupted or influenced by ties be it to kinship groups, unions, or politicians. This is hardly always the case in the real world. For any policy implications, therefore, we need to recognize that at a minimum societies of defect-prone uncooperative individuals need not only the “right” economic and political institutions but also probably need to experience impartial enforcement of the same institutions for an extended period before the effects we have seen in the lab would materialize.

## REFERENCES

- Acemoglu, Daron and James A. Robinson 2006a. *Economic Origins of Dictatorship and Democracy*. New York: Cambridge University Press.
- Acemoglu, Daron, & James A. Robinson. 2000. "Why Did the West Extend the Franchise? Growth, Inequality and Democracy in Historical Perspective." *Quarterly Journal of Economics* 115: 1167-1199.
- Acemoglu, Daron, & James A. Robinson. 2001. "A Theory of Political Transitions." *American Economic Review* 91: 938-963.
- Acemoglu, Daron, & James A. Robinson. 2006b. "Economic Backwardness in Political Perspective." *American Political Science Review* 100: 115-131.
- Acemoglu, Daron, & James A. Robinson. 2008. "Persistence of Power, Elites, and Institutions." *American Economic Review* 98: 267-293.
- Acemoglu, Daron, Davide Cantoni, Simon Johnson & James A. Robinson 2010. "From Ancien Régime to Capitalism: the Spread of the French Revolution as a Natural Experiment." in Jared Diamond and James A. Robinson, eds. *Natural Experiments in History*. Cambridge, MA: Harvard University Press.
- Acemoglu, Daron, Simon Johnson & James A. Robinson. 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation." *American Economic Review* 91: 1369-1401.
- Acemoglu, Daron, Simon Johnson & James A. Robinson. 2002. "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution." *Quarterly Journal of Economics* 118: 1231-1294.
- Acemoglu, Daron, Simon Johnson & James A. Robinson. 2005. Rise of Europe: Atlantic Trade, Institutional Change and Economic Growth." *American Economic Review* 95: 546-579.
- Acemoglu, Daron. 2005. "Politics and Economics in Weak and Strong States." *Journal of Monetary Economics* 52: 1199-1226.
- Acemoglu, Daron. 2008. "Oligarchic Versus Democratic Societies." *Journal of European Economic Association* 6:1-44.
- Aidt, Toke. 2003. "Economic Analysis of Corruption: A Survey." *The Economic Journal*. 113 (November):F632-F652.
- Andrews, Matt. 2010. "Good Government Means Different Things in Different Countries." *Governance-an International Journal of Policy Administration and Institutions* 23 (1):7-35.
- Bates, Robert H. 1981. *Markets and States in Tropical Africa*. Berkeley: University of California Press.
- Bates, Robert H. 2001. *Prosperity and Violence: The Political Economy of Development*. New York: W. W. Norton.
- Druckman, James N. and Cindy D. Kam. 2011. "Students as Experimental Participants: A Defense of the 'Narrow Data Base'." in Druckman, James N., Donald P. Green, James H. Kuklin-

- ski, and Arthur Lupia. *Cambridge Handbook of Experimental Political Science*. Cambridge: Cambridge University Press.
- Eriksson, Kimmo and Pontus Strimling. 2012. "The Hard Problem of Cooperation". *PloS One* 7.7: e 40325.
- García-Jimeno, Camilo & James A. Robinson. 2011. "The Myth of the Frontier." In Dora L. Costa and Naomi R. Lamoreaux, eds. *Understanding Long-Run Economic Growth*. Chicago: University of Chicago Press.
- Gonzales-Ocantos, Ezequiel, Chad Kiewiet de Jonge, Carlos Melendez, Javier Osario, and David W. Nickerson. 2011. "Vote-Buying and Social Desirability Bias: Evidence from Nicaragua" *American Journal of Political Science* 56(1): 202-217.
- Johnston, Michael. 2005. *Syndromes of corruption : wealth, power, and democracy*. Cambridge: Cambridge Univ. Press.
- Kitschelt, Herbert & Steve Wilkinson, eds. 2007. *Patrons, Clients, and Policies*. Cambridge University Press.
- Lichbach, Mark I. 1997. *The Co-operator's Dilemma*. Ann Arbor: University of Michigan Press.
- Lindberg, Staffan I. 2006. *Democracy and Elections in Africa*. Baltimore: Johns Hopkins University Press.
- Lipset, Seymour M. 1959. "Some Social Requisites of Democracy: Economic Development and Political Legitimacy." *American Political Science Review* 53: 69-105.
- Magaloni, Beatriz. 2006. *Voting for Autocracy: Hegemonic Party Survival and Its Demise in Mexico*. Cambridge: Cambridge University Press.
- McDermott, Rose. 2002. "Experimental Methods in Political Science." *Political Analysis* 10: 325-342.
- Messick, Robert E. 1999. "Judicial reform and economic development: a survey of the issues. A survey of the issues." *The World Bank Research Observer* no. 14 (1):117-136.
- Nichter, Simon 2008. "Vote buying or turnout buying?", *American Political Science Review* 102, 1: 19-31.
- Norris, Pippa. 2012. *Democratic Governance and Human Security: The Impact of Regimes on Prosperity, Welfare and Peace*. New York: Cambridge University Press.
- Doucoulagos, Hristos and Mehmet Ali. Ulubasoglu. 2008. "Democracy and economic growth: A meta-analysis." *American Journal of Political Science* 52:61-83.
- Przeworski, Adam and Fernando Limongi. 1993. "Political Regimes and Economic Growth." *The Journal of Economic Perspectives* 7:51-69.
- North, Douglass C. 1982. *Structure and Change in Economic History*. New York: W. W. Norton&Co.
- North, Doulass C. 1990. *Institutions, Institutional Change, and Economic Performance*. Cambridge MA: Cambridge University Press.

- Ostrom, Elinor. 1998. "A Behavioral Approach to the Rational Choice Theory of Collective Action." *American Political Science Review* 92 (1):1-23.
- Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press.
- Persson, Anna, Bo Rothstein, and Jan Teorell. 2012. "Why Anti-Corruption Reforms Fail: Systemic Corruption as a Collective Action Problem." *Governance: An International Journal of Policy, Administration and Institutions*. forthcoming.
- Robinson, James A. 1998. "Theories of Bad Policy." *Journal of Policy Reform* 1: 1-46.
- Rose-Ackerman, Susan. 1999. *Corruption and Government: Causes, Consequences, and Reform*. Cambridge: Cambridge University Press.
- Rothstein, Bo. 2005. *Social Traps and the Problem of Trust*. Cambridge: Cambridge University Press.
- Rothstein, Bo, and Dietlind Stolle. 2008. "The State and Social Capital: An Institutional Theory of Generalized Trust." *Comparative Politics* no. 40:441-467.
- Rothstein, Bo, and Daniel Eek. 2009. "Political Corruption and Social Trust - An Experimental Approach." *Rationality and Society* no. 21 (1):81-112.
- Smith, Adam. 1776. *An inquiry into the nature and causes of the wealth of nations*. London: W. Strahan and T. Cadell.
- Stokes, Susan and Thad C. Dunning. 2008. "Clientelism as Persuasion and as Mobilization" *Presented at the Annual Meeting of the American Political Science Association*. Boston, MA: August 31, 2008.
- Stokes, Susan. 2005. "Perverse Accountability." *American Political Science Review* 99: 315-325.
- Tabellini, Guido. 2010. "Culture and Institutions: Economic Development in the Regions of Europe." *Journal of the European Economic Association* 8: 677-716.
- Trubek, David, and Marc Galanter. 1974. "Scholars in Self-Estrangement: Some Reflections on the Crisis in Law and Development Studies in the United States." *Wisconsin Law Review*:1062-1101.
- Weber, Max. [1904-05] 1958. *The Protestant Ethic and the Spirit of Capitalism*. New York: Scribners.
- Weghorst, Keith and Staffan I. Lindberg. 2010. "Are Swing Voters Instruments of Democracy or Farmers of Clientelism? Evidence from Ghana". Working Paper 2010:17 University of Gothenburg: Quality of Government Institute